Encouraging VMT-Reduction:
Community Characteristics and Planning Process Characteristics that Increase VMT-Reduction Receptivity

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A Master’s Project submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for a degree of Master of City and Regional Planning in the Department of City and Regional Planning
ABSTRACT

An integral component of achieving successful initiation of VMT-reduction agendas is the development of best and innovative practices related to planning, particularly sustainability planning. Another essential component is the understanding on the part of the public and elected officials of which community characteristics should be in place for optimal VMT-reduction receptivity. In this report, I provide an overview of the literature on characteristics of good planning as well as an analysis of the community characteristics of four municipalities in the Southeastern United States as they relate to VMT-reduction receptivity. Findings indicate that there are gaps in the literature on what makes a good planning process as it relates to VMT-reduction receptivity, and in the interviewee’s understanding of VMT-receptive community characteristics. Based on the findings, I recommend that both researchers and city staff and elected officials from the four analyzed cities focus more heavily on developing best and innovative practices around aggressive and targeted educational outreach and marketing campaigns. In addition, I recommend that the city staff and elected officials recognize the connection between a healthy economy and VMT-reduction receptivity. Finally, I recommend that the four cities increase their efforts around the development of a quality implementation and evaluation strategy, a flexible and politically astute staff, and a solid fact base, all of which are important contributors to a community’s VMT-reduction receptivity.
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INTRODUCTION

There is strong consensus that global warming is occurring, that increased greenhouse gases in the atmosphere and ozone depletion in the stratosphere are the main cause, and that the greenhouse gas which is the biggest contributor to global warming is carbon dioxide. According to the U.S. Department of Transportation, the transportation sector is responsible for 28% of U.S. greenhouse gas emissions (as of 2006) making it the second largest emitter after electricity generation. According to the same 2006 data, the largest source of these greenhouse gas emissions (34%) came from passenger cars. Further, the data state that the transportation sector is the largest emitter of the most ubiquitous greenhouse gas: carbon dioxide (CO2). This highlights the value to our environment of reducing our passenger car vehicle miles traveled.

Unfortunately, in the current economic climate, there is less available funding for transportation programs at the federal, state, and local level and especially for non-motorized transportation programs than there has been in recent years. Further, across the majority of the United States, attitudes towards typical VMT-reduction initiatives such as bicycling and to a lesser degree walking and public transportation are more often than not unfavorable. This lack of strong economic, political, and public support for promoting VMT-reduction increases the necessity of effective planning of bicycle, pedestrian, and public transportation programs in order to increase their chances of initiation. It also brings to light the importance of nurturing certain key VMT-reduction receptive community characteristics in the cities where the programs would take place.

I propose nurturing these characteristics at the City and County level in particular because there are significant benefits of a local level approach to VMT-reduction. They include the lack of bureaucratic drag, which allows changes to occur more quickly and the fact that local programs can be customized to fit local needs. An additional benefit is that the result can have positive spillover effects on taxpayer savings, health benefits, and quality of life (Linstroth & Bell, 2007; p. 26). Further, it makes sense for VMT-reduction efforts to happen at the local level because City and County governments adopt and oversee land use zoning and to a certain extent transportation infrastructure planning and construction. (Linstroth & Bell, 2007; p. 30)

In this report, I pose the question: how do planning process qualities as well as community characteristics influence VMT-reduction receptivity? My intent is to improve on the existing literature on what characterizes a good planning process as it relates to VMT-reduction and to provide recommendations for how cities can improve their VMT-reduction receptivity. I provide a brief overview of the literature on what makes a good plan, planner, and sustainability plan. I also provide an analysis of four cities: Durham and Winston-Salem, NC and Charleston and Columbia, SC based on findings from interviews with municipal staff members. In addition, I provide a receptivity analysis that is based on how well the four cities meet a set of six criteria.
that I have chosen based on individual preference. My findings consist of a comparison of the results of the literature review and the theoretical and interview-based community characteristics analyses.
BACKGROUND

Through this literature review I address what qualities and characteristics define a good planner and a good plan, respectively. I also delve into what community characteristics should be in place to maximize a community's receptivity to sustainability initiatives. For this review section I analyzed over twenty articles in order to select the ten that best captured what makes a quality planning process. The most significant of the factors included in the literature were determined based on my preference.

A Good Planner:

The following are the six qualities that are featured most prominently throughout the literature on what defines a good planner:

1. Being in possession of broad knowledge including knowledge of the topic, the local political environment, the community needs and preferences, and the technical factors related to the topic. (Foster-Fishman, Berkowitz & Lounsbury, 2001)
2. Being committed enough to the goals of the plan that one is willing to re-evaluate one’s own rightness, challenge dominant and popularly held beliefs, seek out better methods and alternate perspectives, and change course if necessary to achieve plan goals. (Foster-Fishman, Berkowitz & Lounsbury, 2001; Haines, 1995; Lusk and Kantrowitz, 1990)
3. Being in possession of leadership and conflict resolution skills, which involves the ability to articulate and inspire a shared vision, empower others, and maintain both a positive working environment and positive relationships. (Foster-Fishman, Berkowitz & Lounsbury, 2001)
4. Being able to communicate across varied interest groups, which involves mastery of the written word, spoken word, mathematics, and graphic images, as well as understanding privilege and bias (Foster-Fishman, Berkowitz & Lounsbury, 2001) and being able to make plan goals relevant to the different groups’ wants and day to day experiences. (Adger et al, 2003)
5. Being well-versed in environmental, equity and economic development planning, which would allow the planner to understand the whole spectrum of planning priorities, the differing approaches to growth management and how to mitigate negative economic, environmental, and social externalities. (Campbell, 2006)
6. Being able to understand political realities and be flexible and adaptable in the face of them. (Adger et al, 2003)
Two of these qualities on what makes a good planner are most important for VMT-reduction planning: number four: the ability to communicate broadly across groups and number six: the ability to understand political realities and constraints. These qualities are significant because of how strongly the success of a planning effort is tied to how in line its vision is with that of the community it serves and should the visions be unaligned, how successfully the plan convinces the community to adopt its vision. However, the literature included in this study addressing these two qualities does not sufficiently impress the importance of a planning process that can change ingrained, culturally sanctioned behaviors let alone delve sufficiently deeply into how the planning process can affect this change. Knowing how to affect behavior change is especially important for planning efforts that include VMT-reduction programs, because significant public support for such programs will only come about when communities understand a) the true cost to society and to their own well-being of their travel choices and b) the value of choosing alternative modes of transportation to their personal well-being.

Understanding these two realities will result in an increased willingness to significantly change daily personal transport choices. To achieve this difficult behavior change, what must occur is the introduction of a targeted and aggressive educational outreach/social marketing campaign into the more common (and only marginally effective) incentive, education and promotion campaigns. The intent of the campaign should be twofold: to demonstrate the economic benefit to the individual of choosing alternative transportation modes and to re-appropriate the positive image of single occupancy vehicle driving so that its uglier qualities come to the forefront as well as to re-appropriate the negative image of walking/bicycle riding/using public transportation/car-pooling so that their positive qualities come to the forefront.

**A Good Plan:**

The following are the seven characteristics that feature most prominently on what makes a good plan:

1. A participant outreach and engagement effort that reflects an understanding of the community’s economic, socio-political, psychological and practical needs, wants, realities and influences. (Haines, 1995; Part I)

2. Both a vision statement that consists of an overview of current problems and an image of a better future and a mission statement that consists of a description of why the planning process and plan-proponents exist and what important purpose they serve. (Haines, 1995; Part II)
   a. A good mission statement is succinct, viable, results-focused rather than activities-focused, and it uses purposeful and specific wording. (Haines, 1995; Part II)
b. A good vision statement includes an assessment of current and future trends and impacts. It looks at changes to population, economic development, land use, public infrastructure and the natural environment. (Berke, Godschalk, Kaiser & Rodriguez, 2006)

3. A fact base (as part of the visioning phase) that provides an analysis of current and future population, economy, land use, land supply, facility and infrastructure costs, and the impact on the natural environmental, and has the added value of clearing up misconceptions and validating the problems the plan seeks to address. (Berke, Godschalk, Kaiser & Rodriguez, 2006)

4. Policy objectives and action items that are based on the participants’ vision and mission statements, easy to understand, politically relevant and practical, inspiring, action-oriented, adaptable, and legally viable. (Berke, Godschalk, Kaiser & Rodriguez, 2006)

5. A timeline and implementation strategy that demonstrate an understanding of government, private, and not-for-profit roles in the management and completion of plan goals and action-items as well as an understanding how the plan is integrated into other plans (governmental, corporate, and not-for profit) and their corresponding timelines. (Haines, 1995; Part III)

6. A funding strategy (a component of the implementation phase) that dictates how funding will be allocated and how to align the budget to reflect the plan’s goals.
   a. A quality funding strategy follows instead of goes before the earlier components of the plan because this ensures more realistic resource allocation. (Haines, 1995; Part III)
   b. A quality funding strategy is organized into the following categories: “macro allocations, activity level budgeting, and 5-15% budget cut projections and plans” (an important step to prepare the participant groups for the tough re-allocation and budget cutting choices they may have to make). (Haines, 1995; Part III)
   c. A quality funding strategy involves the participants in fund-raising to acquire near and long-term funding. (Haines, 1995; Part II)

7. An evaluation strategy that is specific, far-reaching and prolonged that uses targets, benchmarks and quantifiable performance measures with regard to the vision, mission and goals of the plan. (Haines, 1995; Part III)
   a. A good evaluation strategy, to determine plan success and failure and how the plan can recover, measures how satisfied the target community is, to what degree the plan has achieved its revenue-raising or money-saving goals, the time it takes to complete the plan and to what degree it has reduced the problem it was meant to reduce. (Haines, 1995; Part III)
Of the characteristics addressed in the literature included in this study on what makes a good plan, I deem the most significant to be number five: a quality implementation strategy and number six: a comprehensive funding strategy. A quality implementation strategy is significant because it moves the plan from being a theoretical document to a completed project with realized goals. It provides the who, what, when and where of implementation and it recognizes the interconnectedness of the actors involved in implementation. It also ensures accountability, communication and ownership of the plan or program. A good implementation strategy will also be linked with a funding strategy, which is the other highly significant characteristic of a good plan. One of the primary reasons for the failure of plans and programs to get initiated is a lack of funding.

A Good Sustainability Plan:

The following are three community characteristics that are present in the literature on how to increase the likelihood of successful initiation of sustainability plans in particular. I consider all of these characteristics to be significant due to their being indicators of public, staff, and elected official support as well as willingness to put the interests of the cause before one’s own interests, both of which are important community characteristics mentioned in the literature on what makes a good planner and plan.

1. A history of championing and funding sustainable programs (Kaiser & Godschalk, 1995)
2. A history of using planning processes to achieve progressive goals in the past (Campbell, 1996) and demonstrating the ability to resist the draw of growing for the sake of profit and expansion without considering the negative externalities (Molotch, 1976)
3. A willingness to learn from mistakes and change course to achieve the goal and to commit the necessary resources and time to developing locally relevant and practical solutions that represent a broad range of participant interests (Campbell, 1996)

An essential characteristic of a good sustainability plan that is mentioned by the literature included in this study is the ability to demonstrate a clear connection between sustainable development and economic development.

Overall, the encouragement of environmental sustainability has a higher likelihood of success if it is presented in conjunction with other high-priority goals such as a healthy, vibrant, and diverse economy. (Otgaar, Klijs & van den Berg, 2011) Thus for a plan or program that promotes an environmentally sustainable vision to be viable, it must demonstrate that it will positively impact the economic sector. Further, a successful environmental sustainability plan will be especially well-positioned if it reaches out to the business community who can provide substantial help in terms of networking and technical assistance as well as financial and political knowledge. (Otgaar, Klijs & van den Berg, 2011) Another perspective on the importance of
environmental sustainability planning proponents partnering with the business community is that effective government efforts at climate change mitigation should revolve around “ecological modernization”. Ecological modernization is defined as the combing of environmental preservation goals with capitalist goals so that environmental conservation efforts integrate the promotion of green technologies or incentivize businesses to be sustainable. (Dedekorkut 2010) An important consequence of this will be the dispelling of the widely held myth that economic development and environmental conservation are mutually exclusive. (Dedekorkut 2010)

What is notably absent; however, is sufficient guidance on exactly how to successfully demonstrate the connection between sustainable development and economic development before audiences of citizens, staff, and elected officials. I surmise that a good argument for sustainable development should impress that a vibrant economy and a reciprocal relationship between economic development, the environment and environmental preservation is a fundamental component of sustainability.

**Summary**

I find that the characteristics of a good planner that are the most significant are the ability to communicate broadly across groups and the ability to understand political realities and constraints. I also find that the most important characteristics of a good plan are a quality implementation strategy and a comprehensive funding strategy. In addition, I find that the most important characteristics of a community likely to be receptive to sustainability planning are a history of championing sustainability initiatives and planning processes and a willingness to learn from mistakes, change course, and understand what is relevant about their initiative to a wide variety of citizens.

A good planner characteristic that I think deserves more attention in the literature is the ability to develop an educational outreach/social marketing campaign that demonstrates the literal and figurative costs of vehicle-travel and the benefits of alternative mode travel and that also challenges the positive and negative associations we make on a daily basis with personal vehicle and alternative mode travel. Further, a planner and/or sustainability plan characteristic that I see not sufficiently addressed in the literature is the demonstration of a connection between economic and sustainable development.
METHODOLOGY

Study Area

The four cities chosen for inclusion in this report’s study area are Durham and Winston-Salem in North Carolina, and Charleston and Columbia in South Carolina. These cities were chosen because they are similar in the following ways: population size, climate and topography, and possession of a Climate Action Plan that prioritizes reducing VMT.

The VMT-reduction initiatives analyzed in this report were chosen from among the greenhouse gas emission-reduction initiative proposals within the cities’ four respective Climate Action Plans. Durham’s GHG Emissions Inventory and Local Action Plan, released in 2007, is a 133-page document that includes a list of VMT-reduction initiatives under the Transportation sub-section of its Proposed Community Measures section. Winston-Salem’s GHG Inventory and Local Action Plan to Reduce Emissions, released in 2008 is a 43-page document that includes VMT-reduction initiative proposals in its Community Action Plan and Local Action Plan recommendation sections as well as in its Future Reduction Measures for Local Government Operations section. The Charleston Green Plan, completed in 2010 but never adopted, is a 176-page document that includes VMT-reduction initiative proposals in its Improved Transportation section. And finally, Columbia’s Climate Protection Action Plan, released in 2003, is a 6-page document that features VMT-reduction initiative proposals under the Transportation sub-section of its Action Items section.

Data Sources

The research for this report involved the acquisition of data from a variety of sources including: academic literature on planning quality, 2005-2009 American Community Survey demographic data reports for each city, the cities’ Climate Action Plans as well as a selection of their bicycle and pedestrian-related plans and documents, and phone interviews with five staff from the four respective city governments.

Demographic Community Characteristics Analysis Methods

The demographic community characteristics section chose six demographic community characteristics to use as indicators of VMT-reduction receptivity. The choice of characteristics was based on individual preference. The four cities were compared across these characteristic-indicators to measure how likely they were to be VMT-reduction receptive.

Interview Methods

The research required for this report received IRB approval for research with human subjects. Each of the five transcribed phone interviews lasted between 1 hour and 1.5 hours and involved
discussions with two staff from Durham and one staff from each of the other three cities. The interviews were semi-structured based on a pre-written interview questionnaire that had been sent to the interviewees prior to the interview.
DEMOGRAPHIC COMMUNITY CHARACTERISTICS

Introduction to Cities:

The city of Durham, which was founded in 1853, lies in the northeast corner of North Carolina’s Piedmont Triad region within Durham County. It is the fifth largest city in North Carolina and the largest city in the county as well as the county seat. It is also one of the vertices of the Research Triangle area, an eight-county region that is home to Research Triangle Park, a center for technology, biotechnology, pharmaceuticals, and medicine research. Major employment areas are educational services, health care, and scientific research. (City of Durham, 2012)

The city of Winston-Salem, which was founded in 1913, lies in the Piedmont Triad region of North Carolina within Forsyth County. It is the fourth largest city in North Carolina and the largest city in the county as well as the county seat. Major employment areas are educational services, health care, and social services. (City of Winston-Salem, 2012)

The city of Charleston, which was founded in 1670 as Charles Towne, moved to its present location in 1680, and given its present name in 1683, (Charleston’s Finest, 2012) lies along the coast of South Carolina within Charleston County. It is the second largest city in South Carolina and is the largest city in the county as well as the county seat. (City of Charleston, 2012) Major employment categories are retail, health care, and accommodation and food services. (Charleston Inspired, 2012)

The city of Columbia, which was founded in 1786 as the second planned city within the United States lies in the center of South Carolina within Richland County and Lexington County. It is the largest city in South Carolina and is the county seat as well as the state capitol. (City of Columbia, 2012) Major employment areas are the state government, health care, and the military. (U.S. News and World Report, 2012)

I propose that each of these four cities possesses community characteristics that significantly impact its likelihood of VMT-reduction receptivity. The community characteristics that will be considered in this section are: transportation, population and population density, economy, housing, population age, and education. Transportation is determined to be the most impactful of the community characteristics while the other characteristics are assumed to be generally comparable in terms of impact and therefore are not ranked according to impact but instead are presented in random order.
Transportation:

A city’s existing transportation network and its transportation planning agenda combine to make up the most important contextual determinant of support for VMT-reduction receptivity. This is because, as expected, the development, coordination, and promotion of VMT-reduction initiatives typically falls within the scope of work of a transportation planning department. Further, the viability of such initiatives is often viewed as dependent on how well the existing transportation network compliments the proposed initiatives. Therefore, such initiatives can be successful only to the degree to which there are transportation policies, political and public will, funding resources, and existing infrastructure and facilities to support them.

The specific components of a transportation network and a transportation planning agenda that are addressed here are the transportation network’s amount of bicycle and pedestrian infrastructure, its quality of public transportation infrastructure and facilities, the existence of public transportation, bicycle, and pedestrian supportive aids, and additional indicators of receptivity to public transportation, bicycle, and pedestrian initiatives (mean travel time in minutes to work, the distribution of work trips across modes, and whether or not the city has been recognized under the League of American Bicyclists’ Bicycle Friendly Community program.)

Bicycle and Pedestrian Infrastructure

Durham ranks in first place in “Bicycle and Pedestrian Infrastructure” due to having the highest number of bicycle lane miles and ranking second to Charleston in greenways/shared use path miles. Winston-Salem outperforms Durham slightly in terms of its sidewalk to road mile ratio, but its low number of bicycle lane miles and greenway/shared use path miles reduces its ranking. Charleston significantly underperforms in its number of bicycle lane miles and Columbia performs worst in each metric except for bicycle lane miles where it comes in second place. Overall, the larger sidewalk mile to road mile ratios and the relatively low bicycle infrastructure mile numbers indicate that none of the cities are providing sufficient infrastructure.
Table 1: Bicycle and Pedestrian Infrastructure

<table>
<thead>
<tr>
<th>Source</th>
<th>Sidewalk Miles</th>
<th>Road Miles</th>
<th>Sidewalk to Road Ratio</th>
<th>Bicycle Lane Miles</th>
<th>Greenway/Shared Use Path Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>204</td>
<td>1,103</td>
<td>1:5.4</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>339</td>
<td>1,427</td>
<td>1:4.2</td>
<td>7</td>
<td>.03</td>
</tr>
<tr>
<td>Charleston</td>
<td>N/A</td>
<td>663</td>
<td>N/A</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>Columbia</td>
<td>165</td>
<td>979</td>
<td>1:6</td>
<td>12</td>
<td>0</td>
</tr>
</tbody>
</table>


Public Transportation Infrastructure and Facilities

Durham ranks in first place in “Public Transportation Infrastructure and Facilities” followed by Winston-Salem with Charleston and Columbia tied for third place. Durham’s first place score is due to its dual bus services, Durham Area Transit Authority (DATA) and Triangle Transit (TTA) (a regional service) servicing significantly more passenger trips per day and per year on average than the other systems, having by far the highest number of routes, being the only system with both an online and phone-based trip planner service and having the most non-fixed route or paratransit service options, as well as being the only system with a supportive community activist group. An exception is the cost to users, where Winston-Salem’s bus service, Winston-Salem Transit Agency (WSTA), outperforms the other cities’ systems due to its overall fare cost being relatively lower. While it shares the same cost range as Charleston, its fares are relatively less costly for adult and elderly riders. Charleston’s bus system, Charleston Area Regional Transit Authority (CARTA), outperforms the other systems in terms of the longest operating hours and Columbia’s bus system, Central Midlands Regional Transit Authority (CMRTA), has its highest ranking with regard to trips/year, where it comes in second.
Table 2: Public Transportation Infrastructure and Facilities

<table>
<thead>
<tr>
<th></th>
<th>Trips/Day</th>
<th>Trips/Year (million)</th>
<th>Fare</th>
<th>Number of Routes</th>
<th>Op. Hours</th>
<th>2-Bike Rack</th>
<th>Trip Planner</th>
<th>Non-fixed Route Service</th>
<th>Supportive Community Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham (DATA/TTA)</td>
<td>24,650</td>
<td>8.6</td>
<td>$0-$2</td>
<td>41</td>
<td>M-SA 5-12:30 SU 6:30-8:30</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Winston-Salem (WSTA)</td>
<td>10,000</td>
<td>2</td>
<td>$0-$1.50</td>
<td>27</td>
<td>M-F 5:30-12 SA 6:30-6:30</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Charleston (CARTA)</td>
<td>8,242*</td>
<td>3</td>
<td>$0-$1.50</td>
<td>22</td>
<td>M-F 5:30-12 SA 6-12 SU 8-8</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Columbia (CMRTA)</td>
<td>9,615*</td>
<td>3½</td>
<td>$0.75-$1.50</td>
<td>26</td>
<td>M-F 5:30-10 SA 5:30-6:30 SU 7-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Sources: DATA, TTA, WSTA, CARTA, CMRTA; Rogers, Jennifer, email message to author on 2/27/2012

*Data obtained was for trips/year; I obtained trips/day by dividing trips per year by 364 (the annual number of operating days)

Public Transportation, Bicycle, and Pedestrian Supportive Aids

The designation of overall first place ranking is less straightforward when it comes to “Public Transportation, Bicycle, and Pedestrian Supportive Aids.” Regarding the number of supportive plans, Durham, Winston-Salem, and Columbia all feature bicycle, pedestrian, greenway, and public transportation plans as well as climate action plans and comprehensive plans that designate these alternative modes as high priority but Columbia ranks first in this category due to its also having a plan geared towards congestion management. Charleston ranks in last place with regard to its number of plans. However, Charleston is in first place with regard to the number of policies and documents that are supportive of alternative modes with an endorsed Complete Streets Policy, a Bike Safe Brochure, a Traffic Calming Brochure, a Pedestrian Brochure, and an urban growth boundary ordinance. (City of Charleston, 2012) Columbia is in last place without significant policies or documents. Columbia is in first place, however; with regard to its number of supportive organizations and entities with the Palmetto Cycling Coalition, Carolina Cyclers, the South Carolina off-Road Enthusiasts, the Columbia Enduro Riders Association, the BikeColumbia Task Force created by the City in 2006 to support the application
process to the League of American Bicyclists, and the office of the State DOT Pedestrian & Bicycle Engineer. Winston-Salem is in last place for organizations or entities. On the other hand, Winston-Salem is in first place in its number of programs and events and is particularly high-performing with almost twice as many programs and events as the second place holder, Durham. Winston-Salem features the Bike/Pedestrian Planning Grant Initiative, the Tour de Tanglewood, a youth sports initiative called WePLAY, a Safe Routes to School (SRTS) program along with a SRTS newsletter, a Sidewalk Updates online service, Step Up Forsyth (a free communitywide program that aims to improve quality of life through increased physical activity), a bicycle rodeo, bicycle tours, bicycle races, Bike Month promotion events, Cycling Sunday!, and Bike Facilities Updates (to let user know where and when new facilities were installed or will be installed). (City of Winston-Salem, 2012) Columbia does quite poorly in this category, coming in last place. Finally, Durham and Charleston tie for first in number of bicycle shops, followed by Columbia then Winston-Salem.

Overall, in terms of pure numbers, with the highest number of first place rankings and the lowest number of last place rankings, Charleston ranks first in ““Public Transportation, Bicycle, and Pedestrian Supportive Aids,” however; further analysis of the quality, applicability, degree of innovation, and political viability of the plans, polices and documents, organizations and entities, programs and events and bicycle shops would be required to determine their true level of support.

**Table 3: Public Transportation, Bicycle and Pedestrian Supportive Aids**

<table>
<thead>
<tr>
<th>City</th>
<th>Plans</th>
<th>Policies/Documents</th>
<th>Orgs./Entities</th>
<th>Programs/Events</th>
<th>Bicycle Shops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Charleston</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Columbia</td>
<td>7</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

**Additional Indicators of Receptivity to Public Transportation, Bicycle, and Pedestrian Programs**

Charleston ranks in first place in “Additional Indicators of Receptivity to Public Transportation, Bicycle, and Pedestrian Programs” followed by Durham and Columbia tied for second place and Winston-Salem in last place. Charleston’s first place score is due to it featuring a higher percentage of commute trips being taken by public transportation, bicycle, and foot, the second lowest mean travel time to work as well as having received a Bronze award from the League of American Bicyclist Bicycle Friendly Community Program. With regard to the League of American
Bicyclists’ Bicycle Friendly Community program, to qualify for either an honorable mention, or a Bronze, Gold, or Platinum award, communities must submit an application that demonstrates a minimum level of commitment to promoting bicycling across five categories: the “Five E’s.” These categories are engineering, education, encouragement, enforcement, and evaluation and planning. The more significant the achievements in these areas the higher the award received. Durham, Winston-Salem, and Charleston have all received Bronze award status while Winston-Salem has not received recognition for reasons unknown. Some of the criteria that the League considers in its assessment overlap with the criteria used to assess public transportation, bicycle, and pedestrian-friendliness in this report. The League criteria include but are not limited to population and population density, median income, age distribution, the amount and quality of infrastructure and facilities as well as the existence of planning on behalf of these modes, advocacy and education around these modes and more. (League of American Bicyclists, 2012)

Table 4: Additional Indicators of Receptivity to Public Transportation, Bicycle, and Pedestrian Programs

<table>
<thead>
<tr>
<th></th>
<th>Percentage Commute by PT</th>
<th>Percentage Commute by Bike</th>
<th>Percentage Commute By Foot</th>
<th>Mean Travel Time to Work (minutes)</th>
<th>League of American Bicyclists Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>3.3%</td>
<td>0.5%</td>
<td>4.2%</td>
<td>21.4</td>
<td>Bronze</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>1.3%</td>
<td>0.07%</td>
<td>1.3%</td>
<td>19.4</td>
<td>N/A</td>
</tr>
<tr>
<td>Charleston</td>
<td>4%</td>
<td>3%</td>
<td>5.9%</td>
<td>20.8</td>
<td>Bronze</td>
</tr>
<tr>
<td>Columbia</td>
<td>2%</td>
<td>0.09%</td>
<td>3.9%</td>
<td>18.3</td>
<td>Bronze</td>
</tr>
</tbody>
</table>

Source: Social Explorer, 2010; U.S. Census Bureau, 2010; League of American Bicyclists, 2012

Population and Population Density:

Population and population density is an important contextual determinant of support for VMT-reduction receptivity. One reason for its importance is that because of the high cost of building and maintaining a public transportation system, it is only a viable investment option in cities with sufficiently large populations that provide more revenue to offset output costs. This is true with regard to population density as well because to achieve sufficiently high ridership, there must be density around bus stops so that the travel time to the bus stop is low enough. Durham ranks in first place in “Population Density” due to having the densest population, followed by Winston-Salem, Charleston, and then Columbia in last place with a population density that is less than half that of Durham.
Table 5: Population Density

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Land Size (square miles)</th>
<th>Population/square mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>228,330</td>
<td>107</td>
<td>2,126.6</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>229,617</td>
<td>132.4</td>
<td>1,733.6</td>
</tr>
<tr>
<td>Charleston</td>
<td>120,083</td>
<td>108.98</td>
<td>1,101.9</td>
</tr>
<tr>
<td>Columbia</td>
<td>129,272</td>
<td>132.2</td>
<td>977.8</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, 2010

Economy:

The state of a city’s per capita and household wealth and the health of its overall economy are important contextual determinants of VMT-reduction receptivity because of the dependence of the transportation system on sources of revenue that increase and decrease with increases and decreases in a community’s economic health. Such sources include the gasoline tax and to a lesser degree, property tax. A healthy economy is also an important determinant due to the fact that more often than not, the public views public transportation, bicycle, and pedestrian initiatives as yielding a low rate of return on investment. In light of such attitudes, the likelihood of a community investing in alternative transportation initiatives is greatly increased if the community is not economically disadvantaged and therefore wary of risky investments. The measures of economic health included in “Table 6: Economy 1 (Individual Wealth),” impact the level of property tax and gasoline tax revenue. The measures included in “Table 7: Economy 2 (Sales),” function more as indicators of the overall economic health of the city and therefore its ability and willingness to fund non-traditional transportation initiatives.

Charleston ranks in first place in “Economy 1” due to it having the highest median per capita and household income as well as the lowest percentage of the population 65 years and over in poverty, the lowest percentage of households receiving public assistance and the lowest percentage of the population unemployed. Durham outperforms Charleston in terms of the lowest percentage of people of all ages in poverty.
Table 6: Economy 1 (Individual Wealth)

<table>
<thead>
<tr>
<th></th>
<th>Per Capita Median Income</th>
<th>Median HH Income</th>
<th>Percentage of Pop. in Poverty</th>
<th>Percentage of Pop. ≥ 65 in Poverty</th>
<th>Percentage of HH Public Assistance</th>
<th>Percentage of Pop. Unemployed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>$26,822</td>
<td>$47,384</td>
<td>16.3%</td>
<td>7.7%</td>
<td>2.4%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>$24,503</td>
<td>$41,979</td>
<td>19.1%</td>
<td>7.1%</td>
<td>2%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Charleston</td>
<td>$30,865</td>
<td>$47,799</td>
<td>17.2%</td>
<td>6.6%</td>
<td>1%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Columbia</td>
<td>$24,576</td>
<td>$38,588</td>
<td>20.2%</td>
<td>11.9%</td>
<td>2.5%</td>
<td>12.8%</td>
</tr>
</tbody>
</table>

Sources: U.S. Census Bureau, 2010; Social Explorer, 2010

Durham and Winston-Salem rank tied in first place in “Economy 2” due to Durham having the highest number of firms and accommodation and food sales and Winston-Salem having the highest number of merchant wholesaler and retail sales. Columbia ranks in last place for two of the metrics, in third place for two others and deviates from this trend in retail sales where it comes in first. Charleston’s best showing is a second place ranking in retail sales capita and also ranks in last place in two metrics.

Table 7: Economy 2 (Sales)

<table>
<thead>
<tr>
<th></th>
<th>Number of Firms</th>
<th>Merchant Wholesaler Sales ($1000)</th>
<th>Retail Sales ($1000)</th>
<th>Retail Sales Per Capita</th>
<th>Accommodation and Food Sales ($1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>18,148</td>
<td>2,648,755</td>
<td>2,978,096</td>
<td>$13,728</td>
<td>652,144</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>18,081</td>
<td>2,841,741</td>
<td>3,886,045</td>
<td>$17,385</td>
<td>508,130</td>
</tr>
<tr>
<td>Charleston</td>
<td>13,392</td>
<td>856,232</td>
<td>2,183,728</td>
<td>$19,553</td>
<td>641,315</td>
</tr>
<tr>
<td>Columbia</td>
<td>12,783</td>
<td>1,448,968</td>
<td>2,720,157</td>
<td>$21,595</td>
<td>495,965</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, 2010

Housing:

Housing is an important contextual determinant of support for VMT-reduction receptivity because housing values and homeownership rates are indicators of individual wealth and of the larger community’s economic health, both of which impact how much income the community has available to invest in transportation initiatives and the degree to which a community is willing to take risks such as supporting so-called low rate of return alternative transportation investments. Housing is also a significant determinant because the number of persons per household and the number of multi-unit developments is a clear indicator of density, which is
strongly correlated to the ability and willingness to support public transportation, bicycle, and pedestrian initiatives.

Charleston ranked in first place in “Housing 1 (Real Estate Market Health)” due to its having the highest median home value, the highest percentage of homes and rental units above a certain value, the highest median gross rent, and the lowest percentage of vacant rentals. Winston-Salem ranked in first place in home-ownership rates.

Table 8: Housing 1 (Real Estate Market Health)

<table>
<thead>
<tr>
<th></th>
<th>Median Value Homes</th>
<th>Percentage Homes&gt; $150,000</th>
<th>Percentage Rentals&gt;$800 per month</th>
<th>Median Gross Rent</th>
<th>Percentage Vacant Rentals</th>
<th>Home-Ownership Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>$173,100</td>
<td>67.0%</td>
<td>48.3%</td>
<td>$787</td>
<td>36.8%</td>
<td>51.4%</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>$139,000</td>
<td>42.4%</td>
<td>31.2%</td>
<td>$670</td>
<td>57.4%</td>
<td>59.2%</td>
</tr>
<tr>
<td>Charleston</td>
<td>$258,000</td>
<td>86.9%</td>
<td>65.1%</td>
<td>$882</td>
<td>24.7%</td>
<td>54.3%</td>
</tr>
<tr>
<td>Columbia</td>
<td>$152,400</td>
<td>53.6%</td>
<td>43.5%</td>
<td>$751</td>
<td>42.5%</td>
<td>48.8%</td>
</tr>
</tbody>
</table>

Sources: Social Explorer, 2010; U.S. Census Bureau, 2010

Charleston ranks in first place in “Housing 2 (Housing Density)” as well due to its having the highest percentage of housing units in multi-unit structures, as well as the lowest percentage of detached single family unit housing.

Table 9: Housing 2 (Housing Density)

<table>
<thead>
<tr>
<th></th>
<th>Percentage of Units in Multi-unit Structures</th>
<th>Percentage of Detached SFU Housing</th>
<th>Average Number Persons per HH</th>
<th>Number of Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>39.5%</td>
<td>52.7%</td>
<td>2.31</td>
<td>103,221</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>30.8%</td>
<td>62.4%</td>
<td>2.44</td>
<td>103,974</td>
</tr>
<tr>
<td>Charleston</td>
<td>43.3%</td>
<td>49.3%</td>
<td>2.25</td>
<td>52,471</td>
</tr>
<tr>
<td>Columbia</td>
<td>42.6%</td>
<td>53.1%</td>
<td>2.14</td>
<td>59,222</td>
</tr>
</tbody>
</table>

Sources: U.S. Census Quick Facts, 2010; Social Explorer, 2010; U.S. Census Bureau, 2010

Population Age:

Age is another important contextual determinant of support for VMT-reduction receptivity because more people in the 18-34 age range use public transportation, ride a bicycle and walk than do people of older generations. This is likely due to differences in physical capabilities as well as to differences in ideology due to the fact that younger generations are making transportation choices at a time when the benefits of transit, bicycling, and walking and the
harmful effects of automobile driving and automobile-centric growth are being increasingly realized. The relatively higher receptivity among younger generations to public transportation, bicycling and walking as modes of self-transport might also exist due to the fact that travelers in this age range are not as likely to have to transport children and other relatives around as are people from older generations, reducing the likelihood that they will feel obligated to travel in personal automobiles. Columbia ranks in first place in “Population Age” due to it having the highest percentage of 18-34 year olds and the lowest percentage of residents who are 6 years and over.

**Table 10: Population Age**

<table>
<thead>
<tr>
<th>City</th>
<th>18-34 years</th>
<th>65 years and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>31.8%</td>
<td>36.0%</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>26.5%</td>
<td>36.7%</td>
</tr>
<tr>
<td>Charleston</td>
<td>35.4%</td>
<td>33.6%</td>
</tr>
<tr>
<td>Columbia</td>
<td>43.5%</td>
<td>31.6%</td>
</tr>
</tbody>
</table>

Source: Social Explorer, 2010

**Education:**

Education is the final important contextual determinant of support for VMT-reduction receptivity included in this report. This is because higher educated populations tend to be more aware of and supportive of environmentally sustainable initiatives including those that promote public transportation, bicycling, and walking and because, due to the correlation between educational attainment and income, higher educated populations tend to have more economic resources, which could increase the likelihood that they would reside in more affluent and urban (dense) areas, and thus have greater opportunities to use public transportation, bicycle, and walk. Charleston and Durham rank tied in first place in “Education” due to their having the highest percentage of the population 25 years and over with high school, Bachelor’s, Master’s, and Doctorate degrees.
Table 11: Education

<table>
<thead>
<tr>
<th>City</th>
<th>Percentage Pop. ≥ 25 with HS Degree</th>
<th>Percentage Pop. ≥ 25 with Bachelor’s Degree</th>
<th>Percentage Pop. ≥ 25 with Master’s Degree</th>
<th>Percentage Pop. ≥ 25 with Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durham</td>
<td>85.7%</td>
<td>45.6%</td>
<td>20%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Winston-Salem</td>
<td>84.5%</td>
<td>31.3%</td>
<td>11.8%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Charleston</td>
<td>90.8%</td>
<td>46.3%</td>
<td>19.9%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Columbia</td>
<td>85.3%</td>
<td>39.5%</td>
<td>17.6%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Sources: U.S. Census Bureau, 2010; Social Explorer, 2010

Final Estimate of VMT-reduction Receptivity Based on Community Characteristics

In the final analysis, an estimate is provided of how likely each city is to be receptive to VMT-reduction based on how it fared under each of the six community characteristic categories (Transportation, Population and Population Density, Economy, Housing, Population Age, and Education). Each ranking level is assigned a number between 1 and 4 (see Appendix Table: 12). The final analysis scores for each category will determine a theoretical estimation of which city is most likely to support VMT-reduction program initiation.

Based on the analysis of the four cities across the six community characteristic categories, the city with the highest likelihood of VMT-reduction receptivity is Charleston, SC followed closely by Durham, NC. Charleston is the highest ranking of the four cities, with four #4 rankings out of six; it exclusively holds first place in “economy” and “housing.” Durham has three #4 rankings out of six, and it exclusively holds first place in “population density.” Charleston and Durham tie
for first place in “transportation” and “education.” This is a theoretical predictive estimate based on a qualitative and subjective estimation of which community characteristics and corresponding metrics are most influential in increasing the likelihood of VMT-reduction program initiation. This theoretical estimation will be tested through a comparison with input provided by interviewees who were asked to choose the characteristics they deemed most important in increasing the likelihood of VMT-reduction receptivity.
**INTERVIEW FINDINGS**

**Introduction:**

This section identifies VMT-reduction initiatives that come from the cities respective Climate Action Plans, described in the *Study Area* section of the *Methodology*. It includes both the initiatives that were successfully initiated and/or continued and those that were not. It also presents community characteristics that were instrumental in facilitating successful initiation and/or continuation as well as failure to initiate and/or continue. The findings in this section are based on five 1 to 1 ½ hour-long phone interviews with municipal staff from the four cities (two staff from Durham and one staff from each of the other three cities). This chapter ends with a summation of the VMT-reduction receptive and unreceptive community characteristics that are of the most relative importance based on which are mentioned most consistently across the cities by the interviewees.

**VMT-Reduction Initiatives:**

<table>
<thead>
<tr>
<th>Durham</th>
<th>Winston-Salem</th>
<th>Charleston</th>
<th>Columbia</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Initiatives Durham has initiated and/or continued:</em></td>
<td><em>Initiatives Winston-Salem has initiated and/or continued:</em></td>
<td><em>Initiatives Charleston has initiated and/or continued:</em></td>
<td><em>Initiatives Columbia has initiated and/or continued:</em></td>
</tr>
<tr>
<td>Bicycle and pedestrian infrastructure</td>
<td>Bicycle infrastructure</td>
<td>Bicycle infrastructure</td>
<td>Artistic bike racks in downtown orchestrated by a small group called Sustainable Midlands</td>
</tr>
<tr>
<td>Fare-free bus service (Bull City Connector)</td>
<td>Intern tasked with investigating the locations and causes of bicycling accidents</td>
<td>Free downtown loop bus system</td>
<td>Off-street parking reduction</td>
</tr>
<tr>
<td>Non-motorized transportation and land-use planning integration</td>
<td>Bicycle Sunday-type programming</td>
<td>Bi-monthly event which closes the business district to cars to allow open access for bicyclists and pedestrians</td>
<td>Street design that accommodates bicycling and walking</td>
</tr>
<tr>
<td>Carpooling</td>
<td>SRTS Coordinator</td>
<td></td>
<td>Early stages of a traffic calming neighborhood planning effort</td>
</tr>
<tr>
<td>Alternative transportation initiative funding in coordination with university</td>
<td>SRTS programming</td>
<td></td>
<td>Bicycle advisory committee</td>
</tr>
<tr>
<td>Durham</td>
<td>Winston-Salem</td>
<td>Charleston</td>
<td>Columbia</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>Initiatives Durham has failed to initiate and/or continue:</strong></td>
<td><strong>Initiatives Winston-Salem has failed to initiate and/or continue:</strong></td>
<td><strong>Initiatives Charleston has failed to initiate and/or continue:</strong></td>
<td><strong>Initiatives Columbia has failed to initiate and/or continue:</strong></td>
</tr>
<tr>
<td>Urban sprawl containment policies</td>
<td>Supportive County Commission for the 2005 Comprehensive Bicycle Master Plan or the 2003 Greenway Plan</td>
<td>Continuous and dedicated funding for bicycle and pedestrian capital improvements</td>
<td>Bicycle infrastructure</td>
</tr>
<tr>
<td>Parking reduction regulations</td>
<td>Successful public transportation system</td>
<td>Successful public transportation system</td>
<td>Successful public transportation system</td>
</tr>
<tr>
<td>Safe Routes to School (SRTS) programing</td>
<td>Targeted marketing campaign to promote public transportation, bicycle, and pedestrian travel</td>
<td>Targeted marketing campaign to promote public transportation, bicycle, and pedestrian travel</td>
<td>Safe bicycle and pedestrian conditions</td>
</tr>
<tr>
<td></td>
<td>Pedestrian advocacy group</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Community Characteristics that Contributed to Successful Initiation and/or Continuation of Initiatives:**

Whether or not a community characteristic is mentioned consistently across the cities by the interviewees provides insight into its relative importance in determining VMT-reduction receptivity or lack of receptivity. Of the receptive characteristics, one is consistent across all the cities, five are consistent across two or three of the cities and three are inconsistent in that they were only discussed in relation to one city each.

**Characteristic Consistent Across the Four Cities:**

The VMT-reduction receptive community characteristic that was consistent across the four cities was strong public demand and this was true for public transportation, bicycle, and pedestrian initiatives. This is a key characteristic because public support and community organizing around an issue is often what sways elected officials and decision makers and is what determines willingness to alter every day self-transport behaviors, the key on the ground-change that must occur alongside higher-level systemic change for optimal success.
Public Demand:

According to the Columbia interviewee, it was the existence of student demand that allowed successful bicycle infrastructure initiation on the USC campus. The interviewee attributed this demand to the student’s recognition of bicycling’s enjoyment factor and cost-efficiency as well as the frustration the students felt trying to find parking in an area with limited capacity. With regard to the general public’s demand for VMT-reduction initiatives, the Columbia interviewee found that what led to it was the slow realization that has sprung up in Columbia in recent years of the unpleasant consequences of their sprawling development pattern and their prioritization of the automobile over other modes. Faced with commercial centers on the fringes of the city and the downtown area closed by 5PM, citizens have begun to yearn for a revitalized, pedestrian-friendly commercial center in downtown. The second Durham interviewee stated that demand from the public resulted not only in an increased likelihood of program initiation but also the passing of supportive bond referendums. He also found that a likely reason for public demand was the growing discomfort with the reality of living in a city that had gone years without building sidewalks. He posited that it was because the citizens came to their own realization of the severity of the problem instead of having it explained to them, that they were sufficiently roused to take action. Like at USC, another example of public demand that was important for bicycling promotion according to the second Durham interviewee came from the students, faculty, and staff at Duke University. He stated that the University met that demand by striping and installing sharrows on campus and making on-line maps with bicycle routes, parking and showers. The Winston-Salem interviewee described that an involved and well-organized bicycle activist community is important because the level of interest the Council members have in bicycle issues is largely proportionate to the level of interest demonstrated by their constituency. The Charleston interviewee also pointed to the importance of a strong bicycle advocacy community and like the Columbia and second Durham interviewees, she found that demand became stronger as a result of disappointment and disgruntlement with the city’s bicycle infrastructure and related planning efforts, which in the case of Charleston was manifested in the failure of the Charleston Green Plan to be adopted. She described how this very public failure encouraged advocates to take action. The Winston-Salem interviewee added that its bicycle advocates’ increased commitment to promoting bicycling in the community, was also partly spurred on by a tragedy among the bicycling community: the automobile on bicycle-crash deaths of a major bicycling advocate and of a physician.
Characteristics Consistent Across Multiple Cities:

There were characteristics that were consistent across two to three of the cities as well. The first, supportive staff, board members, and elected officials, which was consistent across three cities, is important because staff, board members and elected officials are the decision makers when it comes to funding, legislating, and planning for VMT-reduction initiatives. Further, the ability of staff and elected officials to procure funding for VMT-reduction initiatives is clearly linked to the likelihood of initiation. This is especially the case with VMT-reduction funding because it is already so minimal and the security of its status is so consistently uncertain. The second, a targeted marketing campaign, which was consistent across two of the cities is important because in order to reduce demand for car driving and increase demand for public transportation, bicycling, and walking significantly, it is necessary to not only provide options for and incentivize alternative transportation and dis-incentivize car-driving, but to challenge and disprove the negative associations people make with alternative transportation and the positive associations they make with cars; this is a task that targeted advertising is particularly well-suited for. The third, an understanding of the connection between economic development and active transportation, which was consistent across three cities, is important because an understanding of the economic benefit of alternative transportation significantly increases its political viability. The fourth, an interest in integrating land use and transportation planning, which was consistent across two cities, is important because land use plans that incorporate transportation planning often accommodate and promote the use of alternative transportation (i.e. transit oriented development). The fifth, the existence of plans that were supportive of public transportation, bicycling, and walking, which was consistent across three cities, is important because the promotion of VMT-reduction initiatives in official growth plans legitimizes and increases the likelihood of funding for VMT-reduction initiatives.

Staff, Board Member, and Elected Official Support:

The second Durham interviewee stated that the existence of a high-functioning Bicycle and Pedestrian Advisory Commission (BPAC) in Durham was important because it helped to legitimize, normalize, and institutionalize alternative transportation in people’s minds. He found that this was largely due to the committee’s on line and list serv outreach and event-organizing efforts. He found that they also helped raise the bar on the level of professionalism involved in bicycle and pedestrian initiatives. The example he gave was the following: when the interviewee began working for the City, there had been bicycle parking requirements for new commercial/office developments but there was confusion around the design details and it took developers two-three times to reach compliance. He reported that as a result of the BPAC’s efforts, there is now seamless incorporation of bicycle parking requirements into development plans. The second Durham interviewee also brought up the receptivity of key staff such as the
traffic engineer as integral to the promotion of bicycle and pedestrian initiatives. He pointed to the fact that the traffic engineer attended bicycle and pedestrian engineering courses at DOT, and that his receptivity might be related to the fact that he previously worked in an urban area and perhaps was more accustomed to viewing public transportation, bicycling and walking as legitimate modes of transportation. The interviewee also mentioned the Bicycle and Pedestrian Coordinator as an asset whose contributions included his willingness to take a wait-and-learn approach in the beginning of his tenure, which allowed him to build good working relationships that allowed him to get more things done better. He stated that this kind of approach (working well with others) is of key importance to successful program initiation in general. Similarly, in Winston-Salem, the hiring of a highly skilled Bicycle and Pedestrian Coordinator contributed not only to the successful installation of bicycle lanes, sharrows, and route signs and the organization of Bicycle Sunday events but to an increase in overall awareness and support for bicycle and pedestrian issues. The interviewee described the following skills possessed by the coordinator that benefitted bicycle and pedestrian issues: knowledge about how to take advantage of road projects to ensure that bicycle facilities are installed, exceptional organizational ability, and good community outreach skills (reaching out to a broad range of stakeholder interests). Another skill the interviewee attributed to the coordinator, related to outreach skills, were his communication skills. The interviewee described the Coordinator as a good communicator due to his friendly, low-key demeanor, his demonstrated expertise on bicycle and pedestrian issues, his knowledge about the road network and the road user safety risks, his knowledge about the benefits of bicycling and walking, and the fact that he was a bicyclist and therefore was perceived as being truly committed to the cause.

The Winston-Salem interviewee also mentioned the importance of municipal and regional government support for bicycle and pedestrian issues and its relationship to funding and influence: the Council and MPO were supportive of appropriating large amounts of federal dollars for bicycle and pedestrian projects and the Council in particular was willing to put up local matches to make these projects happen. Further the MPO was able to garner more support for these issues from towns across the region regardless of size because it made a concerted effort to spread out the bicycle and pedestrian dollars instead of concentrating investments only in developed cities. The first Durham interviewee found that an important contributor to the successful initiation of the Bull City Connector was sufficient promotional and funding procurement efforts undertaken by City staff especially with regard to federal dollars. In addition, the interviewee considered the willingness of the City, MPO, and State to match federal funds for alternative transportation initiatives to be an important factor. The second Durham interviewee noted that the Durham Chapel Hill Carrboro MPO receives Congestion Mitigation and Air Quality (CMAQ) and Surface Transportation Program Direct Allocation (STPDA) federal funds and has, for the last ten years at least, dedicated those funds to public transportation, bicycle, pedestrian, and streetscape (i.e. brick sound walls) programs.
He stated that in Durham there were also bond referendums in 2005 and 2007 to fund sidewalks and trails that were both approved and that federal economic stimulus package funds and bond funds were also used to install bicycle infrastructure as part of re-striping and re-surfacing projects.

**Targeted Marketing Campaign**

With regard to the importance of marketing, the first Durham interviewee stated that people will support public transportation, bicycling, and walking more when they see (through marketing campaigns for instance) other people who they want to be like doing the same and when this new behavior is presented to them as the expected norm among their peers. The interviewee felt that the least effective method of marketing is to bombard people with overwhelming, threatening facts because she felt that if people did not want to believe they would find a way to justify their behavior and disprove what was presented to them. Also according to the first Durham interviewee, when engaging in marketing geared towards reducing VMT, the climate change argument, because it is polarizing, is not appropriate and should be replaced by an attempt to challenge negative stereotypes about public transportation, bicycling, and walking and positive stereotypes about car-driving, to highlight the user benefits of the alternative modes such as stress-relief, money- and time-savings and the high user costs (literal and figurative) of car-driving. She stated that the City’s public outreach and marketing campaign reflects an understanding that people do things for different reasons and that there are a variety of reasons why people care about reducing VMT. The Winston-Salem interviewee recognized the importance of targeted marketing in his description of the positive qualities of the City’s Bicycle and Pedestrian Coordinator. A skill the interviewee highlighted in the coordinator was his marketing approach, which he described as promoting bicycling and walking in alignment with a variety of other goals that matter to a different stakeholder groups, goals such as increased health, improved neighborhood livability, congestion reduction, safety improvements, and neighborhood revitalization.

**Recognition of Alternative Transportation as an Economic Development Tool:**

The Winston-Salem interviewee pointed to the significance of the city’s government seeing public transportation, bicycling, and walking promotion as tools for economic development. The interviewee stated that municipal elected officials see that compact development is economically beneficial because they understand that it can lead to a reduction in transportation system-maintenance and utility expenditures; a significant cost savings. He also pointed to the fact that the Council believes that the young professionals in their thirties it is hoping to attract with the introduction of 5,000 to 20,000 biotechnology and technology research jobs that will result from the construction of the Piedmont Research Park in downtown, are more attracted to a city with bicycle and pedestrian facilities. He stated that the
Council has seen jobs lost to Charlotte, Chapel Hill and the Triangle and that it attributes this loss in part to the failure of Winston-Salem to attract and retain the young professionals set who view an attractive city in this way.

**Land Use and Transportation Planning Integration:**

The second Durham interviewee stated that the City’s efforts to integrate transportation and land use planning had been important in promoting VMT-reduction initiatives. He noted that in the *Durham Comprehensive Plan* (adopted in 2005 and amended in 2009), areas were identified for proposed future light rail routes in suburban areas and in the city, where the City would prioritize Transit Oriented Development (TOD) projects around stations. He also stated that the City just approved TOD development zoning regulations for the 9th street area, (a highly trafficked “main street” type corridor near Duke University’s East Campus) where a light rail station is planned. In addition, he noted that the *Durham Comprehensive Plan* features development regulations based on tiers (urban, suburban) and an urban services boundary, which the city will not service outside of.

**Integration of VMT-reduction Initiatives into Plans:**

The Charleston interviewee stated that the city’s capacity to support VMT-reduction was significantly increased by the existence of the *Charleston Green Plan*. She stated that there were a large number of people from varied backgrounds involved in the creation of the plan from the envisioning stage onward, and that even though the plan was never adopted, that the awareness generated during this planning process led to increased demand for public transportation, bicycle, and pedestrian promotion. The Winston-Salem interviewee found that the strong bicycle and pedestrian presence in municipal and MPO plans as well as the high degree of technical quality in the bicycle and pedestrian components of the plans, the Legacy Comprehensive Plan in particular, was a significant supportive characteristic. He stated that the technical side of the bicycle and pedestrian planning in the Legacy Comprehensive Plan, including identification of costs and connectivity opportunities to other modes, the design of the facilities as well as prioritization of facility-installation, based on critical gaps, was of high quality. The second Durham interviewee also found that an important community characteristic in contributing to the successful initiation of VMT-reduction was the existence of the 2006 *Durham Walks!* pedestrian plan, the 2006 *Durham Comprehensive Bicycle Transportation Plan*, and the 2007 *Triangle Region 7-Year Long Range Travel Demand Management Plan*. He provided as an example of how the Travel Demand Management (TDM) plan was an important resource in promoting VMT-reduction, and that it brought with it support from both the relevant MPOs and the North Carolina Department of Transportation (NCDOT), all three of which dedicated federal funds to TDM programs in the triangle. A portion of this money was used to set up a Triangle J Council of Governments program that accepts applications annually.
from the larger employers in Wake and Durham Counties as well as in Research Triangle Park to fund different TDM incentive programs for carpooling, van pooling, and public transportation. He noted that the benefit of bringing the two MPOs into the mix with NCDOT, which had already been funding this TDM program was not only the influx of extra funds but the increase in the program’s viability because the decentralized geography of the tri-city region required regional participation for optimal success and coordination. Another reason that this program was successfully initiated was that it was overseen by the Public Transportation Division of the NCDOT, not the Bicycle and Pedestrian Division. He stated that this was relevant because the former is somewhat more independent than the latter and therefore able to be more innovative and also because the former has more funding available to it. The first Durham interviewee also stated that an important community characteristic in promoting the use of and the strengthening of the carpooling promotion ordinance was the hiring of the City’s Sustainability Manager and the development of the *Greenhouse Gas Emissions Inventory and Local Action Plan*. She stated that this was the case because the plan made a convincing and sobering argument for the existence of climate change and for the necessity of reducing transportation’s considerable contribution to climate change.

**Inconsistent Characteristics (Relevant to One City):**

There were also VMT-reduction supportive community characteristics that were not mentioned consistently across a majority of the interviews. The first, the existence of public transportation, bicycle, and pedestrian infrastructure, which was discussed by the first Durham interviewee, is important because two major barriers for many people to using alternative modes are inaccessibility and safety concerns, which can be best-addressed through expansion and safety improvements to the network. The second community characteristic, a liberal and educated population, which was also discussed by the first Durham interviewee, is important because the more educated and liberal a population the more likely it is to believe in the importance of promoting alternative transportation due to its better understanding of the correlation between alternative transportation and climate change, public health, community livability, etc.

**Existing Infrastructure and Liberal and Educated Population**

The first Durham interviewee found that the existence of public transportation, bicycle, and pedestrian infrastructure had been important in increasing the city’s capacity to promote VMT-reduction. The first Durham interviewee also noted that the city’s relatively liberal and highly educated population, which resulted in the majority of the population believing in climate change, was also significantly important in determining support for VMT-reduction.
Community Characteristics that Contributed to the Failure to Initiate and/or Continue Initiative:

Of the unreceptive characteristics, two are consistent across all the cities, two are consistent across two of the cities, and two are inconsistent in that they were only discussed in relation to one city each.

Characteristic Consistent Across the Four Cities:

A key VMT-reduction hindering community characteristic that was consistent across the four cities was a lack of public demand for public transportation, bicycle, and pedestrian initiatives. Another key hindering characteristic that was consistent across the four cities was unsupportive staff members and elected officials.

Lack of Public Demand:

According to the first Durham interviewee, a factor that has held Durham back in terms of its demand for VMT-reduction was the difficulty people have truly understanding the future costs of their current behaviors. She used the proposed 751 development project to illustrate this point. She stated that the City knew it would have to spend hundreds of millions of dollars on clean-up of Jordan Lake in the future if it allowed this development to move forward, yet it still seriously considered it. Yet another indicator of lack of demand she noted was the insufficient pressure overall put on elected officials by citizens to support alternative transportation. She stated that without people putting restraints on elected officials’ decisions, some officials’ decision-making process might not include sufficient focus on the values and needs of the citizens. The Winston-Salem interviewee stated that a main factor behind the lackluster funding of public transportation is a lack of interest from the public, resulting in a lack of interest from the City Council, which will not propose raising taxes to fund what the public does not demand. He stated that City staff had tried but ultimately failed to reduce public apathy towards public transportation. Similarly, the Colombia interviewee found that a main factor in their inability to fund and therefore sustain their public transportation system is insufficient public support. He stated that less than roughly 10% of people are in support of public transportation and those who do ride it either by choice or necessity are not speaking out to save it from closure. The interviewee noted further that the people who oppose it are from higher-income, more politically connected groups than those who support it. The Winston-Salem interviewee found as well that the lack of a strong and organized advocacy (pedestrian) group also limited the city’s capacity for supporting VMT-reduction. He stated that the level of organization of pedestrian issue-minded citizens is much lower than that of bicycle advocates and as such there is no strong unified voice pushing Council to prioritize pedestrian infrastructure; instead most of the sidewalk input comes from individual complaints about specific sidewalk gaps in
neighborhoods. The interviewee posited that a possible reason for bicycle advocacy having been more successful than pedestrian advocacy, might be the fact that the bicycle advocates (whom he identified as “young professionals”) are more comfortable navigating the political system, are more educated about the broad range of its benefits, have more disposable income and time, are more plugged into social media and have a more extensive and powerful social network. He observed that in contrast, the citizens who care mostly about sidewalk issues have more local, specific-neighborhood sidewalk gap agendas rather than broad systemic change agendas. Further, as they may tend to be lower income, less educated, and less politically connected than bicycle advocates, they might feel relatively disenfranchised and thus be less likely to advocate. The interviewee noted that there are a lot of blue collar workers in Winston-Salem who might fall more into this latter category. The Columbia interviewee also noted that the lack of relevant advocacy organizations limits the city’s capacity for promoting VMT-reduction. The interviewee stated that there are not-for-profits in Columbia but that their actions are geared more towards securing funding to keep themselves going and less towards political and outreach action and as a result they are not achieving relevant and impactful goals.

Lack of Staff and Elected Official Support:

According to the Winston-Salem interviewee, an example of lack of staff support is the fact that the City did not have a full-time public transportation staff until 3-4 years ago; which resulted in poorly located stops and inefficient service. While on some of their critical public transportation corridors, the agency has done a good job installing proper signage, garbage cans, landscaping, shelters, benches, landing pads, and sidewalks that connect to trip generators and are ADA compliant; and while they are replacing older vehicles with hybrid buses to make them more environmentally friendly, they have not gotten nearly as far with public transportation as they have with bicycle and pedestrian initiatives. Also due to a staff shortage, they have only just recently begun to use GIS and inventory every stop, to re-do their routes and schedules to make them more efficient; and to do a technical analysis. Up until recently their public transportation authority did not have a record of how many stations they had. Yet another example of lack of support that has negatively impacted the public transportation system in Winston-Salem was the failure on the part of the City to fund it sufficiently and instead to significantly decrease public transportation funding over the past roughly ten years. As a result, the agency is now approaching a complete shut-down barring an influx of funds from federal sources such as STPDA funds. Limited staff support also hindered Columbia’s in its efforts to promote VMT-reduction. An example provided by the interviewee was the proposed zoning changes that would have among other things reduced parking and required new development to accommodate bicyclists and pedestrians especially in downtown, which did not happen due to the fact that with only two staff, such an overhaul of the original 1976 zoning code was not feasible. They have recently looked into hiring a consultant to help them with this re-write.
According to the Columbia interviewee, a staff failure that is limiting the city’s capacity for supporting VMT-reduction is the lack of effort to educate the public on the environmental and financial consequences of air quality non-compliance. He stated that there has been no attempt to inform the public about the potential of road funding and industrial permitting losses that would result from non-attainment.

The Winston-Salem interviewee also noted the City’s failure to secure the support of the County Commission for the 2005 Comprehensive Bicycle Master Plan or the 2003 Greenway Plan. The interviewee stated that the lack of support from the Commission was due to their not wanting to be obligated to fund bicycle and pedestrian programs because they did not and do not see them as a realistic transportation option, and because they do not see reducing VMT as an important goal. Instead, the Commission views its role as providing basic services (i.e. funding of schools, the sheriff’s department, parks, social services, and roads) and it isn’t willing to take resources away from these services and re-allocate them towards bicycle and pedestrian promotion or to raise taxes for such initiatives. Overall, according to the interviewee, the Commission is not supportive of government intervention in non-basic service provision and the City of Winston Salem has failed in changing their mind. The Charleston interviewee provided yet another example of lack of support from elected officials in her depiction of the City Council’s resistance to funding alternative transportation programs. The interviewee claimed that this was a factor in the lack of capital improvements initiated with the exception of sharrows and that the bad economic climate and the perceived lack of return on investment were motivating factors in this resistance. Like the Winston-Salem interviewee, according to the Columbia interviewee a key factor that limited the city’s ability to support public transportation is a pronounced lack of political interest in using or supporting the mode and a resulting refusal to fund it. The Columbia interviewee stated that the only efforts that would save the system from being shut down at this point would be to raise fares or increase taxes and the city is unwilling to do either. Another point the interviewee made about the lack of political will, was that 75% of roads in Columbia are owned by the NCDOT, which has no interest in anything but maintenance, because with a very low gas tax rate, it cannot afford any other considerations but maintenance. As a result NCDOT focuses exclusively on maintaining Level of Service (LOS) for automobiles and does not appear to prioritize the negative environmental, social equity, and environmental justice externalities of road building.

**Characteristics Consistent Across Two Cities:**

**Lack of Targeted Marketing Campaign**

This characteristic was consistent across two cities. According to the Charleston interviewee, another important factor was a lack of a targeted marketing campaign that takes advantage of social media. She noted that initiatives are more likely to be successful when they are imbued
with a cool cache that resonates with particularly the younger sectors of the population. She used food trucks as an example, which have used digital social media-site advertising to create this image and with considerable success. The Winston-Salem interviewee stated that the City has failed to engage in targeted social marketing for the purpose of reversing negative stereotypes about public transportation, bicycling, and walking and positive stereotypes about car-driving. The interviewee stated that the City has tried to present the positive aspects of active transportation but they have not had the financial resources or the technical know-how to delve deeply into the symbolic associations people make with different modes and challenge those associations. He recognized that the Piedmont Authority for Regional Transportation did a good job of engaging in creative marketing, for example they produced videos about how riding the bus allows one to multi-task and relax all the while saving money, but that they have also failed to refute deeply embedded stereotypes about riding public transportation.

**Sprawling Growth Pattern**

This characteristic, which is consistent across two cities, is important because sprawling, low-density growth patterns limit transportation options to a point where car-driving is often the only viable option. According to the first Durham interviewee, a community characteristic that has held Durham back is its failure to strengthen and uphold policies that control urban sprawl. The interviewee stated that the City is not doing this because of political prioritizing of economic development at the expense of promoting alternative modes. She predicted that if a developer came to the City with a proposal application and it met the legal requirements but did not support public transportation, bicycling, or walking (through providing density and the relevant infrastructure), that the City would approve the application. She used the 751 development proposal as an example again. It was a large building project that was supposed to be built in south Durham on forest land near Jordan Lake, which is a significant water source for the region. There is currently a two-lane road (751) that goes there, and there is no sewer service or utility service in the area nor is there public transportation access in the area. She stated that building this large development would require a costly and environmentally harmful road expansion and extension of sewer and utility services and that the fact that this development proposal application was not dead on arrival showed that there are a lot of other interests in Durham that are more important than VMT-reduction and environmental conservation. The second Durham interviewee noted that the dispersed spatial layout of houses and schools, has also led to bicycle- and walk-to-school activities being relegated to low priority for parents and school boards. He noted that there are a handful of schools that have had success with homegrown bicycling and walking to school programs, but that this is rare and that overall there is not much of a Safe Routes to School presence. According to the Columbia interviewee, the city’s sprawling, low-density spatial layout is greatly reducing its capacity to support VMT-reduction. The interviewee described Columbia as very sprawling with a street
network style that features a 7-lane highway through downtown and many roads with multiple lanes and only two-foot sidewalks. He noted that with the land uses being so dispersed, at this point to attempt to connect people to different destinations by modes other than the automobile is cost prohibitive.

**Inconsistent Characteristics (Relevant to One City)**

**Lack of Land Use and Transportation Planning Integration:**

This characteristic was only discussed by the Columbia interviewee. Columbia’s interviewee mentioned the fact that the planning department that historically has only focused on land use planning at the expense of transportation planning, has not come very far integrating the two. He noted, however; that they are making efforts now to integrate, which will hopefully encourage changes down the line to the design of the downtown area to make it more bicycle and pedestrian friendly.

**Educational Districting Policies that Increase Car Trip Frequency and Duration:**

This characteristic was only discussed by the second Durham interviewee, and is important because educational districting policies can have a significant impact on the frequency and distance of school trips, impacting VMT-reduction. According to the second Durham interviewee, the fact that a number of elementary and middle schools are magnet schools means that they are drawing students from a larger area and as a result, it is more difficult to initiate bicycle- and walk-to-school activities and to discourages school-home trips by car.

**Summary:**

**Community Characteristics that Contributed to VMT-reduction Initiative Success or Failure:**

The interview findings indicate that public demand, (consistent across all cities) is the most significant community characteristic in determining VMT-reduction receptivity. They also indicate that staff, board member, and elected official support, recognition of alternative transportation as an economic development tool and integration of VMT reduction into government plans (consistent across three of the cities) are very significant community characteristics in determining VMT-reduction receptivity. With regard to community characteristics that determine failure of VMT-reduction, the interview findings indicate that lack of public demand and lack of staff and elected official support are the most significant.

According to the interviewees, public demand was so important to the success of VMT-reduction initiatives because political interest and the resulting pursuit of initiatives often hinged on public interest. They found staff, board member, and elected official support to be important because the success of certain initiatives was due in part to staff and board member
organizational and outreach efforts and to the willingness of elected officials to obtain funding for VMT-reduction initiatives. Recognition of alternative transportation as an economic tool was deemed an important community characteristic by the interviewees because improving individual and communal economic health was a strong motivator among the citizens and government of their city. Finally, the interviewees believed integration of VMT reduction into government plans to be important because it created large-scale awareness, increased funding opportunities, and presented a convincing argument for VMT-reduction.
DISCUSSION SECTION

Overview of Findings

Literature Review Compatibility with Interview Findings

The literature findings that within a planning process, the possession of leadership skills, knowledge about alternative transportation and the range of community values, the ability to communicate across multiple social, political, and professional groups (which I identified as one of the most important literature review characteristics) and the ability to procure sufficient funding, an understanding of the connection between sustainability and economic development, and the ability to resist the temptation of economic development at the expense of environmental integrity are qualities that are important to VMT-reduction receptivity and this is reinforced in the interview findings.

However, the literature findings that a fact base that clears up misconceptions and validates issues, quality implementation and evaluation strategies, a history of implementing sustainable planning initiatives, the ability to question one’s own rightness, challenge popular beliefs, and abandon one’s preferred solutions, the ability to understand the perspectives of multiple planning specializations, privilege and bias and complicated political realities as well (the second literature review characteristic I identified as most important) are not as heavily featured in the interview findings.

An interview finding that is mentioned across a majority of the cities and in the demographic community characteristics analysis but is not mentioned in the literature review is integration of VMT reduction into government plans as an indicator of VMT-reduction receptivity. This is explainable due to the fact that the literature review is principally looking at what makes a good planner and plan and to a lesser degree at what makes a good sustainability plan and not at what makes a good transportation planner and plan.

Demographic Community Characteristics Analysis Compatibility with Interview Findings

The demographic community characteristics analysis finds that transportation (public transportation, bicycle, and pedestrian infrastructure; supportive aids, and additional indicators of receptivity), population and population density, housing density, educational attainment, and population age are important to VMT-reduction receptivity and this is reinforced in the interview findings. However, while the demographic community characteristics analysis finds transportation to be the most important characteristic, transportation is not represented as more important than other characteristics in the interview findings. Conversely, there is a VMT-reduction characteristic that is discussed in the demographic community characteristics analysis that is not stated as expressly in the interview findings: a healthy economy.
Based on the comparison of the performance of the four cities across the six demographic community characteristics, (transportation, population and population density, economy, housing, population age, and education) through this analysis, I concluded that Charleston, SC is more likely to have a higher degree of VMT-reduction receptivity, followed closely by Durham, NC, with Winston-Salem, NC and Columbia, SC being less likely to have a high degree of receptivity. The interview findings reinforce this conclusion insofar as it relates to public transportation (especially with regard to Durham’s DATA/TTA system). However, the interviewee responses imply that while Durham in particular and Charleston are faring better than their counterparts in terms of their ability to sustain a public transportation system, beyond that, the evidence that Durham and Charleston are more likely to be supportive of VMT-reduction than Winston-Salem and Columbia is plausible but inconclusive.

According to the interview findings, Columbia and Winston-Salem are lacking in public demand for alternative modes but the degree to which their lack is greater than that of Durham and Charleston does not appear to be very significant. Further, while Columbia and Winston-Salem are lacking in staff and elected official support for VMT-reduction, the same can be said for Durham and Charleston, and with a degree of difference that again does not appear to be notable. Further, with regard to the characteristics that are shared by a majority of the cities: failure to recognize alternative transportation as an economic development tool and get VMT-reduction Initiatives incorporated into important municipal and regional plans, the difference between the four cities in these areas is not notable.

Finally, a characteristic that I view as integral to VMT-reduction receptivity that is not significantly featured both in the literature review and in the interview findings is adoption of an aggressive targeted marketing campaign.

Implications

The interview findings included in this report have implications for existing academic theory on what determines a good planner, plan, and particularly a sustainability-focused plan. The literature included in the literature review fails to include in its identification of important planner and plan characteristics an aggressive and targeted educational outreach and marketing campaign. I find this to be a significant failure and I suggest that it be rectified with further academic investigation to uncover the innovative and best practices around this characteristic and their implications for improving plans and planner performance.

Further, while the interview findings include mention of the importance of a targeted marketing campaign, it is not mentioned consistently across all cities nor is it given the same weight as other characteristics and further it is mentioned more as something the interviewees...
aspire to than something they actually do. This is a significant oversight and I suggest that cities looking to maximize their VMT-reduction receptivity, overhaul their educational outreach and marketing campaigns and dedicate more energy and resources to using traditional and social media to penetrate deeply into the social psyche and get at the root of our love affair with cars and driving and our stigmatizing of bicycling and bicyclists, public transportation and public transportation users.

The literature review and the demographic community characteristics analysis also have implications for what cities should be paying attention to in terms of VMT-reduction receptive community characteristics and good plan and planner qualities. The interview findings’ failure to sufficiently address the importance of a healthy economy (a characteristic included in the demographic community characteristic analysis) in determining VMT-reduction receptivity is a significant problem. It is important to rectify this problem because of the absolute dependence of VMT-reduction initiatives on not only dependable funding sources but on public support that grows linearly to economic growth, due, again, to the majority perspective that alternative transportation initiatives are of secondary importance and should be funded only after so-called basic, essential initiatives are funded (i.e. road and bridge construction and maintenance). Important characteristics from the literature review that are not featured in the interview findings are quality implementation and evaluation strategies, the ability to understand complicated political realities and, the ability to question one’s own rightness, challenge popular beliefs and abandon preferred solutions. A quality implementation strategy is important because it organizes and communicates the different roles the varied stakeholders must play as well of the timeframe in which tasks must be achieved to achieve successful initiation of VMT-reduction initiatives. An evaluation strategy is important because it provides insight into which VMT reduction initiatives are successful at reducing VMT and which are not, increasing efficiency and effectiveness. Understanding political realities is important because the likelihood of success of VMT-reduction initiatives is proportional to their logistical and political viability and realism. Being committed enough to the goals of the plan that one is willing to change course is important because situations change and adaptability in the face of change is necessary to achieve goals. I suggest that cities looking to maximize their VMT-reduction receptivity, dedicate more time and energy to improving their performance with regard to these characteristics.

A final characteristic mentioned in the literature review but not in the interview findings is a fact base (as part of a plan’s visioning phase). This characteristic is important because people pay more attention to arguments in favor of initiatives that have a factual basis. Having a solid and comprehensive fact base is particularly important for VMT-reduction initiatives because as it stands currently, the existing data on the benefits of alternative modes, on their impact on reducing VMT, and on the connection between reducing VMT and mitigating climate change
and other environmental hazards is both inconclusive and incomplete. Further, even where there is solid data on these connections, a large proportion of the population is skeptical of the objectivity of this data and writes it off as manipulated to serve a liberal agenda. I strongly suggest that cities looking to maximize their VMT-reduction receptivity, dedicate significant resources to building up and collecting a solid and comprehensive fact base for the purpose of clearing up misconceptions and validating VMT-reduction and alternative modes.
CONCLUSION:

Based on the literature review, demographic community characteristics analysis, and interview findings analysis included herein, I recommend expanding the scope of the literature on what makes a good planner, plan, and sustainability plan, to include an aggressive and targeted educational outreach and marketing campaign. I also recommend expanding the focus of municipalities on what community characteristics increase VMT-reduction receptivity to include the following: an aggressive and targeted educational outreach and marketing campaign, a healthy economy, a quality implementation strategy, a quality evaluation strategy, staff and elected officials who understand complicated political realities and who can question their own rightness, challenge popular beliefs, and abandon their preferred solutions, and a solid and comprehensive fact base. My final recommendation is that Columbia, SC, and Winston-Salem, NC look to the innovative and best practices of first Charleston, SC, and then Durham, NC and pay particular attention to the successes the cities have had with their public transportation systems. I make this recommendation with the caveat that due to the practical considerations, the characteristics and corresponding metrics I chose to determine VMT-reduction receptivity were so chosen based on preference instead of objective, scientific methods nor were they weighted according to objective, scientific methods either.

We know that global warming is occurring, that increased emissions of the greenhouse gas carbon dioxide (CO2) are the main cause, that the transportation sector is a significant emitter of greenhouse gases, and that trips made in passenger cars are responsible for a significant portion of the transportation sector’s CO2 emissions. This combined with the reduction in overall available funds due to the current economic recession and the prevalence of unfavorable attitudes towards funding VMT-reduction initiatives highlights the importance of assisting municipal governments and local public transportation, bicycle, and pedestrian advocacy groups in initiating VMT-reduction. Municipal governments and activists would be greatly served by being made aware of the community characteristics that will maximize their community’s receptivity to VMT-reduction before embarking on a cost and labor-intensive VMT-reduction initiative. Without this understanding, the likelihood of successful VMT-reduction initiation would be greatly reduced. Efforts to understand how to best plan for VMT-reduction initiation will be significantly advanced by the existence of a body of literature that captures the most important qualities of a good plan, planner, and sustainability plan as they relate to VMT-reduction. As the scope of the literature is expanded and the knowledge and understanding of local governments is improved upon, it will become possible to engage in more efficient and effective VMT-reduction planning and in doing so realize the multiple benefits of reducing the negative impact of automobiles on our lives, and most importantly reduce our impact on global warming.
WORK CITED

Introduction


Demographic Community Characteristics Analysis


**Literature Review**


# APPENDIX

## Table 12: City Rankings Across Community Characteristics

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<thead>
<tr>
<th></th>
<th>Transportation</th>
<th>Pop. &amp; Pop. Density</th>
<th>Economy</th>
<th>Housing</th>
<th>Population Age</th>
<th>Education</th>
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<td>Durham</td>
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<td>2</td>
<td>4</td>
</tr>
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<tr>
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<td>4</td>
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<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Columbia</td>
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<td>1</td>
<td>1</td>
<td>3</td>
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</tr>
</tbody>
</table>

4=Highest Rank, 3=2\textsuperscript{nd} Highest Rank, 2=3\textsuperscript{rd} Highest Rank, 1=Lowest Rank