2013

The Impact of Plans, Policies and Practices of Metropolitan Planning Organizations on the Design and Implementation of Streets for All Users

Deborah Riemann
Cleveland State University

Follow this and additional works at: https://engagedscholarship.csuohio.edu/etdarchive

Part of the Urban Studies and Planning Commons

How does access to this work benefit you? Let us know!

Recommended Citation
https://engagedscholarship.csuohio.edu/etdarchive/851

This Thesis is brought to you for free and open access by EngagedScholarship@CSU. It has been accepted for inclusion in ETD Archive by an authorized administrator of EngagedScholarship@CSU. For more information, please contact library.es@csuohio.edu.
FACTORS INFLUENCING REGIONAL TRANSPORTATION PLANNING

DEBORAH RIEMANN

Bachelor of Cultural Engineering
Otto-von-Guericke Universität Magdeburg (Germany)
June 2011

MASTER OF URBAN PLANNING, DESIGN AND DEVELOPMENT
at the
CLEVELAND STATE UNIVERSITY
May 2013
THE IMPACT OF PLANS, POLICIES AND PRACTICES OF
METROPOLITAN PLANNING ORGANIZATIONS
ON THE DESIGN AND IMPLEMENTATION OF STREETS FOR ALL USERS

DEBORAH Riemann

Bachelor of Cultural Engineering
Otto-von-Guericke Universität Magdeburg (Germany)
June 2011

MASTER OF URBAN PLANNING, DESIGN AND DEVELOPMENT

at the

CLEVELAND STATE UNIVERSITY

May 2013
© Copyright by Deborah Riemann, 2013
This thesis has been approved

for the Department of Urban Studies

and the College of Graduate Studies by

Thesis Chairperson: Dr. Brian Mikelbank (Signature)

Department of Urban Studies & Date

Dr. Wendy Kellogg (Signature)

Department of Urban Studies & Date

Dr. Benjamin Clark (Signature)

Department of Urban Studies & Date
Dedicated to my family in Germany and the U.S.
ACKNOWLEDGEMENTS

In acknowledgement of all the people who made this thesis possible, in particular Howard Maier, Dr. Brian Mikelbank, Dr. Wendy Kellogg and Dr. Ben Clark and the staff members and board members at NOACA and MORPC who took the time to give me honest insights into their organizations.
THE IMPACT OF PLANS, POLICIES AND PRACTICES OF METROPOLITAN PLANNING ORGANIZATIONS ON THE DESIGN AND IMPLEMENTATION OF STREETS FOR ALL USERS

DEBORAH RIEMANN

ABSTRACT

Since the rise of the automobile, urban planners, and traffic engineers were confronted with the question of balancing the different needs of all users of the street. Over the last decades that balance tended to favor car-oriented street designs. Health and air quality concerns, as well as an aging population have started to challenge the old ways of transportation planning. The heavy reliance on the private vehicle in the U.S. is facilitated by local land use decisions and investments in the public street and highway network were made. As most road projects are funded by federal dollars, metropolitan planning organizations are in a crucial position to increase active transportation options as they manage federal funds and facilitate regional decision making.

This thesis will provide a comparative analysis of the approach employed by two Ohio MPOs of comparable size and transportation budget - the Northeast Ohio Area-wide Coordinating Agency (NOACA; Cleveland) and Mid-Ohio Regional-Planning-Commission (MORPC; Columbus). The thesis will focus on the differences between MORPC’s Complete Streets planning approach and NOACA’s bicycle and pedestrian planning approach. The thesis analyzes policies and plans through a document review and uses interviews to identify organizational practices and cultures. The cases are described within the four factor-categories that impact the implementation of transportation projects: (1) MPO intention and commitment, (2) MPO culture, structures and practices, (3) funding availability, and (4) state and local operating context.

One conclusion of this thesis is that while the focus on bike and pedestrian planning tends to create transportation projects that are only focused on one single mode, the focus on users of Complete Streets helps to integrate the needs of different users of the street into every single project. The thesis concludes by outlining different strategies and tools that can be pursued by MPOs to increase the number of Complete Streets and projects that enhance active modes of transportation within the region.
TABLE OF CONTENTS

ABSTRACT ........................................................................................................................................vi
LIST OF TABLES ......................................................................................................................... ix
LIST OF FIGURES ...................................................................................................................... x
TABLE OF ACRONYMS .............................................................................................................. xi

CHAPTER

I. INTRODUCTION ....................................................................................................................... 1

II. CHALLENGES IN ACTIVE TRANSPORTATION PLANNING .......... 4
   2.1 Active Transportation Planning ................................................................. 4
   2.2 Early Trends in Transportation Planning Beyond the Automobile .. 6
   2.3 Multi-Modal Planning and Complete Streets ....................................... 9
   2.4 Complete Streets Designs, Policies and Benefits ............................ 10

III. TRANSPORTATION FUNDING ..................................................................................... 15
   3.1 Federal Stance on Multi-Modal-Planning ............................................ 15
   3.2 The Federal Mandate for MPOs ............................................................. 17
   3.3 Funding of Complete Streets by MPOs .............................................. 18
   3.4 Limits to MPOs ....................................................................................... 22

IV. METHOD/ STUDY DESIGN .......................................................................................... 26
   4.1 Hypotheses and Measurements ............................................................. 26
   4.2 Unit of Analysis and Selection of Cases ............................................. 27
   4.3 Study Design ......................................................................................... 36

V. THE MORPC APPROACH: COMPLETE STREETS PLANNING ... 42
   5.1 MORPC’s Intention and Core Commitment to All Users of the Road ................................ 42
   5.2 Funding Issues and Actual Implementation ......................................... 55
   5.3 Political Context and Organizational Structure and Culture ............ 62
VI. THE NOACA APPROACH; BIKE AND PEDESTRIAN PLANNING

6.1 NOACA’s Intention and Core Commitment to Bike and Pedestrian Planning

6.2 Funding Issues and Actual Implementation

6.3 Organizational Culture, Structure and Political Context

VII. RESULTS - COMPARISON OF BOTH APPROACHES

7.1 Core Commitment

7.2 Position of the MPO staff

7.3 Structural differences

7.4 Approaches to planning

7.5 Tools and Planning Mechanisms

7.6 Review process

7.7 Funding Sources

7.8 Relationship with ODOT

VIII. CONCLUSION, DISCUSSION AND RECOMMENDATIONS

BIBLIOGRAPHY
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Commuter Patterns in Central Ohio, Northeast Ohio and Ohio</td>
<td>31</td>
</tr>
<tr>
<td>II. Complete Streets Coalition - Weighted Scores of Cleveland (16f.),</td>
<td>35</td>
</tr>
<tr>
<td>Columbus (18f.), NOACA (10f.) and MORPC (8f.)</td>
<td></td>
</tr>
<tr>
<td>III. Search Terms for Document Review</td>
<td>37</td>
</tr>
<tr>
<td>IV. Overview of Policies and Plans of NOACA and MORPC</td>
<td>38</td>
</tr>
<tr>
<td>V. MORPC’s Spending on Projects with Bicycle Components in SFY 2012-2015</td>
<td>60</td>
</tr>
<tr>
<td>VI. NOACA’s Spending on Projects with Bicycle Component in SFY 2012-2015</td>
<td>88</td>
</tr>
<tr>
<td>VII. Summary of Main Differences between MORPC’s and NOACA’s Approach</td>
<td>96</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Features of Complete Streets on Euclid Avenue, Cleveland, Ohio</td>
<td>11</td>
</tr>
<tr>
<td>2. Sharrow in Akron</td>
<td>12</td>
</tr>
<tr>
<td>3. Benefits of Complete Streets</td>
<td>13</td>
</tr>
<tr>
<td>4. Three Major Funding Sources for Active Modes of Transportation</td>
<td>19</td>
</tr>
<tr>
<td>5. Factors that Influence the Implementation of Complete Streets</td>
<td>28</td>
</tr>
<tr>
<td>6. Ohio’s Metropolitan Planning Organizations (Map provided by ODOT)</td>
<td>30</td>
</tr>
<tr>
<td>7. Word Cloud for MORPC’s “2012-2035 Metropolitan Transportation Plan”</td>
<td>44</td>
</tr>
<tr>
<td>8. Word Cloud for MORPC’s “Complete Streets Policy”</td>
<td>52</td>
</tr>
<tr>
<td>9. Word Cloud for NOACA’s “Connection 2030 Plan”</td>
<td>72</td>
</tr>
<tr>
<td>10. Word Cloud for NOACA “Regional Transportation Investment Policy”</td>
<td>76</td>
</tr>
<tr>
<td>11. Contrasting Bike and Pedestrian Planning with Complete Streets Planning</td>
<td>104</td>
</tr>
<tr>
<td>12. How Organizational Practices Shape the Built Environment</td>
<td>114</td>
</tr>
<tr>
<td>12. Tools and Planning Mechanisms for Active Transportation Planning</td>
<td>117</td>
</tr>
<tr>
<td>13. Stages towards Active Transportation Planning</td>
<td>121</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>AMATS</td>
<td>Akron Metropolitan Area Transportation Study (MPO)</td>
</tr>
<tr>
<td>APA</td>
<td>American Planning Association</td>
</tr>
<tr>
<td>BPAC</td>
<td>Bikes and Pedestrian Advisory Council</td>
</tr>
<tr>
<td>CSC</td>
<td>Complete Streets Coalition</td>
</tr>
<tr>
<td>CDC</td>
<td>Community Development Cooperation’s</td>
</tr>
<tr>
<td>CMAQ</td>
<td>Congestion, Mitigation and Air Quality Funds</td>
</tr>
<tr>
<td>C/STP</td>
<td>County Surface Transportation Program</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation (State)</td>
</tr>
<tr>
<td>E/STP-M</td>
<td>MPO Enhancement Surface Transportation Program</td>
</tr>
<tr>
<td>E/STP-S</td>
<td>State Enhancement Surface Transportation Program</td>
</tr>
<tr>
<td>FHWA</td>
<td>Federal Highway Authority</td>
</tr>
<tr>
<td>GCRTA</td>
<td>Greater Cleveland Regional Transit Authority</td>
</tr>
<tr>
<td>ISTEA</td>
<td>Intermodal Surface Transportation Efficiency Act (1991)</td>
</tr>
<tr>
<td>MAP-21</td>
<td>Moving Ahead for Progress in the 21st Century Act</td>
</tr>
<tr>
<td>LRTP</td>
<td>Long-range metropolitan transportation plan</td>
</tr>
<tr>
<td>MORPC</td>
<td>Mid-Ohio Regional-Planning-Commission</td>
</tr>
<tr>
<td>MPO</td>
<td>Metropolitan Planning Organization</td>
</tr>
<tr>
<td>MTP</td>
<td>Metropolitan Transportation Plan</td>
</tr>
<tr>
<td>NEOSCC</td>
<td>Northeast Ohio Sustainable Communities Consortium Initiative</td>
</tr>
<tr>
<td>NOACA</td>
<td>Northeast Ohio Area-wide Coordinating Agency</td>
</tr>
<tr>
<td>RTA</td>
<td>Regional Transit Authority</td>
</tr>
<tr>
<td>RTIP</td>
<td>Regional Transportation Investment Policy</td>
</tr>
<tr>
<td>SAFETY-LU</td>
<td>Safe, Accountable, Flexible Transportation Equity Act: A Legacy for Users Act (2005)</td>
</tr>
<tr>
<td>SFY</td>
<td>State Fiscal Year</td>
</tr>
<tr>
<td>SGA</td>
<td>Smart Growth America</td>
</tr>
<tr>
<td>STIP</td>
<td>Statewide Transportation Improvement Program</td>
</tr>
<tr>
<td>STP</td>
<td>Surface Transportation Program</td>
</tr>
<tr>
<td>S/STP</td>
<td>State Surface Transportation Program</td>
</tr>
<tr>
<td>TE/TA</td>
<td>Transportation Enhancement or Transportation Alternative Funds</td>
</tr>
<tr>
<td>TEA-M</td>
<td>MORPCs indication for Transportation Enhancement Funds</td>
</tr>
<tr>
<td>TEA-21</td>
<td>Transportation Equity Act for the 21st century (1998)</td>
</tr>
<tr>
<td>TIP</td>
<td>Transportation Improvement Program</td>
</tr>
<tr>
<td>TLCI</td>
<td>Transportation for Livable Communities Initiatives</td>
</tr>
<tr>
<td>ODOT</td>
<td>Ohio Department of Transportation</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

**Background and Objectives:** Throughout the past five decades, planners on all levels of government and cross-disciplines (land-use, zoning, transportation) have been part of designing environments that favor an auto-dependent life-style. As society faces challenges such as the obesity crisis and climate change adaptation and mitigation, planners perceive an increasing pressure to re-design the built environment in order to enable citizens to choose healthier lifestyles. Within that context, the interest in alternative modes of transportation such as transit, cycling, or walking has been increasing. Despite the increased interest, decision-making over investments in infrastructure has yet to catch up with the new demand. Therefore, this thesis examines how the built environment is shaped by organizational decision-making practices over transportation projects.
While the federal government, through the Department of Transportation, provides funding opportunities for transportation infrastructure, it is up to local and regional entities to use those funds. Since Metropolitan Planning Organizations (MPOs) direct federal transportation dollars to local communities, they are in a crucial position when it comes to influencing transportation decisions and investments. That crucial position makes them the unit of analysis for this thesis. The problem statement is: To what extent do plans, funding policies, practices and structures of MPOs influence the design, selection and implementation of transportation projects to meet the needs of all users of the road - Two case studies from Ohio.

**Case Studies and Method:** This thesis will provide a comparative analysis of two different approaches to respond to multiple-users’ transportation needs in one state. Two Ohio MPOs are seeking a balance of car-needs with other transportation needs. While the Northeast Ohio Area-wide Coordinating Agency (NOACA; Cleveland) is following a multi-modal planning approach, the Mid-Ohio Regional-Planning-Commission (MORPC; Columbus) chose a complete streets planning approach. Both MPOs operate under the same state regulations and have comparable transportation budgets. The outcome of this thesis will result in a better understanding of the differences in the consideration of all users of the road and the influencing factors such as differences in policies, organizational structures, planning, as well as in the decision-making process. A document review of policies as well as long-range and short-term plans will give insight into the priorities of both MPOs. Additionally, interviews with staff and board members can help to understand the motivations behind priorities, organizational cultures, and capacities.
Structure of the Thesis: Chapter 1 of this thesis is concerned with the challenges of planning for active modes of transportation. Chapter 2 provides a theoretical background of transportation funding in the US - in this part, an initial hypothesis about transportation funding in regards to local interests, regional decision making, and state funding will be developed, with emphasis on Complete Streets. Chapter 3 will describe the method in more depth and explain the selection of the cases. Chapter 4 and 5 will present the two case studies. Chapter 6 contrasts the two different approaches to preface the conclusion in Chapter 7 which will outline different strategies for MPOs to achieve an increase the number of in Complete Streets.

Results: The thesis was able to show how two essentially different approaches to active transportation planning are driven by policies and organizational practices. On the one hand, MORPC follows a Complete Streets planning approach, integrating the consideration of all users into every single project and widening the funding base. At the same time NOACA pursues a bike and pedestrian planning approach that is driven by local initiatives and faces limited funding sources. Based on these two different approaches, this thesis provides a summary of tools that can be used by MPOs in different stages of the planning process to enhance the consideration of all users of the road.
CHAPTER II

CHALLENGES IN ACTIVE TRANSPORTATION PLANNING

2.1 Active Transportation Planning

The term “Active Transportation” has been used to describe the health benefit of using non-auto modes of transportation such as walking, biking, or taking transit on a daily base. Several studies have been conducted that show the health benefit of walking to the grocery store or biking to work. According to those studies, physical inactivity relates to diseases such as obesity, hypertension, diabetes, high blood pressure, coronary heart disease, and back problems (Furie & Desai, 2012; Cullingworth & Caves, 2009, 263). While leisure-time exercise is one option to stay fit, active transportation has been shown to have additional benefits. Gregg Furie and Mayur Desai analyzed a data set of 9933 participants and found that “those who met physical activity recommendations had a significant lower mean BMI and lower mean waist circumference when they also engaged
in high level of active transportation” (p. 625). Interestingly, the study found a gender, income, and racial bias. Low income, Mexican-American males with less than a high-school degree were most likely to have the highest level of physical activity (p.624). The article concludes that public policy and built environment interventions are necessary to increase the levels of activity in the U.S. (p. 626).

On that note, some studies have analyzed the causation between physical activity and the built environment. Eriksson, Arvidsson, Gebel, Ohlsson and Sundquist (2012) were able to show the causation between residential density and land-use mix and their impact on physical activity. They collected accelerometer logbook data over a year in 32 Swedish neighborhoods with 3,226 individuals (p. 3f.). While the study was able to show a causal connection between land-use mix and density to pursuing of active modes of transportation, the study did not look at the impact of specific street designs.

The impacts of street retrofitting were examined by Krizek, Barnes and Thompson (2009) for the case of Minneapolis/St-Paul. They focused on the relationship between investment in bicycle facilities and the number of commuters between 1990 and 2000. They identified specific larger facilities that were implemented between 1990 and 2000 such as bike lanes and off-street bicycle paths. Afterwards they determined the area of analysis using traffic analysis zones that were within a 1 mile buffer of the new facilities (p. 69). While overall the bicycle mode share in both cities only slightly increased between 1990 and 2000, “almost all the facilities showed statistically significant increases in bicycle and mode share” (p. 70). That means the study was able to show that investment in bicycle facilities actually was able to create an increase in the number of cyclists in the areas surrounding the new facilities.
All three studies illustrated factors that influence the likeliness of active transportation. One set of factors is related to local decision making about land-use mixes and densities while the other factor is related to street designs which can be influenced partially by local jurisdictions but respond to much more complex state and federal requirements and funding issues. Accordingly, the following sections examine the discourse around creating streets that allow for active modes of transportation.

2.2 Early Trends in Transportation Planning Beyond the Automobile

Since the rise of the automobile, traffic planners and engineers have been confronted with the question of balancing the different needs of all users of the street. In the United States that balance has tended to favor car-oriented street designs over the last five decades. Since the 1970s, though, different concepts such as traffic calming, multi-modal planning and transit-oriented-design have arisen that strengthen street configurations that are more conducive to modes of transportation other than the car.

With increasing concerns over pedestrian safety, the idea of traffic calming emerged primarily for residential streets (Cullingworth & Caves, 2009, 255). Traffic calming is done through the reconfiguration of existing roads through different road textures, reduction in number of vehicular lanes, chicanes and neck-downs, as well as speed plateaus (Newman & Kenworthy, 1999, p. 124f.). The goal of traffic calming is to reduce vehicle speeds and make streets safer for residents. The benefits are a reduced severity and number of accidents in urban areas, better local air quality, and less noise pollution (Newman & Kenworthy, 1999, p. 125). The concept has been around since the
1970s and has been widely implemented in Europe. However, the issue of safe local residential streets was primarily addressed through cul-de-sacs in the United States.

More recently, walkability (which often times gets reduced in cul-de-sac developments) has experienced an increased interest from the real estate and urban design sector. The American Planning Association, in collaboration with the Urban Land Institute, recently published the book “Pedestrian- & Transit-Oriented Design” written by Reid Ewing and Keith Bartholomew (2013). The authors quote several studies that have been conducted between 2000 and 2010 that indicate that more than half of Americans would like to walk more to run errands and to exercise (p. 4). The authors specifically point out the challenge of aging population and the desire to “age in place” once losing the ability to drive. Additionally, the preferences of Generation Y for exciting, dense, and urban spaces have been identified as a real estate challenge (p. 5). That means there is an increasing interest in the real estate sector to develop more dense and walkable urban areas. Some of the trends can be recognized in the current mall market as indoor malls are being replaced by outdoor open-air shopping districts (p. 7). Additionally, the concept of transit-oriented-development has been used frequently to connect public investment in transit stations with private investment into mixed-use districts (Cullingworth & Caves, 2009, 252).

On the bicycle advocacy side, a lot of attention has been created nationally about the need for increasing bicycle facilities. Pucher, Komanoff and Shimek (1999), studied the major factors that influence the perception and use of a bicycle as a mode of transportation in the U.S. (in comparison to Europe). They identified the most important factor to be the public attitude and image of biking. They found that most cycling
commuters are men and that the public perception of utilitarian cyclists is that they are either too poor to own a car or that they are eccentric (Pucher, et. all., 1999, p. 132). Additionally they identified a nexus between the city size, density and cycling infrastructure with the likeliness of people to bike. If things are accessible within a short bike ride, car trips tend to occur less often. Other factors that they pointed out were the low costs of operating a car, high incomes, climate, and the perception of danger (Pucher, et. all., 1999, p. 132). Lack of infrastructure, especially, in combination with a tendency to blame the cyclist in case of an accident, has a negative impact on the number of cyclists in the U.S (Pucher, et. all., 1999, p. 133). As they outline steps to increase cycling in the U.S., one suggestion is to “expand bicycle facilities” and to “make all roads bikeable”.

Although there has been increased interest in active transportation by bicycle advocates, real estate developers, and seniors, some regions are lagging behind in terms of actual infrastructure improvements. Two transportation planning approaches deal with the need of an increase in mode-alternatives. Since the 1990s the federal government has mandated that multi-modal planning should be the framework used to address transit, bike and pedestrian concerns. More recently, within the past 10 years, the concept of Complete Streets has emerged. The latter takes in design elements of traffic calming while fostering goals of healthy living, walkability, and bikability. The following section will explain the differences between both planning approaches in more detail.
2.3 Multi-Modal Planning and Complete Streets

Starting with the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, the federal transportation policy has been more vigilant in regards to multi-modal transportation planning. By mandating that Metropolitan Planning Organizations do multi-modal planning, the federal government “sought to increase [planning for] walking and bicycling” (Cradock, et al., 2009, p. 39). However, during the past five to ten years, the limitations of those approaches have become widely recognized. “For many years in most communities, multimodal streets have been treated as special projects requiring extra planning, funding, and effort“ (McCann & Rynne, 2010, p. 28). In that sense multi-modal streets were often framed as adding infrastructure for transit, bicycles, or pedestrians after major vehicular or car-focused improvements had been made. Additionally, current travel demand modeling practices have limitations in their accuracy of transit, pedestrian, and bicycle travel forecasts (Lynott, et al., 2009, p. 23).

In contrast, the Complete Streets approach tries to address the limitations of federal multi-modal-planning approaches and requirements by integrating the idea of planning for all users into everyday business. According to the American Planning Association (APA), Complete Streets are defined as right of ways that are “designed and operated to enable safe access for all users”, which includes pedestrians, bicyclists, motorists, and transit riders of all ages, and abilities (APA; p. 3). That goal has wide-reaching implications for the design of intersections, sidewalks, bike infrastructure and public space in general. The car-centered-focus has led to urban streets with very wide travel lanes which are difficult and dangerous for pedestrians to cross (Dumbaugh & Li, 2011, p. 70). The Complete Streets approach advocates for changing this focus toward a more
pedestrian and cyclist friendly street design. It reframes the discourse around traffic calming, bicycle, and pedestrian advocacy toward new street designs that shift the focus from car-oriented streets towards streets that serve all users and create vibrant communities. The goal is to make it a routine part of project development by changing local, regional, and state policies and procedures. That means that even repaving projects can become opportunities to accommodate all users more efficiently (Lynott, et al., 2009, p. 27).

In other words, while bicycle and pedestrian focused multi-modal planning tends to fund special projects targeted towards bikes and pedestrians, Complete Streets planning tries to integrate the concerns of all potential users of the road early on in the planning process. During multi-modal planning bicycle and pedestrian needs are potentially at a disadvantage since projects focus on a special user group rather than on integrating the needs of all users into every single project. By looking at two case studies that follow each of those approaches, this thesis will be able to address the benefits and challenges of both transportation funding schemes.

2.4 Complete Streets Designs, Policies and Benefits

Generally, local and regional jurisdictions can encourage the implementation of Complete Streets through the adoption of a Complete Streets policy that requires “planners and engineers [to] consistently design and operate the entire roadway with all users in mind” (National Complete Streets Coalition, 2012). Some cities such as Boston go even further by adopting Complete Streets Guidelines that re-define streets as “vibrant
“public spaces” compared to the usual approach of streets being simply thoroughfares. Therefore they introduce new street types such as downtown commercial, downtown mixed-use, neighborhood main, neighborhood connector, residential, as well as industrial that all serve different purposes. Common design elements used on Complete Streets are “sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts“ (National Complete Streets Coalition, 2012). Figure 1 illustrates Euclid Avenue in Cleveland, Ohio as an example to visualize features of Complete Streets. Additionally, Figure 2 shows an example of a sharrow which is a “share the road with cyclists” road marking that is used as a minimum bargaining point to improve conditions for cyclists.

Figure 1
Features of Complete Streets on Euclid Avenue, Cleveland, Ohio
In the literature, there are different arguments/rationales for the benefits of Complete Streets. Some are concerned with the health benefits of encouraging residents to walk or bike to stores and to do more exercise on a daily basis (Cradock, et al., 2009, p. 39; McCann & Rynne, 2010; Handy & McCann, 2011, p. 23f.). A study by the Centers for Disease Control and Prevention “found that 43% of people with safe places to walk within 10 minutes of home met recommended activity levels; among individuals without safe places to walk, just 27% were active enough“ (National Complete Streets Coalition). Cradock et al (2009) make an interesting argument by comparing the health care cost connected with physical inactivity ($24 billion) and obesity ($70 billion) with the spending for public funding of bicycle and pedestrian projects ($450 million) (p. 62).

Furthermore, there is an economic development impact since the access to stores can be improved through Complete Streets (National Complete Streets Coalition). APA points out that growth and revitalization can be results of the implementation of Complete
Streets and the resulting higher pedestrian traffic which may result in an increase in spending (McCann & Rynne, 2010, p. 4). Another benefit of Complete Streets is increased safety since roads without sidewalks are more likely to cause fatal accidents (Dumbaugh & Li, 2011). Considering the Americans with Disabilities Act (1990), Complete Streets also help to serve populations with special needs such as children, older adults, and disabled persons (McCann & Rynne, 2010). Within a bigger framework, APA considers Complete Streets a tool to create livable communities (p. 107). “Walking and bicycling foster safer, more livable, family-friendly communities; promote physical activity and health; and reduce vehicle emissions and fuel use.” (DOT: Policy Statement on Bicycle and Pedestrian Accommodation Regulations). Other arguments concern environmental advantages and job access issues (Handy & McCann, 2011, p. 23f.). Figure 3 summarizes the benefits of Complete Streets.

**Figure 3**
**Benefits of Complete Streets**
Despite the benefits of Complete Streets, implementation has been slow in some regions. Complete Streets are an issue of infrastructure funding that is embedded into a complex system of federal and state funding as well as regional and local decision making. Because of the way transportation funding is structured in the U.S., MPOs play a crucial role in the implementation of Complete Streets (Handy & McCann, 2011, p. 28). While the federal government, through the Department of Transportation, provides funding opportunities for bike and pedestrian infrastructure, it is up to local and regional entities to use those funds. Several studies have done cross-state comparisons of MPOs success with the implementation of Complete Streets. However, due to differences in state policies in funding of MPOs and on the supportiveness of Complete Streets, it appears that there is more to be learned by comparing MPOs within a state. The following section describes the transportation funding process in regard to the implementation of Complete Streets. This will be the basis for the study design explained in the following section.
CHAPTER III

TRANSPORTATION FUNDING

3.1 Federal Stance on Multi-Modal-Planning

There are a variety of different ways for local jurisdictions to finance street projects. They can either pay for them themselves which is usually the case for restriping projects, or they can charge development impact fees for new subdivisions. However, once projects get more complicated and expensive, they exceed the local budgets. Therefore, local jurisdictions are able to request state or federal funding for re-paving or completely re-doing streets that are of regional significance. Those funding mechanisms are regulated by a federal transportation bill that allocates money to state departments of transportation (DOTs). The individual state DOTs then allocate the money to Metropolitan Planning Organizations (MPO’s). As MPO’s are responsible for managing federal funds and regional decision-making, they are in a crucial position when it comes to Complete Streets implementation. The following section gives a brief overview of the history of
transportation bills and the increase of responsibilities carried by the MPO’s and the changes in the types of projects that are able to receive funding.

When MPO’s were founded during the 1970s, their primary assignment was to build regional consensus over highway and bridge projects (Cullingworth & Caves, 2009, 242). Starting with ISTEA, which was passed in 1991, a shift happened in federal transportation policy that moved away from a highway-centric focus and towards a multimodal approach to transportation (Cradock, et al., 2009, p. 40). ISTEA was followed by the Transportation Equity Act for the 21st century (TEA-21) passed in 1998, and the Safe, Accountable, Flexible Transportation Equity Act: A Legacy for Users Act (SAFETY-LU) passed in 2005. Recently, the new act, Moving Ahead for Progress in the 21st Century Act (MAP-21), has been passed after several extensions of SAFETY-LU. Since 1991 the amount of available federal funding for bicycle and pedestrian infrastructure has been steadily increasing. Before the passing of ISTEA in 1991, $7 million per year was spent on bicycle and pedestrian infrastructure. By 2003 it was over $400 million (Handy & McCann, 2011, p. 24). The transportation act SAFETY-LU allowed for $4 billion to be spent on bicycling and walking over the lifetime of the bill (2005 to 2012) (Handy & McCann, 2011, p. 24). MAP-21, which was recently passed, is still quite controversial in terms of its impacts on Complete Streets funding. On the one hand, it opens up the Surface Transportation Program for including transportation alternatives into normal road projects; on the other hand it reduced the funds that are available within the transportation alternatives/ enhancement program that traditionally has been used for bike and pedestrian projects ($809 million) (Flusch, 2013, Webinar).
In 2010, the Federal Department of Transportation released a “Policy Statement on Bicycle and Pedestrian Accommodation Regulations“. According to the statement,

the establishment of well-connected walking and bicycling networks is an important component for livable communities, and their design should be a part of Federal-aid project developments. [...] Accordingly, transportation agencies should plan, fund, and implement improvements to their walking and bicycling networks, including linkages to transit (DOT: Policy Statement on Bicycle and Pedestrian Accommodation Regulations, Purpose; emphasize (bold) was added by author).

However, the policy statement does not require the networks and leaves them to the judgment of localities and MPOs. This allows for wide variety of spending habits for bike and pedestrian infrastructure across MPOs (Handy & McCann, 2011, p. 25).

3.2 The Federal Mandate for MPOs

Federal funding and legislation is the basis for the work of MPOs. MPOs were first established during the early 1970s in regions with more than 50,000 people with the assignment to build regional consensus about the transportation system (Cullingworth & Caves, 2009, 242). Since 1991 federal transportation bills have strengthened the role of MPOs and increased their responsibilities. Starting with ISTEA two major changes for MPOs were implemented: “One was the sub-allocation of state funds and decision making to the local and metropolitan level. The other was the granting of flexibility in determining how transportation funds would be spent” (Puentes & Bailey, 2003, p. 3). Instead of only being concerned with highway constructions, the authority of the MPOs was extended toward the overall regional transportation system (Cullingworth & Caves, 2009, p. 244). By increasing the administered funding and decision authority, the role of
the MPO within the process had been strengthened (Goetz, Dempsey, & Larson, 2002, p. 87).

MPOs are supposed to ensure communication and coordination between transit projects and local projects. Furthermore, they provide technical assistance in collecting data and they adopt regional short-term and long-term plans (McDowell, 1999, p. 13). That means that they provide funding, plans, and a framework for decision making. ISTEA required MPOs to develop a 20 year long range metropolitan plan (LRTP) and a short range transportation improvement plan (TIP) that both establish regional transportation objectives and goals (Puentes & Bailey, 2003, p. 3). The MPO’s TIPs are incorporated into a statewide transportation improvement plan (STIP). While the LRTP provides a long-term perspective on the regional transportation network, the TIP contains specific projects that were selected to be implemented within the next 5 years. “They also had to “fiscally constrain” their long-range plans and short-range TIPs so that they were more than mere “wish-lists”. This meant that MPOs had to create realistic, multi-year agendas of projects matched with available funds” (Walking, 2003, p. 2f.).

3.3 Funding of Complete Streets by MPOs

MPOs depend on federal funding programs, state programs, as well as local funds to matches the projects. In a case study produced for the American Planning Association, Handy and McCann (2011) found that MPOs used a variety of different funding programs that could vary from 1 to 14 in order to finance bicycle and pedestrian projects. That indicates that MPOs have a fairly high discretion to select programs for financing those projects.
Under the Federal Highway Administration programs, the three most commonly used programs are the Surface Transportation Program (STP), the Transportation Enhancement/Transportation Alternatives (TE/TA) program and the Congestion Mitigation and Air Quality Improvement Program (CMAQ) (Goetz et al., 2002, p. 87; Puentes & Bailey, 2003, S. 8; and Cradock et al., 2009, p. 41). Figure 4 summarizes the primarily types projects eligible for each of the three funding programs (based on Flusche, 2013).

**Figure 4**
Three Major Funding Sources for Active Modes of Transportation

| STP          | • Flexible funding  
|             | • Construction of bicycle transportation facilities and walkways (recreational trails etc.)  
|             | • Non-construction projects related to safe bicycle use  
| TA          | • Former Transportation Enhancement > safe routes for non-drivers  
|             | • Safe Routes to School  
|             | • Recreational Trails  
|             | • Redevelopment of underused highways to boulevards  
|             | • Scenic Byway Uses  
| CMAQ        | • Emission reduction in non-attainment areas  
|             | • Construction and non-construction projects and programs eligible  

Most bicycle and pedestrian infrastructure is financed through the Transportation Enhancement Program since those programs specifically target “mitigating the negative effects of the surface transportation system as impacts on pedestrians, scenic beauty, the environment, and historic structures“ (Puentes & Bailey, 2003, pp. 6-8). According to a webinar by the American League for Bicyclists and the Pedestrian and Bicycle Information Center on April 9th 2013 about “Accessing Funding for Bicycle and Pedestrian Projects”, the federal funds that are available for transportation alternatives were reduced by 30 percent with MAP-21 since the programs Safe Routes-to-School, Transportation Enhancement, and Rails-to-Trails have been combined into one program (Transportation Alternatives). While overall $52 billion is provided, $809 million annually is set aside for transportation alternatives and enhancement (Flusche, 2013; U.S. Department of Transportation, 2013b).

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) targets areas that do not meet the National Ambient Air Quality Standards. Its primary purpose is to be used for transit, but some MPOs have used funds for pedestrians and bike projects (Cradock et al., 2009, p. 41; Walking, 2003, p. 31). “ISTEA linked investment decisions directly to meeting air quality standards laid out in the Clean Air Act. Suddenly bicycling and walking had a clear source of federal funds, and could be treated as transportation control measures helpful in meeting air-quality requirements“ (Walking, 2003, p. 2f). MAP-21 authorized $2.21 billion for 2013 to be spent for CMAQ funds (U.S. Department of Transportation, 2013c).

Flexible funding for multiple types of transportation projects is available through the Surface and Transportation Program (STP). Those funds are generally used for road-
projects that could include Complete Streets (Cradock et al., 2009, p. 41; Walking, 2003, p. 31). According to the Federal Highway Administration, $10 billion has been set aside for the Surface Transportation Program (U.S. Department of Transportation, 2013d). STP, CMAQ and TA funds are most commonly used by MPOs to fund bicycle and pedestrian improvements. Between 1992 and 2012, 49 percent of the TE funds, 10 percent of CMAQ funds, and 8 percent of STP funds were used for projects with bicycle and pedestrian components (Flusche, 2013). Additionally, the National Complete Streets Coalition raises awareness for other funds that could potentially be used by MPOs for Complete Streets. Those are the Transportation for Livable Communities (TLC) funds that support community (re)development projects, System Development Charges which could be charged as fees to developers, or public-private-partnerships which could be used, for instance, for trail projects (Walking, 2003, p. 32f.).

Despite the cuts in TA funding with the MAP-21 legislation, “Congress has [still] made it possible to spend federal funding on bicycle and pedestrian infrastructure, [however] it has not mandated spending on these transportation modes.[...]” (Handy & McCann, 2011, p. 24). On a webinar on “Accessing funding for bicycle and pedestrian projects”, Darren Flusch, the Policy Director at the League of American Bicyclists pointed out that the reduction means that MPOs now have to start allocating TAP funds in a competitive process. At the same time, with MAP-21, Surface Transportation dollars (STP) are more flexible to use. That means that bicycle and pedestrian projects can apply for STP funds. Darren Flusch encouraged the listeners of the webinar to assign points in their review process to projects with a bicycle and pedestrian component. He pointed out that MPOs who did that all of a sudden found themselves with many more project
applications that considered active transportation opportunities. He also, emphasized the opportunity to use Congestion, Mitigation and Air Quality (CMAQ) funds for bicycle sharing stations as they encourage a mode shift. The webinar also referred to other more innovative programs, like Bike Ed (Texas), which receives funds through people buying license plates that say “Share the road” (Flusche, 2013).

Concluding, Complete Streets policies offer a special opportunity to include bike and pedestrian amenities routinely into road projects that use STP funds. While bike and pedestrian planning is usually considered as an add-on using limited Transportation Alternatives/ Enhancement dollars, Complete Streets policies open the door to including such amenities routinely by using STP funds. The webinar pointed out the tools that can be used by MPOs to encourage bicycle and pedestrian infrastructure: policies, application process, prioritization process through project scoring, committees, and political support.

### 3.4 Limits to MPOs

**Relationship with the State Government and Administration.** Several issues limit the influence of MPOs on the implementation of active transportation modes. State departments of transportation have considerable power over MPOs by retaining authority over substantial amounts of transportation funds. Additionally, in some states, including Ohio, governors and DOTs have veto authority over MPO-selected projects (Puentes & Bailey, 2003, p. 9; Handy & McCann, 2011, p. 28). Furthermore, the allocation of funds to the MPOs varies widely among states “[...] with some states distributing funding evenly among counties and other states using various transportation need-based
formulas.” (Cradock, et al., 2009, p. 42) Most states also do not require spending on bike-pedestrian projects. However, it can be encouraged through plans, program funding, matching funds or other resources, or it can be discouraged through onerous funding requirements or by assigning low priority to bike and pedestrian projects (Handy & McCann, 2011, p. 28).

The role of the state legislature and DOTs makes it generally difficult to compare MPOs and their success in implementing bike and pedestrian infrastructure on a national level for three reasons: (1) each state decides how it allocates funding to its MPOs (based on population, based on every MPO receiving equal funding); (2) states have different policies and procedures. For instance, California (Deputy Directive 64-R1) has a lot of policies that highly encourage sustainable local land-use planning as well as Complete Streets transportation planning. The transportation departments of Colorado, Mississippi, Tennessee have a “Bicycle and Pedestrian Policy” while Louisiana’s and North Carolina’s state transportation departments have Complete Streets policies (Seskin & McCann, 2012, p. attachment p. 6). That means different state policies and ordinances can affect the awareness of local and regional leaders but it can also greatly shape organizational practices; and (3) Different geographies can have an impact on what type of transportation planning is feasible.

The above outlined reasons make it necessary to examine the quality differences between MPOs operating under the same state legislature. Goetz, Dempsey and Larson (2002) found that “The most successful MPOs engage their state DOT in a cooperative and collaborative decision-making-process” (p. 103). In conclusion, federal transportation legislation has set the stage for metropolitan planning organizations to administer funds
and guide a regional selection of projects. However, formally, the MPOs face constraints based on the availability of funding, their ability to negotiate with the state department of transportation, and their level of independence.

**Local Interests.** MPOs also face significant influence from local jurisdictions. First, local elected officials are members on MPO boards and are charged with decision making for the region. According to Handy & McCann (2011), “evidence suggests that local interests override regional interests” (p. 28). An MPO that is primarily based on local representation tends to be more likely to implement short-term projects that only affect one or two jurisdictions whereas MPOs with a stronger regional focus tend to implement more regionally focused, long-term projects (Gerber & Gibson, 2009, p. 634). Gerber and Gibson found that this is reflected in the composition of the board. If there are more public managers on the board, the decisions and policies tend to be more regionally focused whereas a board of local representatives tends to be more locally focused. They explain the dilemma for local officials as the following: “The rub, however, is that local political actors may then be held accountable for regional policies that are contrary to the preferences of their local constituents” (Gerber & Gibson, 2009, p. 635). Concluding, the organizational structure of the board seems to have an impact on the decision making in regards to Complete Streets projects.

The negative impacts of regional decision making by over 40 representatives of local jurisdictions, has been described by Normal Krumholz (1990) for the fight over the Clark Freeway during the 1970s. Norman Krumholz gave a testimony of the politics and regional conflicts surrounding the decision at NOACA to implement the Clark freeway in his book “Making Equity Planning Work”. He pointed to the unfairness of the City of
Cleveland bearing most of the cost and negative impact of the freeway while the decision was made by a regional group of local officials that “boasted that they had no idea of where the route was” (p. 76).

Despite the influence of local governments in regional decision making, they also hold power over land-use decisions and types of transportation projects they apply for. Local governments submit proposals for projects, first for inclusion in the long-range regional plan and then for consideration for funding in the TIP. Since they are the primary implementing agencies, bicycle and pedestrian projects depend on the merits of local interests (Handy & McCann, 2011). Additionally, one of the biggest challenges for the implementation of active transportation is the disconnection of land-use planning from transportation planning. While local governments are primarily responsible for land use planning (land-use mix and density), transportation policies and planning are happening on the regional or state level. The latter do not necessarily have influence on land-use decisions (Cullingworth & Caves, 2009, 250).

Summarizing, the implementation of active transportation does not just depend on design practices but also on the organizational, decision making level and collaboration of various levels of government. Laplant and McCann point out that policies and procedures need to be changed to serve all modes, design guidelines need to be rewritten, staff needs to be trained and data need to be collected on pedestrians and bicycles (Laplante & McCann, 2008, p. 25f.). Overall, funding transportation choice requires a commitment on the local, regional and state-wide level to truly make a difference.
4.1 Hypotheses and Measurements

Considering the literature review, four main factors can be identified that impact the consideration of all users of the road. First, it depends on the MPO’s commitment to considering all users of the road and their intention to foster active modes of transportation (See Chapter 2.4 - National Complete Streets Coalition, 2012; McCann & Rynne, 2010; Handy & McCann, 2011). That intention is reflected in their long-term plans and their funding policies. Second, the MPO’s organizational practices, structures, and culture shape the number of projects that considered Complete Streets or bike and pedestrian elements (See Chapter 2.3 - Cradock, et al., 2009; McCann & Rynne, 2010; Lynott, et al., 2009). For instance, the “project review process” and the amount of time that staff is able to dedicate to active transportation planning can have significant
influence on local project sponsors. Third, the actual implementation is reflected in the projects on the TIP and the funds that are being used for Complete Streets and bike and pedestrian amenities (See Chapter 3.3 - Handy & McCann, 2011; Goetz et al., 2002; Puentes & Bailey, 2003; Cradock et al., 2009; Flusche, 2013; Walking, 2003). Lastly, the implementation of Complete Streets or bike and pedestrian infrastructure is impacted by outside factors such as the local project sponsor’s stance on the issues as well as federal and state-wide policies (See Chapter 3.4 - Puentes & Bailey, 2003; Handy & McCann, 2011; Cradock, et al., 2009; Gerber & Gibson, 2009; Krumholz, 1990; Goetz, Dempsey & Larson, 2002; Cullingworth & Caves, 2009; Laplante & McCann, 2008).

Figure 5 summarizes those factors that can potentially influence the level of implementation of Complete Streets or bike and pedestrian infrastructure. Ultimately, the idea of Complete Streets comes down to the consideration of all users of the road. Therefore that type of language has been chosen in Figure 5 to refer to Complete Streets.

4.2 Unit of Analysis and Selection of Cases

The unit of analysis of this thesis is the metropolitan planning organization. As described previously, MPOs are in a crucial position when it comes to the funding of transportation projects. As they manage federal funds and guide regional decision making, they have influence over the types of projects that receive funding and that get implemented. By comparing two different approaches that both respond to multiple users’ transportation needs in one state, this thesis seeks to understand the organizational factors that shape the built environment in more depth.
**Figure 5**
Factors that Influence the Implementation of Complete Streets

1. MPO intention and commitment
   - a. Emphasis on "all users" in long-term plans
   - b. Relevance of "all users" in funding policies

2. MPO structures and practices
   - a. Staff assigned for bike/ped or to complete streets
   - b. Design of project review processes to foster consideration of "all users"
   - c. Awareness/attitude of staff and board of officials
   - d. Special training for staff

3. Actual Implementation and Funding
   - a. Types of funds available for projects that consider "all users"
   - b. Projects currently on TIP

4. Operating Context
   - a. Cities with Complete Streets policies or bike/ped focus
   - b. State support
   - e. Bicycle advocacy groups

**Comparability of NOACA and MORPC.** This research design is a comparative analysis of two Ohio MPOs: Northeast Ohio Areawide Coordinating Agency (NOACA, Cleveland) and Mid-Ohio Regional Planning Commission (MORPC, Columbus). Both MPOs operate under the same state regulations and have a comparable transportation budget. NOACA serves 2.1 million people in five counties while MORPC serves in its transportation planning function, 1.6 million people in two and a half counties. Both MPOs have 44 board members. In FY2011, ODOT allocated $39 million to NOACA’s
projects; the amount is divided up into $28,600,000 for the STP budget, $15,200,000 for the Congestion Mitigation and Air Quality budget, and $2,900,000 for Transportation Enhancement budget. For the same fiscal year, MORPC had an overall budget of $25,600,000 with $17,200,000 allocated for STP, $8,700,000 allocated for Congestion Mitigation and Air Quality Funding, and $950,000 allocated to Transportation Enhancement. NOACA had carried forward funds to fiscal year 2011 of $56,127,796 whereas MORPC had carried forward only $8,395,801 (Ohio MPO & large cities program). The staff size of the agencies varies significantly: MORPC has 66 employees and NOACA has 39 employees (NOACA homepage and MORPC homepage).

MORPC’s regional authority comes as a planning commission that was voluntarily formed before MPOs were implemented by federal legislation. Figure 6 shows the differences in spatial extent of MORPC in its function as MPO in a darker shade in comparison to its function as a twelve county regional planning commission (black outline). In its function as a metropolitan planning organization it directs federal transportation dollars to communities in Franklin and Delaware County. However, in its function as regional planning commission, other counties and localities joined MORPC to discuss common land use, energy, housing and environmental concerns. For instance, one of the board members interviewed is employed by Union County which does not receive transportation dollars but participates in conversations. At the same time, NOACA covers a 5 county region as a transportation entity but additionally is involved in the efforts of Northeast Ohio Sustainable Communities Consortium (NEOSCC; a 12 county region including the MPOs Akron Metropolitan Area Transportation Study (AMATS) and Eastgate).
Table I compares the two regions in terms of their transportation data and their commuting patterns. Looking at the commuter patterns, both MPO regions are very similar and comparable to the Ohio average. Eighty-three percent of people drive alone to work in the MORPC region and 82.6 percent drive alone in the NOACA region. One major difference is the travel time to work. Within the MORPC region, the average drive time is 21 minutes while NOACAs average is 24 minutes. The NOACA region is about 1 minute above the Ohio average while the MORPC region is about 2 minutes below the Ohio average.
Table I
Commuter Patterns in Central Ohio, Northeast Ohio and Ohio

<table>
<thead>
<tr>
<th></th>
<th>MORPC 2010¹</th>
<th>NOACA 2011²</th>
<th>Ohio 2011³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive alone</td>
<td>83%</td>
<td>82.6%</td>
<td>83.3%</td>
</tr>
<tr>
<td>Carpool</td>
<td>8%</td>
<td>7.7%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Bus</td>
<td>2%</td>
<td>3.2%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Walk</td>
<td>0%</td>
<td>2.1%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Others</td>
<td>3%</td>
<td>1.2%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Work at home</td>
<td>4%</td>
<td>3.2%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Travel time to work</td>
<td>21 minutes</td>
<td>24.2 minutes⁴</td>
<td>23.1 minutes</td>
</tr>
</tbody>
</table>

The State Context: Ohio Department of Transportation (ODOT). ODOT has organized itself into 12 districts. While MORPC is located within one ODOT district (6), NOACA has two districts (12 and 3) that serve its area. Within its planning division ODOT has a bike and pedestrian program. The program provides a “Cycling Smarter Guide”, an Ohio Bikeways Map and Design standards. ODOT also have a Bicycle and Pedestrian Accommodation policy (ODOT - Bike and Pedestrian Program Homepage). Furthermore, they provide one in-house transportation planner as the designated bike and pedestrian planner. The planner assists with data gathering and organizes informal meetings between the bicycle and pedestrian planner of the MPO’s to foster knowledge exchange. According to ODOT’s homepage, the transportation agency itself, in

¹ MORPC’s data are published in MORPCs MTP and are based on the U.S. Census Bureau American Community Survey 2006-2010.
² NOACA’s data have been derived from the homepage of the U.S. Census Bureau, 2011 American Community Survey for each of the 5 counties. As the data provided by the census bureau indicate the total number of people for each county in each commuting category, the total numbers were added up and the percentage was calculated based on the total number of workers 16 years and older.
³ The information were provided by the U.S. Census Bureau, 2011 American Community Survey.
⁴ The travel time to work is also based on the U.S. Census Bureau, 2011 American Community Survey for each of the 5 counties. The average time to commute to work for each county was multiplied by the total number of workers 16 and older. The numbers for all the counties were added up and divided by the total number of workers 16 and older.
collaboration with the MPOs, has invested $118 million in bicycle specific projects since 2002. It plans on investing $92.5 million over the next five years (http://www.dot.state.oh.us/Divisions/Planning/SPR/Bicycle/Pages/default.aspx).

Previous Studies on NOACA and MORPC that Focus on Complete Streets Policies. The Complete Streets Coalition (CSC) and Smart Growth America (SGA) published a report in August 2012 in which they rated Complete Streets policies throughout the U.S. MORPC’s and NOACA’s policies were the only policies in Ohio that were mentioned. According to the CSC and SGA, “Complete Streets policies formalize a community’s intent to plan, design, operate, and maintain streets so they are safe for all users of all ages and abilities” (p. 9). The report states the purpose of a Complete Streets Policy is to “change the traditional transportation paradigm from “moving cars quickly” to “providing safe access for all modes” (p. 8). In terms of the scope of their study, they focused on the strength of the language of adopted policies using “the Coalition’s ten elements of an ideal policy” as a benchmark (p. 12). The ten criteria were rated on a scale from 1 to 5 and afterwards weighted based on the relevancy of the criteria (p. 29). Each policy was then rated would have been able to potentially receive 100 points as a maximum.

Their study focused on the intent of the policy (must consider Complete Streets vs. may consider Complete Streets), the users and modes entailed, a best practice element and described next steps. The main criterion, weighted at 20 percent, was the consideration of all users. The Complete Streets coalition emphasizes the relevance and legitimacy of all different users in the following way:
“A Complete Streets policy must begin with an understanding that people who travel by foot or on bicycle are legitimate users of the transportation system and equally deserving of safe facilities to accommodate their travel. No policy is a Complete Streets policy without a clear statement affirming this fact, and it is therefore a requirement to include both modes – walking and bicycling – in the policy before it can be further analyzed” (p. 18).

The report stresses the importance of policies acknowledging different modes (walking, bicycling, and transit) but also of differences in age and abilities (p. 6). They are concerned with making places walkable for elderly or young families with kids or those with disabilities, but to also take into consideration the needs of freight traffic and emergency responders. Additionally, the ranking looks for projects and phrases that Complete Streets are part of such as “new construction only” or retrofit/reconstruction projects. Additionally, it looks at exceptions which specially emphasize a lack of loopholes and gives additional points for a specific approval process. Another factor considered is the jurisdictions that are encompassed by the policy; the policy needs to go beyond agency-owned roads and at least consider agency-funded projects. Furthermore, points are received for referencing design elements, acknowledging context sensitivity, and for establishing performance measurements. Lastly, the report looks at next steps outlined for the implementation (p. 15).

The CSC used a 100 point scale to rate the Complete Streets Policies. Out of 14 MPO’s with a Complete Streets Policy, the highest rated MPO policy received a score of 88 points (Miami Valley Regional Planning Commission). The seventh best policy scored 62 points. Some policies were in the range of 40 to 50 which can be considered medium good and the lowest rated policy received 20 points (Seskin & McCann, 2012, p. attachment p. 9ff.). NOACA’s Regional Transportation Investment Policy achieved a rating of 42.8 out of 100 points (Seskin & McCann, 2012, p. attachment p. 10/11) and can
be considered a mid-range policy. MORPC’s Complete Streets Policy achieved a rating of 77.6 points and receives special mention throughout the report (Seskin & McCann, 2012) It was the second highest ranked MPO policy.

Overall 37 city legislations within the U.S. were rated. The highest city scored with 83.2 points. The 10th strongest city received 57.6 points. The City of Cleveland achieved a score of 48.4 points for its Complete Streets ordinance. While Cleveland’s policy scores were mid-range, Columbus’ policy only received 15.2 points for its ordinance and is therefore on the lower end of city legislations (second to last). Table II shows the results of the rating for NOACA and MORPC as well as for the City of Cleveland and the City of Columbus.

NOACA’s Regional Investment Policy (RTIP) was not designated as a Complete Streets Policy, nevertheless, it received 8 out of 20 points in terms of considering all users and modes. It also scored high in terms of intent (6 out of 6) and on projects and phases (7.2 out of 12). Its rating is much worse for the implementation, measurements, specific designs, and addressing the network. Comparably, MORPC’s policy was drafted as a Complete Streets Policy. MORPC’s 5 page long Complete Streets Policy received a higher rating for intent, project and phases, exceptions, network, jurisdictions and context, as well as implementation measures than NOACA’s 50 page policy received. MORPC’s policy is lacking in term of design, measures, and implementation. Since MORPC received a higher rating compared to NOACA and was among the top policies of all the policies analyzed, this thesis starts by examining MORPC’s approach in order to contrast NOACAs bike and pedestrian planning approach afterwards.
Additionally, this thesis extends to focus far beyond analyzing the language of a policy. The Complete Streets Coalition was careful to point out that their report only focused on the strength of the language of the policy but that strong language can only be the first step (p. 14). Other factors mentioned are changes inside of the transportation agency that can be fostered through additional education opportunities for staff and community leaders, a new development process, a review and revision of design standards, and new performance measurements (p. 14). This thesis seeks to understand in more depth the impact of organizational practices and policies on the implementation of infrastructure that provide safe and efficient transportation choice for commuting residents.

### Table II
**Complete Streets Coalition - Weighted Scores of Cleveland (16f.), Columbus (18f.), NOACA (10f.) and MORPC (8f.)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MORPC</td>
<td>Complete Streets Policy</td>
<td>2010</td>
<td>6</td>
<td>20</td>
<td>12</td>
<td>9.6</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>77.6</td>
</tr>
<tr>
<td>NOACA</td>
<td>RTIP</td>
<td>2003</td>
<td>6</td>
<td>8</td>
<td>7.2</td>
<td>6.4</td>
<td>0</td>
<td>4.8</td>
<td>2.4</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>42.8</td>
</tr>
<tr>
<td>Columbus</td>
<td>Ordinance No. 1987-2008</td>
<td>2008</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4.8</td>
<td>2.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15.2</td>
</tr>
<tr>
<td>Cleveland</td>
<td>Ordinance No. 798-11</td>
<td>2011</td>
<td>1.2</td>
<td>16</td>
<td>7.2</td>
<td>12.8</td>
<td>0</td>
<td>3.2</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>48.4</td>
</tr>
</tbody>
</table>
4.3 Study Design

This thesis is built around two major methodological approaches. First, a document review seems most appropriate to get a better understanding of the intent and core commitment of the MPOs which are outlined in their plans and policies. Second, interviews with board members and staff can give a better understanding of the organizational practices, processes, and culture of the organization.

**Document Review.** Based on the background discussion of Complete Streets in the first part of this thesis, search terms were developed to review the long-term transportation plans, the policies, and the Transportation Investment Program (TIP) of both agencies with regard to their consideration of Complete Streets and bikes and pedestrians space (see Attachment A for list of search terms and Attachment B for complete review of documents). The search terms entailed the different users of Complete Streets such as “bicycle”, “pedestrian”, and “transit”. It also considered a variety of goals and benefits of Complete Streets such as “health” and “safety” but also “economic growth” considerations. Furthermore, design elements such as “sidewalks” or “roundabouts” or “speed bumps” were included (see Table III).

A major challenge while reviewing the documents was that NOACA generally is doing “multi-modal” and “bike and pedestrian planning” while MORPC is doing “Complete Streets planning”. That difference became evident as none of the NOACA documents mentioned the word “Complete Streets”, but instead the users and goals of Complete Streets planning could be identified. Those terms were typed into the search function of the Adobe PDF Professional Reader. As the words bicycle, bike, cyclist or
bicyclist all relate to each other, all the possible terms were looked up in the document.

The number of occurrences of the terms was tabulated. Afterwards each occurrence was reviewed and important quotes were copied into a summarizing table. This more qualitative approach will help to identify the strengths of the policies and plans in regards to all users of the road.

**Table III**

**Search Terms for Document Review**

<table>
<thead>
<tr>
<th>Users of streets</th>
<th>Design-Elements</th>
<th>Benefits/ Goals</th>
<th>Street-Classification</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Complete Streets</td>
<td>4. sidewalks; design review; (street) furniture; lightening; transit stops; Pavement; signage; greening/trees</td>
<td>6. public space</td>
<td>15. local context</td>
<td></td>
</tr>
<tr>
<td>1. (Bi)cyclists, bicycle</td>
<td>5. bike lanes; bus lanes; islands; neckdowns; curb; diet; roundabouts; crosswalks</td>
<td>7. safety</td>
<td>16. land use</td>
<td></td>
</tr>
<tr>
<td>2. bus, trolley, rapid transit, (health) line, riders</td>
<td>8. mobility</td>
<td>9. convenience</td>
<td>17. function</td>
<td></td>
</tr>
<tr>
<td>4. sidewalks; design review; (street) furniture; lightening; transit stops; Pavement; signage; greening/trees</td>
<td>12. climate change; vehicle emission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. bike lanes; bus lanes; islands; neckdowns; curb; diet; roundabouts; crosswalks</td>
<td>13. revitalization; growth; jobs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. public space</td>
<td>14. storm water management</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The documents that were reviewed for both organizations are listed in Table IV. As required by federal guidelines, both agencies have a long-range plan, some form of policy that implements the plan, as well as a short-term plan that lists specific projects’ funding structures (TIP). The purpose of a long-range plan is to outline the goals of the transportation planning efforts of the MPO and assigns strategy to the achievement of those goals over the next 20 years. The policy can be part of the strategy, but it is primarily concerned with describing the process of how money is allocated to local projects and how those projects are reviewed. There is a cross-over with the long-range plan to the extent that the long-term goals can become project review criteria. The
Transportation Improvement Program (TIP) lists the projects that the MPO is currently funding and refers back to the policy to clarify the project selection and prioritization process.

Table IV
Overview of Policies and Plans of NOACA and MORPC

<table>
<thead>
<tr>
<th>Policy/ Plan</th>
<th>MORPC</th>
<th>NOACA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies</td>
<td>- Complete Streets Policy</td>
<td>- Regional Transportation Investment Policy.</td>
</tr>
<tr>
<td>Transportation Improvement Plan</td>
<td>- Transportation Improvement Program 2012-2015</td>
<td>- Transportation Improvement Program (TIP) 2012-2015</td>
</tr>
</tbody>
</table>

Originally the number of occurrences of each search term was to be summarized in a table and compared; however, considering the significant differences in length of documents between both organizations, it seemed more applicable to work with word clouds. The advantage of word clouds is that they illustrate the most common words in a document based on their relative frequency. That allows for contextualizing and visualizing the importance of search terms within the entirety of the document. The webpage tagcrowd.com, created by Daniel Steinbock of Stanford University, was used to generate word clouds that visualize the word frequencies in each of the texts. After the word clouds were generated, the terms that identically matched the search terms were highlighted in orange and in addition other terms that could be considered in the context of Complete Streets were underlined.

The word clouds helped to set the context of how often the word “bicycle” or “Complete Streets” was used in comparison to the other most common words. In terms of
methods used to generate the clouds: the documents of both agencies were first copied
into Microsoft Word and then the files were uploaded to tagcrowd.com. The option to
only show 100 words was selected. “TagCrowd automatically ignores words such as ‘the’
as part of what it calls a stop list” (Cidell, 2010, p. 517). Cidell discusses the advantages
and disadvantages of content or word clouds: she points out the caveats of content clouds
being better for descriptive information rather than relational concepts. Content clouds do
not provide the context a word is used in (Cidell, 2010, 521). That weakness was
addressed by using word clouds only as a secondary method.

Another issue is that words that are displayed larger might distract from smaller
words. To a good extent this issue was addressed by highlighting the search terms
independent of their size. However, if the words were not among the 100 most common
words, they did not make it onto the word cloud. Another limitation is that pairs of words/
two-word phrases cannot be identified (Cidell, 2010, p. 516). This limitation actually did
influence the word cloud as it seemed that “Complete Streets” was not always written
consistently (Complete-streets) and the word “complete” is a common and frequently
used English word. Furthermore, when comparing two different content clouds, each
word is displayed in a size that is relative to the frequency it appears in a single
document (Cidell, 2010, 521; Paulovich et al, 2012). Comparing MORPC’s 5 page
Complete Streets policy with NOACA’s 50 page Regional Investment Program might be
an issue. The issue was partially addressed by only allowing the 50 most important words
onto MORPC’s Complete Streets policy word cloud and by primarily considering the
word cloud exclusively only for each document (and not to compare documents).
Because of the limitations of content clouds, this thesis applies the method of content clouds as a secondary method to the actual document review. As Cidell puts it “[…] they can usefully summarize information and allow a quick visual comparison across sites” (p. 521). It builds upon the strength of content clouds to visualize data and text in an interesting form and that allows identifying the relative importance of words to each other based on their frequency. Within the content clouds, the words are ordered alphabetically.

**Interviews.** While the document review was used to identify the MPO’s intentions and core commitment, it seems necessary to learn more about the organizational practices to assess the ability and capacity of the MPO to consider all users of the road. Therefore interviews with MORPC’s and NOACA’s staff were conducted as well as with two board members in each organization. The relevant people to interview were identified based on their position in the organization (such as the multimodal transportation planner). The primary purpose of the staff interviews was to gather insights into the document review process, to satisfy technical questions, and to better understand Complete Streets planning and bike and pedestrian planning. The interviews with board members served to analyze the political context within which the staff operates. Furthermore, to gain a third (more independent) perspective on NOACA’s Transportation for Livable Communities Initiative (TLCI), an interview was conducted with a local planner who had gone through the TLCI planning process several times. To gather more insight into the state context, an interview was conducted with ODOT’s bicycle and pedestrian planner in March 2013. Additional interviews were conducted with bicycle advocates in Cleveland and Columbus in March and April 2013. Interviews with NOACA’s bike and pedestrian planning staff
were conducted in late November of 2012. MORPC’s Complete Streets and bike and pedestrian planning staff was interviewed in person in December and January. Interviews with board members were conducted by phone in late February and early March 2013.

The interviews were structured by using an interview guide. Although each guide was similar in structure and topics, the guide was modified and focused depending on the expertise of each interviewee. The topics were generally grouped around the hypothesis indicated in Figure 5. The questions were generally designed as open-ended questions based on Patton’s (2002) instructions for semi-structured interviews (p. 343f.).

During the interviews it was apparent that NOACA focuses mainly on bike and pedestrian planning, leaving Complete Streets planning to local communities, whereas MORPC is focused on Complete Streets planning. Due to the difference between both planning approaches, interview guides had to be adjusted for each interview in order to be able to gather meaningful information. However, there was an attempt to ask similar questions and all the interviews were structured in the same way to ensure a minimum comparability between them. However, it was difficult to talk about what NOACA is doing in terms of Complete Streets since they are framing their efforts as bike and pedestrian planning. One control question during the interviews was “how would you describe Complete Streets planning in comparison to bike and pedestrian planning and to multi-modal planning”. There was a sense at NOACA that the concepts were very similar and could almost be used synonymously, while they were framed as essentially different at MORPC.
5.1 MORPC’s Intention and Core Commitment to All Users of the Road

2012-2035 Metropolitan Transportation Plan (MTP). The drafting of long-range plans is required by federal law. The plan is required to be updated every four years with a planning horizon of at least 20 years. "It provides the basis for how federal transportation funding is spent to improve highways, transit, freight, bikeways and pedestrian facilities“ (MTP, p. 1-2). Generally, the plans contain an analytical section that examines current conditions as well as a prognosis for future population and development requirements followed by regional strategies that address the goals. In the context of Complete Streets, the plans can cast light on the question of "How does the plan deal with the issue of all road users of all abilities and ages?" The long-range plan helps to identify the extent to which all users of the road are considered within the MPO’s goals and the strengths of the chosen strategies to implement the goals.
**General Plan Structure.** MORPC’s long-range plan, called MTP, contains seven main chapters. It starts by laying out the purpose of the plan by establishing goals and objectives. The second chapter contains an analysis of regional trends through 2035. The third chapter addresses six transportation systems: roadways, transit, freight, aviation, bikeways and pedestrian facilities. Afterwards, the fourth chapter is concerned with system management and safety. The fifth chapter deals with the issue of demand management, followed by the sixth chapter that explains the strategies and projects in terms of project evaluation and selection process. The last chapter is concerned with monitoring. In terms of Complete Streets, the first and the third chapter are most relevant.

MORPC’s plan is structured around 6 major goals that are divided into 16 measurable objectives. The 6 main goals concern (1) energy savings, (2) protection of natural resources such as habitat’s water quality and air quality, (3) economic opportunity, (4) sustainable neighborhoods, (5) collaboration, and (6) health, safety, and welfare related to increasing access to transportation choices (p. 1-8). The chapter 3 in its entirety (Transportation systems) cross references the goals to the outlined strategies. For instance, all six goals come together in the strategy "Work with local governments to encourage reduced need for vehicle travel through local regulations.” (p. 2-34) As none of the goals are directly related to transportation specifics, it puts transportation in service of economic opportunity, sustainable neighborhoods and so forth.

**Word cloud context.** As described earlier, the tag clouds were used to provide a context of the relevance of the search term within the entire document. For instance, among the potential goals for Complete Streets, only two of the five goals appear within the 100 most common words. Those goals are safety concerns and economic concerns.
The two words “safety” and “economic” are fairly well presented in the word cloud.

Health issues such as transportation, mobility issues, and emissions did not make it among the 100 most important words.

**Figure 7**

Word Cloud for MORPC’s “2012-2035 Metropolitan Transportation Plan”

Within the word cloud (Figure 7), the term “complete-streets” is very small which indicates that it is not as frequently used as other words such as bike, pedestrian, MORPC, project, or transportation. The words “pedestrians” and “bike” are actually much more present than the word “vehicle”. However, the word cloud has a lot of references to road lanes indicated by words such as “minor-widening”, “modification” or “lane-width”. The fact that they are talking about modification and lane width suggests that they are dealing with many urban streets that would lend themselves naturally to Complete Streets considerations.
The word cloud reflects the main transportation concerns that MORPC deals with. Although the word “lifelong communities” did not make it among the 100 most common words, and Complete Streets is mentioned comparably little, the location in the plan strengthens their relevance.

*Complete Streets and Lifelong Communities.* The concept of Complete Streets is considered throughout the document as a crucial strategy to achieve the six major goals. It is part of the bikeway strategies (p. 3-49) and pedestrian strategies (p. 3-55). The idea of Complete Streets is introduced together with lifelong communities:

> MORPC’s efforts in the Complete Streets realm are part of a broader effort to foster Lifelong Communities that allow residents to enjoy a high quality of life throughout their lifespan. Over the next 40 years, central Ohio will undergo dramatic changes in demographics (a population that is growing, aging and more diverse), with resulting changes in housing demand, the workforce, and costs related to transportation, the environment, and health (p. 1-7).

One of the motivations for MORPC to foster life-long communities is that “at least one-third of the region’s population does not drive because they are unable due to age, economics, health or simply choose not to” (p. 3-45). Accordingly, the plan makes a strong case for a “convenient” and “safe” bike and pedestrian network. During the interviews, one of MORPC’s board members recalled that originally the combination of both concepts was not chosen intentionally, “but as we worked and got more into it, we saw the connections.”

As MORPC’s staff members were intimately involved with drafting the policy and the plan, they were able to give some additional insights. They made a very strong case for lifelong communities based on the abilities of different age groups and the disadvantages of being auto-dependent. The approach of combining lifelong communities
with Complete Streets created a strong support base. The staff members explained that they provided data to local jurisdiction that basically told them: “if you keep doing what you did, that won’t have a good ending” (Active Transportation & Safety Manager). As population is aging and people have a hard time to get around in car-dependent neighborhoods, the officials saw the potential impact of population decline in their communities.

In terms of the effect of that approach, the other two planners gave some insights:

> The idea of life-long communities really resonates well for a lot of our members. They can personally relate to it or they know people whose needs change as they get older. A lot of people like where they live, but then they run into issues of getting around. The members reacted well to that concept - I think it is a larger target that appeals to more than just bike advocates. Complete Streets is just not super narrow, like we need stuff for bikers.

The commitment to Complete Streets is indicated by goals such as “100 percent adoption of Complete Streets or similar polices by communities by 2035” in order to “create sustainable neighborhoods to improve residents’ quality of life” (p. IX). MOPRC’s target is to add “at least 10 miles of bikeway per year” which would add a total of 800 miles by 2035 and to “increase the percentage of people within 3/4 miles of a bikeway in the urbanized area from 62 percent to 80 percent by 2035” (p. 1-9). In terms of the bikeway system, MOPRC differentiates between three types of connectors: regional, short, and local (p. 3-48).

The pedestrian system in general is treated as the common denominator of all transportation networks as every trip begins and ends with a pedestrian trip (p. 3-54). Pedestrians are approached differently than car drivers as is shown through the "Pedestrian Quality of Service” studies rather than car based “level of service” studies. While the latter mainly looks at roadway infrastructure, pedestrian quality of service
looks at the environment as well (p. 3-56). MORPC’s board member that is highly involved in equity issues, made a strong case for the needs of all kinds of different users of the road:

Well, you know Complete Streets are really important for those that use walkers, elderly population, and families with strollers, disabled. That all relates to lifelong communities. [...] And those with disabilities so they have a safe way to travel and not get bumped over by a car on the road. Where they previously had to be in the street, now they would not have to be in the streets. That’s the benefit of Complete Streets; it addresses a variety of pedestrian uses and then of course you have bike lanes and cars and buses. You have them separated so that each can function in their own ways.

She even pointed to the fact that there is more advocacy currently supporting bicycle issues and that pedestrians need to be considered an equal amount. One of the leading regional bicycle advocates confirmed: “Pedestrian concerns are huge for us! Before we are bikers, we are walkers. We are dominantly bike advocates but if there is a pedestrian issue on the agenda, we always include that into our comments.”

Land Use Patterns. The connection between lifelong-communities and Complete Streets points to local governments having found a good footing with the MPO. While their land-use decisions impact communities, regional transportation spending does the same. Their transportation strategies heavily relate back to land use strategies as they advise local communities to revise their zoning codes

Development patterns directly impact the transportation system both in terms of accessibility and capacity. The way land develops, including densities, proximity to transit, and accessibility to roadways, is just as important as the type and location of development that occurs (p. 2-1).

Therefore the plan encourages "weighing local decisions in the context of regional functionality. The emphasis to incorporate transportation amenities as part of local development considerations, such as sidewalks, transit accessibility considerations, and
bikeways helps to better disperse the concentrated need for mobility that the regional system delivers. (p. 2-5)

Talking to the board member gave insights into the partial difficulties when it comes to land use issues among the board:

*MORPC doesn’t have many teeth. We have transportation dollars and we could definitely do a better job in guiding development through transportation dollars. We can encourage sustainable development, land-use development and Complete Streets but it is difficult to enforce because of the home-rule in Ohio. If we do not come up with a plan how do we ensure that we have enough areas to grow food and grain. So the question is how we can promote better land-use decisions. We are working on a regional plan right now.*

That means, although MORPC cannot influence local decisions, they can take a stake as a moderator by bringing together different communities to talk about the issue. Considering that MORPC is perceived as more than just a transportation entity, it might help them to have that position within the region. One of the board members pointed out that Union County is not even a member of the transportation side of MORPC, but they are participating and engaging in the regional consensus finding. He said: “They are primarily doing transportation planning but where they are really making a difference is in terms of working together as a region. That’s the value of MORPC that we can discuss regional issues.” That was confirmed by the other board member, “MORPC local governments get together and decide on issues that are of cross-jurisdictional significance. It is also the entity that deals with roads, bridges, rails and transit, as well as environmental, water and air quality, and land-use planning.”

Concluding, MOPRC’s core commitment to Complete Streets is closely tied to local interests through the concept of lifelong communities. In theory there is a sense of
regional collaboration when it comes to transportation in order to create a win-win situation for established communities.

**MORPC’s Complete Streets Policy.** Drafting the policy. MORPC’s Complete Streets policy was adopted in 2010 as a replacement for the Routine Accommodation Policy that had been in place since 2004. MORPC’s planners were careful to point out that they did not want to just change some words in the old policy, but to draft a truly valuable Complete Streets policy. As MORPC’s Senior Engineer put it:

> The new Complete Streets policy is much stronger and broader. Routine accommodation talks about bikes and pedestrians, but not of the idea of different users such as motorcycles, kids, wheelchair drivers, older people - we really wanted to address the needs of people with all different kinds of body abilities to use the road.

Her quote illustrates a significant shift of focus from modes of transportation to people or ‘users’ of the road. According to MORPC’s planner, they would draft and re-draft the policy, meet with local jurisdictions one on one, and work with a group of 24 stakeholders, including state-agencies such as the Ohio Health Department and ODOT. The process seemed to be designed for consensus building among different interests groups.

The Active Transportation & Safety Manager recalled: “Of course it was very time consuming and sometimes very political. Especially, in the context of scarce funding it sometimes can be scary for local communities.” The meeting with board members, local engineers and council men included cross-section scenarios of Complete Streets for different types of communities. MORPC’s planner pointed out that the biggest concern to overcome were the costs and the notion that Complete Streets would be more expensive to implement.
The interviews with both board members showed appreciation of the outreach work that was done by the staff members. “The staff did a great job in introducing the concept of Complete Streets and presenting it to us. Following, the Complete Streets policy development process, some members have adopted land-use strategies that align with the ideas of Complete Streets.”

However, one of MORPC’s board member was careful to point out that it was not just the efforts of staff members. They had to receive a request to update the Routine Accommodation Policy by the citizen advisory committee first before being able to start the process. Additionally, the idea of Complete Streets was brought in by an outside expert that gave a presentation on Complete Streets during one of the early task force meetings. That eventually convinced the working group to follow the path of Complete Streets and set incentives for local project sponsors to consider all users of the road.

Asked if she would redraft the policy MORPC’s Active Transportation & Safety Manager said she would not change anything and in fact, the original review after one year was extended to a couple years out. She said: “I think it allows enough flexibility to be creative as long as everybody on the street is safe. We really made sure that we designed a collaborative process.”

The Policy and General Document Structure. MORPC’s Complete Streets policy was established in March 2010 and is therefore still fairly young. The policy addresses within 5 pages the background of the policy, a definition of Complete Streets, the vision statement and purpose, as well as a short statement followed by the applicability and requirements of the policy. Afterwards some recommendations for local jurisdictions and
the transit agency are included as well as a brief section about the implementation of the policy and evaluation process.

*Analysis of the Complete Streets Policy.* Being based upon the Routine Accommodation Policy, the Complete Streets Policy continues the tradition of trying to integrate bike and pedestrian facilities into all transportation projects. The policy actively relates the multi-modal transportation system to sustainable land use developments and understands Complete Streets as a tool to ensure job growth and improve public health and fitness (p. 1).

The strength of the Complete Streets policy is the requirement that all users of the roads of all ages and abilities are to be considered within all projects (p. 1 and 4): “Every project shall ensure that the provision of accommodations for one mode does not prevent safe use by another mode (e.g., a bus shelter should not block the clear walking zone on the sidewalk)” (p. 4)

The policy also has a provision that asks for the consideration of street furniture as “part of all projects as long as they do not impede any user” (p. 4). To ensure compliance with the policy, step 2 of the project review process asks local project sponsors to provide a statement that “their project will comply with the Complete Streets policy by accommodating all users as reasonably as possible” (p. 2).

What does that mean practically? For instance, for public transit facilities there is an emphasis on including sidewalks, bicycle connections, and bike parking (p. 4). The policy also lists suggestions for traffic-calming elements such as landscaping, street trees, and narrowing lanes (p. 4) without losing a sense for context sensitivity. The policy has some
language that distinguishes between rural areas and urban settings and the different requirements for streets. While paved shoulders are considered sufficient in rural areas, there is a preference for sidewalks and bike lanes in urban settings (p.3). The policy specifically states that “It is important to note that Complete Streets may look different for every project and road type“ (p. 3).

Figure 8
Word Cloud for MORPC’s “Complete Streets Policy”

Word Cloud. Within the word cloud (Figure 8), “Complete Streets” is among the four most used phrases of the document. The word cloud also indicates that the policy is less specific than the MTP when it comes to distinguishing the different users. Words such as “bicycle” and “pedestrian” did not make it onto the 50 most common word list. However the word “users”, which is most likely used in the context of “all users”, appears in the word cloud. Additionally, the words “bus-riders”, “transit” and “freight haulers” made it onto the list. The word cloud points to the fact that the policy is less specific than the plan in terms of specifying goals of Complete Streets as well as design elements. However, when it comes to design elements, MORPC developed a Complete Streets toolkit that is much more specific.
**Complete Streets Toolkit and Educational Component.** In January 2010, MORPC received an Ohio Department of Health grant to write an extensive toolkit that provides model policies for urbanized, suburbanized, and rural communities. It also provides a variety of examples for street modifications.

The Bike/Pedestrian planner pointed out the primary benefit of the toolkit:

“*A lot of engineers aren't as well educated about Complete Streets so the toolkit has some checklists - those can be helpful in that way - they need to be applied to the specific site. I think the toolkit is helpful to give people a wide range of looking at things, if people do not travel a lot that can give important insights.*”

The involvement of the Ohio Department of Health was seen as an indication of the overarching interest in Complete Streets. Part of the development of the toolkit was a short video. As a result of the video, a series of workshops with communities have been conducted and more have been requested. However, being asked the question of how much they think the members are using the Complete Streets toolkit, MORPC’s staff could not really answer,

“It is one of those things where it depends on the members to use it and to implement things […] Personally, I think it happens a lot in planning, it always depends on having the necessary information but much more it depends on the political will to do something. We give information, if there was only the political will. Of course, the information is necessary, but I personally think that political will is more important. If one of our members doesn’t have the political will, the toolkit doesn’t help much.”

The regional bicycle advocate was a little bit more critical with the policy and the toolkit. She said:

‘*It’s not really successful’ - It’s not mandated. It’s a suggestion. If you don’t have something you need to do than people don’t do it. We are not in that culture yet that it is a natural thought to include bicycle and pedestrian infrastructure. If it was mandated, people would get into that thought. I wish it was stronger and more aggressive.*
She points to a valid critique, having a policy and a toolkit does not necessarily by itself increase the number of actual Complete Streets implemented. Therefore MORPC went through a process of restructuring their review process. Up to this point not many projects have actually followed the standards of the new review process since most of the projects already underway in 2010 were grandfathered in.

**Review Process and staff assistance.** When projects apply for funding, they sign an agreement to comply with the Complete Streets policy. For the application, the project description can be fairly imprecise, i.e. “we are going to widen the road from 2 to 3 lanes” or “we are going to improve the signals”. The decision on the project is based on whether it is included or identified as a problematic area in MORPC’s long-range plan. Once the project receives agreement for funding, the project sponsor starts the design process, at which MORPC gets involved. That means, the actual review process happens after the project has been admitted for funding. “Pretty much always we respond that they can do a better job and we come up with some suggestions. We are never going to say 'you have to have', it is always phrased like 'should consider' depending on the context” (Bike/Pedestrian planner).

There seems to be a sense of collaboration. As the Active Transportation & Safety Manager pointed out, jurisdictions sometimes make up to 3 or 4 suggestions that MORPC’s staff reviews. The Senior Planner explained the three potential outcomes:

*First, if they completely agree with our comments, that's great! Second, if we are satisfied with their reasoning to do it different, they'd be able to go forward. Third, and that has never happened, if there is a conflict, we would need to go to a higher level than the staff. The policy committee would need to make the decisions - pretty rare - it hasn't happened yet.*

54
The third option is referring to the appeals-process. If project sponsors completely disagree with the review process they can appeal to the policy board. The appeals process enables the policy to get around without exemptions. Rather than having an extensive list of exemptions the board members agreed to collaborate and to seek dialog.

Although local jurisdictions “need to do Complete Streets” as MORPC’s Senior Engineer puts it, she was very careful to point out that not every road is required to have a bike lane or sidewalk. She explained, that for instance, rural roads might just have wider shoulders or sidewalks only on one side. “We want to keep our members happy, you would want to work with people, and we do point out existing standards. Sometimes engineers or city officials do not remember those, so it is helpful to point them to federal and state regulations.”

5.2 Funding Issues and Actual Implementation

_Funding pots used to finance Complete Streets._ The Complete Streets Policy allows MORPC to make STP funds available and those funds are regularly used for complete projects. Rather than funding sidewalk-only or bike path-stand-alone projects through limited TE/ TA funds, projects have to consider all-users within STP projects which allows for a more integrated approach. “For instance, if somebody is going in with a road-widening project, if there is an opportunity to do improvements for bikes and pedestrians, they need to consider it” (Senior Planner). MORPC’s Active Transportation & Safety Manager stressed that Complete Streets are about the same price as other road projects if there is no need to purchase new right-of-ways.
Another funding source frequently pointed out by the national Complete Streets coalition are the CMAQ funds. According to MORPC’s planners, those funds are more used for brochures to promote car-pooling, biking, and walking or for signalization projects at intersections to reduce air pollution.

Because of the integration of Complete Streets with STP funds, MORPC’s planners weren’t too worried about the spending cuts for TE/TA. As the Senior Planner put it:

*It definitely is disappointing that the TA funding went down but I think Complete Streets policies are more systematic, instead of single projects through TA funds. In the end it results in a more comprehensive network - some of my belief is that advocates are so focused on TE but bicycles and pedestrians are really eligible through all other funds.*

While there was a more positive perception among MORPC’s staff, one of the board member was a little bit more worried: “STP funds are decreasing money for all types of infrastructure are decreasing. Really, money is the biggest obstacle to implement any infrastructure and funded projects.”

**Implementation of Projects.** There are different opinions among MORPC staff to the satisfaction of Complete Streets projects implemented up to this point. Overall, about 20 to 25 projects went through the review process. As the policy was adopted in 2010, all the pending projects were grandfathered in which explains the smaller number of actual Complete Streets projects. One limitation to the amount of projects considering Complete Streets elements is that MORPC cannot require locally funded projects that do not use MORPC funds to consider Complete Streets. The Senior Engineer remarked that they usually write comments like ‘it’d be nice if…’ but they cannot be forceful. MORPC’s planners pointed out that usually city staff and planners are very familiar with the concept of Complete Streets but that it “comes down to city council”. Originally, MORPC staff
would offer workshops for city managers, council members and engineers. However, their current staff capacity and resources were prohibitive to continuing those efforts.

Another limitation to the widespread implementation of Complete Streets was asserted by one of MORPC’s board members. He explained that the concept of Complete Streets had been well received in Columbus and Franklin County “since it is a more urbanized approach” but that for instance the communities in Union County were less interested in Complete Streets. He said “[…] what we definitely could do is promote the program more to make communities more comfortable with the policy and with adopting their own policies.”

However, being asked about bicycle planning, one board member explained the value of it for their county in recreational terms:

Yes, absolutely. MORPC did a great job. We are working on a county wide multi-modal plan. MORPC has promoted that and we received funding to work on the plan. A lot of leadership comes from MORPC. I am excited about it and I am a bike rider, so we are working on it.

**MORPC’s Transportation Improvement Program (TIP) 2012-2015.** Reviewing the projects on the TIP can give insights into which projects actually will receive funding. The TIP is federally required and is used by MPOs to schedule projects and funding for a four-year period. Therefore this section pays close attention to MORPCs TIP and the amounts of money scheduled to be spent on projects with bicycle components. MORPCs TIP starts by explaining the TIP development and public involvement process. The section is followed by a status of projects from State Fiscal Year (SFY) 2008-2011 TIP (Chapter 3). Afterwards, MORPC’s TIP lists expected financial resources (Chapter 4) and
outlines the project selection process (Chapter 5). Before they provide a detailed project listing (Chapter 8), they summarize the projects and the fiscal balance (Chapter 6) as well as outline other federal and MORPC requirements such as Air Quality conformity, Complete Streets policy and environmental justice (Chapter 7). At the end of the document, a summary map with project locations is provided as well as a list with projects that have a bicycle and pedestrian component.

**Project Prioritization.** The TIP refers back to MORPC’s Complete Streets policy as a requirement to receive funding (p. 69). Accordingly MORPC establishes a selection process to “determine which projects can be achieved within fiscal balance with the limited resources” (p. 48). A separate document called ‘Principles for Managing’ lays out criteria for the project prioritization.

Within their principles, they indicate that funds are sub-allocated how they best meet the needs of the metropolitan area and not based on a formula (Principles for Managing, p. 2). Furthermore, funds are given with priority to urban areas since they are the basis for the allocation of funds to MORPC:

*The STP federal funds attributable to MORPC are based on the population in the Columbus and Delaware urbanized areas. No funds are attributable to MORPC based on the population in the planning area that is outside the U.S. Census Bureau-defined urbanized areas. Consequently, as long as there are unmet needs inside the urbanized areas, MORPC will allocate funds for projects only within the adjusted urbanized area boundaries. Exceptions include studies that are regionally significant and projects, such as ridesharing, which reduce travel in the urban area (p.2).*

Within that condition, projects are awarded points for ensuring a sustainable development pattern and including Complete Streets elements (p. 6). Another self-imposed limitation is that “project funding in any year [is limited] to 25 percent of annual funds available” (p. 7) MORPC establishes such a rule to correct for projects that are not
able to achieve their obligations in a given year. The next section looks into more detail of projects with bicycle components that are scheduled to receive funding in SFY 2012-2015.

Projects with Bicycle Components. MORPC provides in its report a summary of projects with primary bike components (p. 162 - 166). The TIP spells out 72 projects with bicycle components that are scheduled for the SFY 2012-2015. Most projects can be found in the category multi-use path. With over 40 projects in that category, MORPC plans to add 36.58 miles over the next 4 years to its network. Additionally, seven projects that include a bike lane will add 9 more miles of bikeway. A third category is fairly imprecise; it is called “Yes-type to be determined” - 10 projects fall into that category and are expected to add another 25.55 miles to the bicycle network. The phrase “type to be determined” most likely addresses MORPCs review process. It indicates that the project sponsors and MORPC have not yet agreed on whether a bicycle lane, a track or a sharrow, or other solutions might be best for the specific project. The project description indicates “Minor Widening/ Multi-Use Path) (p. 163).

Despite the majority of the projects being focused around multi-use paths and bicycle lanes, other projects include a widening of the outside lane (1) or shoulder (5) or marking with sharrows (1). Furthermore 2 projects are concerned with bicycle racks. All in all, MORPC’s projects would add 88 miles of bikeway to the network over the SFY 2012 to 2015.
Table V  
MORPC’s Spending on Projects with Bicycle Components in SFY 2012-2015

<table>
<thead>
<tr>
<th></th>
<th>MORPC spending on projects with bicycle component</th>
<th>Total amount allocated in SFY 2012-2015</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP-M</td>
<td>$48,852,000</td>
<td>$77,665,970</td>
<td>63%</td>
</tr>
<tr>
<td>CMAQ-M</td>
<td>$17,388,000</td>
<td>$36,953,577</td>
<td>47%</td>
</tr>
<tr>
<td>TEA-M</td>
<td>$6,835,000</td>
<td>$9,886,678</td>
<td>69%</td>
</tr>
<tr>
<td>STP-S (Managed by ODOT)</td>
<td>$-</td>
<td>$111,407,814</td>
<td>0%</td>
</tr>
<tr>
<td>TEA-S (Managed by ODOT)</td>
<td>$-</td>
<td>$5,808,000</td>
<td>0%</td>
</tr>
<tr>
<td>OTHER MORPC (combination of previous)</td>
<td>$22,840,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUM (without Others)</td>
<td>$73,075,000</td>
<td>$124,506,226</td>
<td>59%</td>
</tr>
</tbody>
</table>

Looking at the counties that the projects are located in, 60 projects are located in Franklin County, while 10 are located in Delaware County, and only one each in Licking County and Fairfield County. Since MORPC’s region as an MPO only includes Franklin County and Delaware County and small parts of Licking County and Fairfield County this is not surprising. However, it is interesting that between Franklin County and Delaware County there is a clear preference for Delaware County.

Looking at the financing structure of the TIP (Table V) it is remarkable how much of MORPCs money gets spent on projects with a bicycle component. It needs to be clarified though that a lot of MORPCs road-widening projects (major or minor) included
a bicycle component. That has two implications. First, not the entire $48.85 million of STP-M funds were actually spent on the bicycle component of each project. Some of the money was spent on vehicle infrastructure and other on pedestrians. For that reason some of the ODOT projects were not counted as they concerned bridge constructions and highway exit ramps. It is worth pointing out the ODOT projects that agreed to include pedestrian and bicycle infrastructure, but the total amount of those projects would completely distort the final outcomes.

Second, since the total dollar amount does not account for the specific dollars spent on bicycle components, the number needs to be read in a different way. For instance, 63 percent of the money that is spent within the STP-M category actually funds projects that include a bicycle component such as a cycle track or multi-use path or bike lane. The similar argument applies to the CMAQ-M as well as the TEA-M funds. Out of the Congestion Mitigation and Air Quality fund, 47 percent of the money is spent on projects that include a bicycle component. Out of the $9.9 million spent on transportation enhancement and alternative funds, 69 percent of the money is spent on projects that include a bicycle component. Although, the total dollar value is not representative of the money that is spent specifically on bicycle infrastructure, it indicates the impact of a Complete Streets policy in terms of scope. Without a Complete Streets Policy having been in place most likely, no STP-M funded projects would have included a bicycle component.
5.3 Political Context and Organizational Structure and Culture

**Perceptiveness of members to the topic.** During the interviews with MORPC’s staff there was a strong indication that all board members supported the policy but that urban communities definitely had a greater stake in the policy.

“When you have 44 different government members involved, it gets very diverse. You get a couple more strong voices but I would not say that Columbus was primarily pushing it. Townships are usually represented by their counties - that actually might make a difference.”

MORPC’s board member put it as:

“I think that overtime as people get to understand what is meant by Complete Streets, they are more ok with it. You will find that smaller communities such as townships often have a hard time to come up with matching funds. And well, in the rural areas it simply doesn’t always make sense. Some areas, well suburbs, simply do not want sidewalks. They really like that idea that they do not have sidewalks; they do not see it as a big issue.”

One of the challenges for local urbanized communities is to retrofit existing streets without buying more right-of-way, which can become expensive. MORPC planners found that many communities focus on auto-level service rather than on all users of the street and that often times the maintenance of specific infrastructure is a concern - like for instance the liability in the case of an accident on an unplowed bike path.

Another approach of MORPC is to encourage local communities to adopt their own policies. The Senior Planner explained that they are sometimes approached by smaller cities to help them with specific issues to retrofit streets or to design intersections. He also pointed out that there would definitely be help for drafting a Complete Streets policy in their agencies.
Limits to the implementation of Complete Streets perceived by the planners. The MORPC planners were all asked about what they perceived to be the limitations to the implementation of Complete Streets. Reoccurring topics were the political will and the issue of staff-turn-over at the local level. They reported hearing a lot of local jurisdictions pointing out that their engineers and planners ‘always’ think about that kind of stuff - but what if those people leave for a different job? MORPC’s Senior Engineer pointed out the necessity of codification of Complete Streets considerations through local policies.

Another issue that was brought up was the lack of willingness to change the flow of traffic. As the planner pointed out, the culture of driving and the low densities in Ohio have caused it to be more difficult to do “outside-in planning” in Ohio than for instance in California. Outside-in planning means, according to the Senior Planner: “They start with the sidewalks, add tree lawns, plus bike lanes and the rest is used for cars. In our communities we too often hear the 'have to have' that much car room argument.”

Furthermore, the funding issue and slow implementation were brought up. There are cuts in transportation funding that make it more and more difficult to argue for more diverse public transportation options.

Staff Capacity. According to the Active Transportation & Safety Manager, all departments in one way or another have to deal with the topic of Complete Streets. Although she was careful to point out that her team of 4 staff members mostly focuses on Complete Streets. There also seems to be some limitation to the current ability to go out and give community workshops - that was partially attributed to the fact that MORPC
does not have a new director yet, so the planning section wanted to wait for the new direction.

**Relationship with ODOT.** It seemed like the relationship between ODOT and MORPC was perceived as being positive from MORPC’s side. It sounded like the original steering committee that worked on the policy had strong involvement from ODOT. As the Active Transportation & Safety Manager put it:

> We were lucky back then because it was still a different state government. ODOT’s administration back then was really interested in multi-modal and Complete Streets planning. Now, ODOT is more traditional again and less interested in Complete Streets planning. ODOT does have a Routine Accommodations Policy though. Their policy is mainly concerned with Peds and Bikes only and not with the other modes.

MORPC’s planner mentioned that it would be nice if the state would adopt its own policy. There was a sense that, especially in the city of Columbus, ODOT was being very context-sensitive and took some effort to connect neighborhoods and make bridges over the freeway more bike and pedestrian friendly. Also, in the case of Columbus, a strong push from the local community helped.

**Conclusion.** Overall the previous discussion illustrates how MORPC, as a regional planning organization, was able to achieve agreement among its members to adopt a Complete Streets policy and how it enfolds its impact. First the policy restructured the project selection and review process. The mandate to consider all users of the road for every transportation project enables the MPO staff members to negotiate with local project sponsors. The result is reflected in the TIP by a significant amount of STP-funded projects (69 percent) that include a bicycle component.
CHAPTER VI

THE NOACA APPROACH: BIKE AND PEDESTRIAN PLANNING

Although the National Complete Streets Coalition considered NOACA’s RTIP a Complete Streets policy, looking closer at NOACA’s policies, plans, and practices, it seems more appropriate to talk about the RTIP in terms of Bike and Pedestrian Planning. NOACA’s policies and plans do acknowledge different modes of transportation such as bicycling and walking, however, those modes are not framed within the Complete Streets and “all users of the street” context. As it will be shown, the difference between modes and users has significant implications for how planning is done and funded.
6.1 NOACA’s Intention and Core Commitment to Bike and Pedestrian Planning

Connection 2030 Review. NOACA’s Connection 2030 long-range plan was adopted in 2008 and updated in 2009. The document starts by giving a background of the regional context such as population, employment, and other factors. Chapter 2 reviews federal requirements and how NOACA intends to meet those. Chapter 3 lays out the ten major goals and assigned strategies to achieve each goal. It is followed by a chapter about so called “technical issues” that are concerned with “Travel Demand Model Updates”, the regional transportation system, the congestion management system, and the pavement management system. Chapter 5 is concerned with “planning issues” (such as transit, bicycle, and pedestrians), the “Transportation for Livable Communities Initiative”, and transportation enhancements. Chapter 6 lists specific projects while Chapter 7 is concerned with financial impacts, environmental justice, and air quality conformity. Chapter 8 addresses issues of public involvement.

A More Balanced Transportation System. Goals 3 and 4 in the long-range plan appear to be most relevant in the context of Complete Streets. Goal 3 states:

“Preserve and improve the efficiency and safety of the existing transportation system, prioritize elements of the system identified as significant and ensure the system serves homeland security.”

Goal 3 specifically mentions, as a strategy, to “continue bicycle and pedestrian planning efforts” and to “continue promotion of ridesharing, bicycling, walking, and transit as alternatives to single occupancy vehicle use“ (p. 35). Many of the approaches geared towards pedestrian and bicycles relate to the education of drivers and cyclists as well as maps and data collection. Those efforts encompass updating the regional bicycle
plan, assisting local governments with their planning, and providing educational opportunities for local governments and the public to increase their understanding of the role of bicycles as a transportation choice.

The plan also uses bicycle data for the year 2006 in comparison to data from 1997. For instance, “bicycle lanes increased five-fold, from eight miles to 40 miles” and “Multipurpose paths increased about 90 percent, from about 105 miles to nearly 195 miles.” (p. 54) Furthermore the plan refers to 5 major bicycle planning goals related to the regional bicycle plan. The goals are (p. 86):

1. Create a regional network of safe bikeways and supporting facilities
2. Increase bicycle planning and provision of facilities at the local level
3. Increase bicycle ridership in the region, in particular, for transportation.
4. Promote safer bicycling in the region and reduce accidents.
5. Encourage involvement of the private sector and other support for bicycling for transportation and recreation.

The strongest goal when it comes to multi-modal planning and funding infrastructure is goal 4 as it refers to transportation system balance.

\[
\text{Goal 4 - Establish a more balanced transportation system which enhances modal choices by prioritizing goods movement, transit, pedestrian and bicycle travel instead of just single occupancy vehicle movement and highways.}
\]

The strategies to achieve a “more balanced transportation system” include the continuation of the Bicycle Advisory Committee, the identification of priority bicycle routes, and the encouragement of local committees to do their own planning. Through the bicycle advisory committee, NOACA formally includes bicycle issues into the project review process for funding. However, NOACA’s take on bicycle and pedestrian issues is best summarized with the following quote:
Significant challenges remain in promoting a balanced system. Some elements of the public continue to think of transit as an “only if you have to” option and generally considers bicycle and pedestrian modes as purely recreational. Significant education efforts will be necessary to overcome these preconceptions (p. 36).

Goal 7 acknowledges the importance of the appearance of infrastructure for core communities. “Roads, sidewalks, bike paths, and transit stations/stops in decline and disrepair decrease the vitality and desirability of their surroundings” (p.44). Although the plan shows awareness, the strategy is disappointing:

“Consider giving additional priority to projects for urban core communities” (RTIP, p. 45).

Elderly Population and Land-Use. The idea of Complete Streets relates to users of all ages. The plan only marginally deals with the issue of the elderly population. It points out that as people are getting older they tend to be more transit-dependent but the “cost of providing such services in low-density environs will increase” (p. 6) The following quote illustrates the situation:

As shifts in job growth occur, minority and/or low-income populations are isolated from employment. The elderly and disabled living in auto-oriented communities cannot easily be served by transit. Therefore, populations are now isolated from critical destinations, or will be when one of these factors is missing (NOACA p. vi).

But that does not apply to all senior populations equally. Although there is awareness about the issues and problems at play, there is no real suggestion about how to deal with the topic in a meaningful way. Goal 5 somewhat address the issue by mentioning the strategy of prioritizing “transportation projects that provide direct service to the transit-dependent and low-income individuals” (RTIP; p. 39). However, even when talking to representatives of the board, it became apparent that the elderly population was
not one of the major concerns and that there was low awareness to the issue of increasing elderly population considering most baby boomers are nearing retirement.

Within a lot of our townships, walkability is not designed and it makes it an increased cost for us to consider it. I am not sure how we are going to face it. I have been mindful of it. Where else can we go with the seniors... You know, some local communities approved senior citizen housing clusters. We cannot have a hand in those local processes, but why did they do that so far away from all amenities. We have a lot to do in informing local officials with their decisions.

While one of the board members showed some concern, the other was more reluctant to buy into the issue labeling it as a more conservative approach:

I am not aware of it. (PAUSE) I guess it is more a political approach to take. Legislators are more likely to be prone to elderly population. I would think that especially in Ohio, as a conservative state, ‘seniors’ are a good argument. That won’t work here because bikes and environmentalists are just not the majority of voters. I am sure that if you say ‘Complete Streets’ are a package for senior citizen; legislators are more likely to follow the advice. Cleveland tends to be more liberal and not as conservative as the state. Again, it is a bigger and broader approach; people tend to see bikes as minority.

One board member pointed to the issue of local land use decisions, which is a common theme for Complete Streets concerns. It is addressed with goal 9 which calls for investments “toward efficient, compact land use development/redevelopment that facilitates accessibility, saves infrastructure costs, preserves and enhances farmland, forests, and open space, and enhances the economic viability of existing communities within the region” (p. 48). The main strategy of achieving that goal is the Transportation for Livable Communities Initiatives that assists communities with their planning efforts.

NOACA, as the Metropolitan Planning Agency for Northeast Ohio must explore options for addressing the transportation inequities realized by the region’s growth patterns. However, at this stage of development, transportation is more responding to, rather than generating, these apparently unsustainable trip-making patterns. (p. 152)
Concluding, there is awareness about the disconnect of transportation and land-use planning. However the plan does not address it on a regional level but more so offers opportunities to local jurisdictions to plan.

**NOACA’s “Safety” Goal.** Since safety for all users of the road is a major concern of Complete Streets, and it is not very specifically defined within NOACA’s document, the interviews were used to get more details about what “safety” actually means to them. The TLCI Program Manager explained:

> Well, we are generally criticized for our goals - that they are not very concise and too broad. If you talk about preserving safety and efficiency, it does include cars, but as there are more people on bikes or pedestrians using the roads, NOACA certainly wants cyclists and pedestrians to be safe. It always relates to the safety rating of streets (A, B, C, D, E, and F). For instance, including crosswalks is safe.

However, using the traditional safety ratings (A, B, C, D, and F) instead of a pedestrian level of service rating suggests that there is a car bias. Another issue that was only touched on briefly during the interviews was that older staff and engineers sometimes can be uncomfortable doing things differently when it comes to planning streets differently than just vehicle-focused.

**Regional Bicycle Transportation Plan.** The long-range plan specifically refers to NOACA’s Regional Bicycle Transportation Plan. The first part of the bicycle plan is concerned with the evaluation of the 2006 Bikeway system, bicycle counts, accidents and progress in implementing the 1997 plan. Furthermore the plan lists projects with planned and proposed facilities. It also outlines an earlier version of the above quoted bicycle goals. The last section estimates the costs of bikeways. As each of the goals has a set of strategies that is assigned to achieve them, there is no overarching strategy such as “lifelong-communities” or “Complete Streets”. The “strategies” in NOACA’s plan read
much more like action points. For instance, the plan calls for the continuation of bicycle counts and for the refinement of the review process. The plan also refers to a bicycle facility priority plan without explaining how the priorities were determined. Most of the outlined strategies relate to education of the public and to the creation of manuals. However, none of their strategies say “make funding available for bicycle infrastructure”. There seems to be a lack of an overall strategy for the region to increase bike ridership through enhancing road conditions.

The plan also seems biased against funding actual road projects. It only estimates the costs for bicycle-only projects but does not take into consideration the fairly low percentage that the bike and pedestrian portion would take of a standard road repaving project. Additionally, the information is not compared to the dollar amount of repaving a vehicular road.

Being asked for the political motivation behind adopting a bike plan, one of NOACA’s board members replied:

A lot of it has been driven by the bicycle community. We have a lot of interest in our civic groups on the issue. We have avid cyclists in Medina County, too, that I have been friends with and that encourage biking. It is actually important to our county politics. At NOACA a lot of the times it is perceived as an issue of special interest groups that bring needs to be articulated.

The statement helps to understand the impression during the document review that NOACA’s bicycle and pedestrian plans do not go much beyond mere standards, or smaller educational based or map-creating programs. There seems to be a sense that cycling is advocated for by a small group of people and is not a concern of the majority.
Figure 9
Word Cloud for NOACA’s “Connections 2030 Plan”

The word cloud confirms previous findings (Figure 9). The word “Complete Street” did not appear within NOACA’s long-range plan. However, while the word “street” was not present at all within the 100 most common words, the word “road” was. There might be some implications in the wording that indicate the expectation towards the right of way - it seems that road implies cars, while street implies other modes as well.

Overall, the word bicycle appears much larger than the word pedestrian which suggests a stronger focus on bicycles than on pedestrians. That partially confirms an impression during the interviews that there was more of an emphasis on bikes then on pedestrians at NOACA. Their Multimodal Transportation Planner II stated, “Right now, I am not doing much that is geared to pedestrians. We try to incorporate pedestrians through the TLCI programming and road safety audits but there is no true regional
pedestrian plan or planning effort.” He pointed out, though, that for next year he will be working on a pedestrian safety plan.

The words safety, jobs, growth, economic, and emissions relate to Complete Streets goals. However, those terms seem to be more secondary terms among the 100 most common words. Goals such as health benefits, increased mobility, and convenience did not make it onto the word cloud. Water and emissions is marginally represented as a tertiary concern.

**NOACA’s Regional Transportation Investment Policy (RTIP).** This policy plays a key role in defining the requirements and processes for transportation project applicants. It is “the NOACA Governing Board policy for planning, programming and prioritizing federal-aid transportation investments for the region” (p. 5). Accordingly, whether a project gets funding or not depends on how well it meets the requirements in this policy. The 50-page document points out that Chapter III should definitely be reviewed by applicants before applying. The chapter contains policy guidance about multi-modal, land-use and roadway planning, as well as economic development and aesthetics. The first chapter states NOACA’s ten transportation goals as outlined in the Connection 2030 plan and the five-step application process. The second chapter contains detailed information about the five different funding programs.

**Analysis of the RTIP.** NOACA’s Regional Transportation Investment Policy does consider multi-modal planning and has a separate section devoted to bicycles and pedestrians. The distinction between different users of the road is fairly limited: transit, vehicles, bicycles, and pedestrians are the four main groups addressed in the policy. The
section about multimodal planning starts with the following introduction: “As per NOACA Plan goals, the regional transportation system must be planned and designed to serve all modes effectively, efficiently and safely.” (p. 23)

The word “modes” rather than “users” has implications for how the transportation system is perceived. While “users” implies people, the word “modes” implies things or activities. As humans it seems easier to care for people than for things. The transportation mode “walking” is an example, as it is a fairly broad category that fails to acknowledge the different needs of the elderly population or young families. If the plan would call to design streets that are safe for children to play in, or streets that enable seniors to walk to their local book club, it seems like more emotional attachment could be generate than by simply calling for “enhancing the walking environment”. Additionally, within NOACA’s plan the different modes are all addressed by themselves but not in an integrated way. The policy dedicates one page to each of the modes. In terms of bicycle and pedestrian requirements it states: “Applicants are required to consider bicycles and pedestrians in the planning and design of their proposed project.” (p. 23). “Required to consider” seems a long way from actual implementation. Partially, the policy is set up in a way to leave a variety of loopholes to avoid having to consider bicycle infrastructure. The exemptions from considering bicycle and pedestrian infrastructure are (1) they are prohibited by law, (2) the costs would exceed 10 percent of the costs of the larger transportation project, (3) topographic constraints, and (4) an average daily traffic of less than 1,000 vehicles which would mean that it is unlikely that people would bike or walk on those routes, or if (5) the project is limited exclusively to resurfacing (p. 24). The Complete Streets Coalition points
out that a cap on bike and pedestrian spending should not be lower than 20 percent (p. 20).

In comparison to bicycle and pedestrian amenities, transit actually has a decent standing within NOACA’s RTIP. It is eligible for a larger variety of different funding options (including CMAQ) and it is represented through a separate regional entity - the “Greater Cleveland Regional Transit Authority” (GCRTA). Those agencies are required to work together with the local entity in which their project is located (p. 19). Transit is considered a way to enhance air quality which puts it on the map as a strategy for congestion mitigation and air quality. While the section about bicycles is more focused around exceptions as explained above, the transit requirements are actual project design requirements that are concerned with the curbstone and the type of asphalt used (p. 29). Pedestrian needs are to be partially considered when designing transit (p. 26).

**Word Cloud.** Looking at the word cloud (Figure 10), among the 100 most common words are bicycle, pedestrian, and transit. That goes along with the previous finding of separate sections of the document being dedicated towards those modes. However, none of the other search terms made it into the word cloud. The only exception is “economic” which is likely to relate to issues such as economic development and job growth. Concluding, the policy does not relate to design elements or to Complete Streets goals.
Review Process and the Bike and Pedestrian Advisory Committee. The outlined requirements become relevant during the review process. NOACA’s review process is a three month process to determine which new projects are added to NOACA’s transportation improvement program. The review process includes a review of the projects with NOACA staff for completeness, accuracy and accordance with NOACA’s current transportation goals. Afterwards the projects are reviewed in different committees. Additional review occurs through the intergovernmental review and consultation process which allows other governmental organizations and communities to give input to specific projects. Another aspect is the public involvement process. After the review and input process, “the Governing Board resolves that the Project Planning Review is completed.
This action allows the project to be added to NOACA’s long-range Transportation Plan” (NOACA Project Planning Reviews).

In more specific terms, three purposes of the review process are outlined: to assess whether the project helps to achieve one or more of the transportation goals, “to work with the applicant to develop a project that meets or exceeds multimodal goals”, and to fulfill public involvement requirements (p. 22). According to the RTIP, recommendations and comments of the review process need to be addressed (p. 22). However, organizational practice seems to suggest otherwise. NOACA’s Multimodal Transportation Planner II chairs the Bike and Pedestrian Advisory Committee (BPAC) that is involved in the project review process. The 11 members of the BPAC are mainly bike advocates, planners, and consultants. Since the meetings are generally public, “often other people are showing up.” Out of the overall 20 to 30 quarterly project applications, NOACA’s Multimodal Transportation Planner II selects the projects that “are relevant for the BPAC. Usually, we talk about 6 to 12 projects each quarter.” After further inquiry as to how projects are selected he admitted that it is

Not very scientific... Well, so projects that are on NOACA’s priority plan are definitely considered. Interstate projects are excluded so are rural resurfacing projects. Resurfacing projects usually do not lend themselves to bike and pedestrian projects because the accommodation of such would exceed 20 percent of the original project costs. Usually, reconstruction and repaving projects in urban and suburban areas are considered and reviewed by the committee.

After the projects have been selected, they are individually discussed in the BPAC and comments in response to the project applications are developed. Factors of discussion are: the location of the project application, the surrounding land uses, other projects underway, and projects of regional priority. The Multimodal Transportation Planner II mentioned that if an application is from one of the outer-counties, then usually BPAC
members do not have sufficient local knowledge in order to properly judge the project. Therefore local representatives of the area in question are usually welcome at the BPAC meeting.

After the meeting, the comments are drafted by the Multimodal Transportation Planner II. Afterwards the comments are sent to the project sponsor for consideration and publicly posted on NOACA’s webpage. There is no means of enforcement for the BPAC.

As one of the leading regional bike advocates puts it: “I mean, it is nice that NOACA has a committee like that but there is really no way for them to reinforce their comment. They also don't have any incentives.” Incentives could be set through a scoring system. If projects include bicycle and pedestrian components, they could receive a higher score and increase their competitive chance for funding.

As the impact of the project review process on already established projects is limited, NOACA’s staff stressed the necessity to work with local communities early on. One of the programs that allows that is the Transportation for Livable Communities initiative (TLCI).

6.2 Funding Issues and Actual Implementation

Funds used for bikes and pedestrians. NOACA primarily funds bike and pedestrian projects through TE funds. However, looking in more detail it becomes apparent that TE funds aren’t “spent quickly enough”. Limitations often include getting the approval of local matches or that the local review boards take longer with their design review process. The Bike/Pedestrian planner explained: “That’s because some of the
project sponsors aren’t the common sponsors and are less experienced. For instance, the park district doesn’t have experience in working with ODOT. Also, the bike and pedestrian designs require other skills and more involvement.”

NOACA seems to hardly use STP or CMAQ funds for bike and pedestrian elements of a street. One major limitation to the use of CMAQ funds is the measurement of per minute reduction of pollution to justify CMAQ funding. “A project that improves traffic signals can show success easier at that intersection than a multi-use bike trail. The funding is really tied to documenting the impact.”

Another limitation was brought up by one of the board members. He talked about the diverse interests within the board and how biking is perceived as a minority issue. He explained:

*I know a lot of cyclists who do that as their recreational preference. But the question is, are we paying for the recreational preferences of a few or is it really something to spend money on that benefits everybody. But other than that, there is of course always a safety concern. [...] It is just hard to justify bicycle infrastructure since some people view it more as a nuisance.*

His arguments clearly indicate that the funding of bicycle infrastructure might be more a matter of mindset rather than of availability of funding. If it is perceived as a minority and specific-interest-group-in-an-urbanized-area activity that cannot be exercised year around, it is hard to justify spending money on it. “The dollars are just limited. We always need to see how we spend our funding best and get the most public benefit.” According to both board members, the question comes down to, on whose interest money will be spent.

There seemed to be a high awareness by the two board members of future funding cuts and the need to figure out how to spend limited funds wisely to
increase the public benefit. Since car drivers were perceived as a majority, bicycling and walking clearly would have a hard time to get NOACA’s board to take a strong advocacy role. However, programs like the TLCI planning efforts allow jurisdictions that are interested in bicycles and pedestrians to place a stronger strategic focus on it.

**Implementation of Projects.** Looking into more details of the implementation, the impact of the BPAC seems very limited. As the Bike/Pedestrian planner puts it

> The comments of BPAC do not result in major changes of scope of a project. The comments are usually provided to the project sponsor, not a whole lot is accomplished although we are urging them to address those comments. Sometimes we do not hear back from the local project sponsors at all.

In other words, the projects are approved by the board without having to address the comments. Since bike and pedestrian infrastructure are framed as an add-on, it becomes hard to bargain for them. Although there would be the opportunity to address the comments further along in the process, both staff members sounded pessimistic due to limited capacities at NOACA. One board member was stressing the idea of home rule in Ohio:

> Well, the local governments I think do take them [the comments] into consideration, this county is home ruled… The cities would listen to advice but not feel compelled to follow it. They want to spend the money where they see the biggest need.

According to the other board member:

> Some board members see bike and pedestrian comments as helpful and consider them, other board members really see them more as a nuisance […] Typically the “highway people”, well ODOT, look at bicycle recommendations very reluctantly. A lot of the times the costs are a major argument, bicycle infrastructure is considered as an enhancement but not as a requirement. They often times do not see the value in the extra costs.

Concluding, there are a variety of reasons for local communities to not implement bike and pedestrian infrastructure such as costs, being too far along in the process, a lack of long-term
planning, or the perception of bicycle and pedestrian planning being a minority concern. The issue of being ‘too far along in the process’ is partially addressed through NOACA’s TLCI funding mechanism.

**TLCI Studies Planning and community outreach.** The TLCI program was implemented in 2006. It enables local project sponsors to receive funding for transportation and land-use studies and planning efforts. Ever since its implementation, NOACA’s board awards $1 million each year to 12 to 14 local communities. During the past 5 years, the TLCI program has been constantly evolving - today’s projects involve comprehensive community planning that goes beyond mere transportation planning by considering land-uses, economic development, and environmental concerns. The purpose of the TLCI is to make communities more livable and to try to offer more transportation options.

Usually the project sponsors are communities or local partnering agencies such as a port authority, a park district, or a Community Development Cooperation (CDC). The applications are reviewed by NOACA board members as well as the TLCI task force whose members are experts in community development and transportation. The money for the studies is awarded based on a scoring system of 100 points out of which applicants need to receive at least 80 points.

At the beginning of 2012, NOACA hired a planner who concentrates on administrating the TLCI funds and advising the projects. The role of NOACA’s TLCI Program Manager is to give input to each TLCI project in their steering group meetings and to take care of re-imbursement. While the Multimodal Transportation Planner II is mainly concerned with in-house planning, the TLCI Program Manager works on
community outreach in early planning stages. He explained “We get more involved than other stakeholders because we fund them. We review closely the transportation element of the plans. However, I try to be careful to not impose too much because the process should be locally driven.”

Additionally, the TLCI Program Manager is starting to get more involved with the general review process since a lot of the TLCI projects are starting to apply for funding. According to NOACA’s TLCI Program Manager “a lot of the TLCIs have Complete Streets elements.” He shows the examples of West 25th street, which is looking at implementing more pedestrian amenities, such as an upgrade for the pedestrian areas and a multi-use path. Furthermore, he brings up the city of Westlake that is working on a city wide bike plan that encompasses the needs of serious commuters but also of recreational bikers. Also, the West 65th street plan is talking about a road diet and they are also talking about bike boxes. Most of his examples related to a pedestrian or bike focused approach - more or less implying that Complete Streets are equal to bike and pedestrian planning.

One benefit of the TLCI process is the public involvement process which, according to the planner, helps to create awareness on why things are important - “sometimes people ask: why do we need bike facilities, and it helps to be able to explain the importance and to build consensus.” Another benefit of the TLCI was asserted by one of NOACA’s board members. He explained that projects have a higher likeliness to include and implement bicycle and pedestrian amenities if that need had been identified by a TLCI study. He pointed out the special relevance of the extensive public involvement process of the TLCI. He said:
I mean, you have involved the public and it’s a better design process. If you only involve the highway engineers, you only get highway like streets. […] More recently, the communities that are doing TLCI studies often take bicycling and pedestrian issues very seriously. I think if the bike and pedestrian component is added in early on, there is a stronger buy in on the side of the design people but if they are being added after the fact, it creates a lot of tension. That’s in fact why we started TLCI to improve needs of multimodal transportation.

After the TLCI study is completed, more detailed engineering plans are needed. Therefore NOACA has a program to fund the preliminary engineering and design for core communities. For instance, the TLCI study would identify a road that would be suitable for a road diet and the preliminary engineering and design would help pay for construction blueprints. Up to this point, only two communities have used the funding.

**Local Perspective on TLCI.** In order to learn more about the local perspective on NOACA’s TLCI planning efforts, a local planner as well as a leading bicycle advocate were interviewed. The local planner can look back on the experience of having completed two TLCI studies and more recently applied for preliminary design funding. The one TLCI study was conducted in 2007 for a Downtown Euclid Transportation and Redevelopment Plan, and the other study is currently underway for the Euclid Avenue Corridor (funding granted in 2011). The local bicycle advocate has been involved with giving input in the steering committees and public hearings of several TLCI studies.

During the interview, two major benefits of the TLCI study became clear: one was the ability to coordinate across different agencies, and the other was to look at the city in a comprehensive way. Euclid’s planner explained that NOACA and ODOT are both represented on the steering committee. He also talked about additional cooperation with Cleveland Metro Parks and the County to fund a greenway. “When you bring people together, you want everybody to do what they are best at. Keeping an open dialog is
important to us.” Another partner is the Land Bank. Although the efforts were not directly tied to the TLCI study, he was keen about working together with different agencies to achieve improvements for the city’s transportation system. It seemed as if the TLCI studies were one of many approaches for him to achieve collaboration to receive funding and finance projects.

Being asked about Cleveland’s Complete Streets policy, Euclid’s planner admitted that it had not been a topic yet in Euclid. One of their current, major concerns was green infrastructure since their city has combined sewer overflows and a waste treatment plant that cannot handle all of the sewage during heavy rain storms. “If we bring something forward it will be a green and Complete Streets policy.” Although green infrastructure is an important topic in itself, his quote indicates the variety of concerns and priorities in local communities.

Another concern of Euclid is health; the planner explained that Euclid is part of an initiative called “Great and Healthy Communities” administered by the Board of Health. As health is a goal in Complete Streets planning, there is a relationship to active transportation. Euclid’s planner remarked that they are thinking of applying goals of great and healthy communities to their Euclid Avenue TLCI study “For the first time in the city’s history we are connecting active transportation with green infrastructure and different parts of the city.”

Concluding, local communities usually have to deal with a large amount of different topics, issues, and interests at the same time. Although healthy recreation and green infrastructure are important topics that can be addressed through the TLCI, it shows the
limitations of TLCI in terms of being NOACA’s tool to address Complete Streets and bike and pedestrian planning. It might well be possible that Complete Streets are addressed within the framework since health is an important benefit of Complete Streets; however, it is up to local project leaders to address them. Euclid’s planner shared an anecdote:

In 2007, when that document [Euclid TLCI] was adopted nobody talked about Complete Streets. We worked with City Architecture [a consulting firm] to develop the plan. We focused on the pedestrian component and aspects such as planting trees to line the streets. We actually discovered after the plan was adopted that Lakeshore is a designated bike route.

In terms of the outcomes of TLCI studies, the downtown Euclid TLCI resulted in design guidelines that are now part of the city code. Aspects of the design guidelines were that buildings had to be built up to the sidewalk and landscaping efforts had to be undertaken. Additionally, a streetscape for downtown was developed and sculptured planters were installed to guarantee pedestrian safety and to provide a sense of place. He said jokingly “I lost eight planters so far in car accidents.” Another impact of having a streetscape planned was that they were able to work with RTA on a different transit waiting environment design. Instead of flat roofs, the transit stops now have curved tops.

These two examples illustrate the impact of the TLCI study beyond mere investment into repaving streets. Design guidelines help to guide private activities and to improve the streetscape in doing so. Additionally, planters are one of the cheaper options for improvements to the pedestrian environment.

Another aspect of the TLCI studies is the consultants that get involved. The design guidelines and streetscape elements were drafted by one of the consultants, City Architecture, which together with the transportation consultant, Baker, are the two main
consultants that are often involved with TLCI studies. The approach of the consultant is to not just have engineers but to include landscape architects and planners. One of the tasks of the consultant is to guide the public involvement process. The local bicycle advocate explained:

Well, ideally the consultant should know what the local laws are and they should be trying to bring out what the community really wants. Most of the time though they meet prior with the city, ODOT, and RTA to see what they want. When meeting with traffic engineers they find ways to not reduce road capacities.

As mentioned previously, local communities have a variety of concerns that go beyond mere transportation planning. Being asked about the sources of their transportation dollars, Euclid’s planner listed: Ohio Capital Improvement funds, TIF districts, RTA funding, TLCI study, and community block grants. The wide variety of funds shows the limited influence of NOACA on spending in local jurisdictions.

Transportation Improvement Program. Reviewing the projects on the TIP can actually give more detailed insights into how much money is spent on bike and pedestrian infrastructure as a result of local interest, TLCI efforts, and BPAC comments.

The General Document Structure of the TIP. The main purpose of the TIP is to list all “proposed highway, bikeway, enhancement and transit projects for the region “that are expected to be implemented within the next four years and beyond” (p. 1). The list was developed by NOACA working together with project sponsors and program managers for cost, scope and schedule updates (p. 1). The first 171 pages of the document list all highway and bikeway elements as well as the funds programmed to finance the projects. Pages 171 to 235 contain the transit element of the study. The appendices give a financial assessment and fiscal constraints (Appendix A), a four-year priority list of NOACA funded projects (Appendix C) as well as projects beyond SFY 2015 (Appendix C).
Furthermore, Appendix E explains the “Review, Selection and Prioritization of Projects”. The remaining appendices give information about implemented, delayed and sold highway and bikeway projects (Appendix F and G), transportation system expenditures (Appendix H), air quality impact, and environmental justice (Appendix I and J). This analysis mainly focused on the list of programs (Highway and Bikeway Element Project Listing) and their Four-Year-Priority-List.

Analysis of the TIP. NOACA’s TIP was analyzed based on the number of projects that included a bicycle component and the amount of money that is to be spent on those projects. All the projects with bicycle projects included in NOACA’s TIP for the SFY 2012-2015 were copied into one table. The table was generated based on the project information in the TIP. The TIP was searched for words such as ‘bicycle’, ‘bike’ and ‘trail’. Accordingly, each project that had a bicycle component was with all its information. Afterwards the amounts of money were analyzed using Excel.

The TIP calls a significant section “highway and bikeway projects”. However, counting the actual amount of bikeway projects, it becomes clear quickly that bike trails are not the type of project the majority of NOACA’s money is spent on. Out of an estimated 420 projects, only 27 projects included a bicycle component. Most bicycle and pedestrian projects are funded through Transportation Enhancement Dollars. Out of the 27 projects, expenditures of 23 projects are scheduled to be implemented during the years 2012 to 2015. The 23 projects account for $46,497,131 of NOACA’s budget plus $10,141,801 in local matches. For the same period of SFY 2012-2015, a total of $1.6 billion is scheduled for all NOACA projects (p. 17). That means, that only 3 percent of all funds are spent on projects that include a bicycle component. For the projects that are not
scheduled to be implemented yet, projects with bicycle components are only scheduled to be allocated 1 percent of the entire amount. Table VI breaks down the funding sources of the 23 bicycle projects. 99 percent of the E-STP/S funds (Transportation Enhancement) are allocated to bicycles. Additionally, 41 percent of NOACA’s TE funds (E-STP/M) are used for projects with a bicycle component. The surface transportation dollars are only used for 7 percent of the projects with a bicycle component. Additionally 29 percent of the Congestion Mitigation and Air Quality funds are spent on bicycles.

Table VI
NOACA’s Spending on Projects with Bicycle Component in SFY 2012-2015

<table>
<thead>
<tr>
<th>Funds</th>
<th>Allocated for Projects with Bicycle Components in SFY 2012-2015</th>
<th>Overall amount allocated in SFY 2012-2015</th>
<th>In Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOACA FUNDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STP - Surface Transportation Program</td>
<td>$10,265,248</td>
<td>$140,794,000</td>
<td>7%</td>
</tr>
<tr>
<td>E/STP-S - State Enhancement Surface</td>
<td>$5,280,000</td>
<td>$5,336,000</td>
<td>99%</td>
</tr>
<tr>
<td>Trans Program (TE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E/STP-M - MPO Enhancement Surface</td>
<td>$4,721,200</td>
<td>$11,567,000</td>
<td>41%</td>
</tr>
<tr>
<td>Trans Program (TE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/STP - State Surface Transportation</td>
<td>$2,240,000</td>
<td>$132,146,000</td>
<td>2%</td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMAQ - Congestion Mitigation Air</td>
<td>$19,350,000</td>
<td>$67,009,000</td>
<td>29%</td>
</tr>
<tr>
<td>Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other funding sources</td>
<td>$4,640,683</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUM SFY 2012-2015</td>
<td>$46,497,131</td>
<td>$1,656,395,000</td>
<td>3%</td>
</tr>
<tr>
<td>Not Scheduled/ Plan</td>
<td>$17,595,478</td>
<td>$2,568,484,000</td>
<td>1%</td>
</tr>
<tr>
<td>Local Match/ Funds (County, Municipality Funds)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFY 2012-2015</td>
<td>$10,141,801</td>
<td>$291,006,000</td>
<td>3%</td>
</tr>
<tr>
<td>Not Scheduled/ Plan</td>
<td>$4,992,620</td>
<td>$154,659,000</td>
<td>3%</td>
</tr>
</tbody>
</table>

5 NOACA TIP p. 16f.
The projects would add at least 17 miles of new bike lanes and trails (although that number is not very reliable since not all project descriptions indicated the length of the project). Most of the projects are located in Cuyahoga County (11). Lake County has the second most projects with six. Lorain County and Medina County each have two projects and Geauga County has only one project. In the perception of the local bicycle advocate: “NOACA doesn't even have enough projects to use all their TE/TA funds, so projects get funded as long as they have the local match.”

The not yet-scheduled four bike projects would add an additional $24,085,166 out of which $17,595,478 would be NOACA funds. Looking at the estimated costs of all other ‘unscheduled projects’ of $2.57 billion, the sum for bicycle projects appears very low. The fact that TIP includes unscheduled projects that are worth $2.57 billion brings up the question of how projects are prioritized. “Project readiness is a primary consideration for prioritization” (TIP, p. 272). The projects for the next state fiscal year are written out in a “lockdown list”. The explanation is:

*At this stage, a project’s design must be developed sufficiently to be able to prepare and file final plans and award a contract within 12 to 18 months of its selection (including the best available cost estimate). Project sponsors must provide evidence that their project’s development status will enable them to award a contract within the time period of the TIP (P. 272).*
6.3 Organizational Culture, Structure and Political Context

Perceptiveness of Members to the Topic. Throughout both staff interviews, there was a sense of appreciation for bike and pedestrian infrastructure. When asked about the perceived board attitude or opinion about the issue, there was a sense that urbanized communities are much more attentive to the topic than more suburbanized or rural areas. As the TLCI Program Manager puts it: “Well, if it is in an area where there are already a lot of pedestrians it makes sense right away.” There is a sense of it being easier to convince those communities to more strongly consider pedestrians and bikes. However, tight local budgets are identified as the major counter argument by smaller communities.

Looking to the board, there seems to be a more diverse opinion on bikes and pedestrians. One member put it in terms of 20 percent of the members being supportive, 20 percent being against it and 60 percent being open-minded about it.

“You know, there is a little bit of a tension between car riders and bike riders. There tends to be enthusiasm among small segments of bike enthusiasts but car-drivers are really the main users of the roads, so they tend to see bikes as a nuisance.”

He went on to frame cycling as something that is done in India and China where the people are not as “industrialized” and “prosperous”. “Here most people can afford a car while there the bike is the only option.” There seemed to be a lack of appreciation for other forms of transportation. The other board member was a little bit more supportive, especially for recreational cycling. He explained that Medina County has been focusing their public space network around bicycles during the last 10 to 15 years. Especially when it comes to recreation, there is a strong interest in less urbanized areas.
Limits to the Implementation of Complete Streets Perceived by the Planners.

Being asked about limits they perceive to the implementation of Complete Streets, NOACA’s Multimodal Transportation Planner II replied that “One limit definitely is the issue of not being able to work with the project sponsors before their application. That would avoid the “add-on” perception. He also talked about the necessity to educate project sponsors more on the benefits of bicycle and pedestrian infrastructure. Another perceived problem is the TE-only funding. Especially with STP-projects, “They are not able to do everything they want to do.”

The TLCI Program Manager pointed out that

Costs are always a limit to anything. It really depends on what communities are willing to pay for their local matches. If communities say they want to do it and if we can help them to put together the funding it is a lot easier to implement bike and pedestrian infrastructure.

Concluding, the perceived major limitations relate to the cooperation and collaboration of NOACA and the local communities as well as the availability of matching funds and education. Individual cities might not think about Complete Streets or bike-pedestrian-planning on their own. According to them, NOACA gets involved too late into the process for it to not seem like a top-down, add-on or the local community might have already had to struggle to come up with the matching funds.

Staff Capacity. The assignment of only one staff member to bike and pedestrian planning clearly has disadvantages. A major issue that came up frequently during the interviews was the lack of time to provide other services, like, for instance reaching out to educate local jurisdictions. Also, the lack of capacity was further illustrated by the over
extendedness of the current bike planner who is busy with developing a regional scale system, updating the old policy, and coordinating the BPAC.

In terms of continued education (knowledge capacity) in the staff, NOACA’s TLCI Program Manager remarked that he was able to attend a course at the University of Wisconsin about context sensitive solutions and potential street design elements. Additionally, NOACA subscribes to webinars of the American Association of Bicyclists and Pedestrian Planning (APBP).

**Relationship with ODOT.** The relationship with ODOT seemed to be a special concern in the NOACA region as there seemed to be a good deal of conflict when it comes to retrofitting streets. ODOT has significant amounts of money that they administer and they have an authority over the designs of state routes. Being asked about the working relationship with ODOT, one of the board members replied:

*That’s a little difficult. ODOT is a voting member at NOACA. Also, as individual members we are depending on a good relationship with ODOT. [...] As board members the relationship is a little bit more tension filled. I have noticed that ODOT has abstained from controversial decisions. I think the ODOT director tells the representatives on NOACAs board not to take a position if it is controversial among local members. But that is rare. It only happened recently with the Avon interchange issue.*

That means there are politics going on between both agencies that can make it hard to work together on bicycle and pedestrian issues. Talking to the ODOT bike and pedestrian planner, she said that conflicts of personalities sometimes can impact projects that go through in one region but not in another.

The local planner gave insights into the work with ODOT for TLCI studies. He seemed generally satisfied with ODOT’s work but was concerned with the challenge of retrofitting streets while meeting the requirements of ODOT standards:
**ODOT** has a steering committee representative on the TLCI board. They have a high stake in what we are doing because Lakeshore is a state route and Euclid Ave is a US route. They are definitely in a position to dictate what can be done. They like to keep a 12 foot lane. We are trying to get it down to 11 ft. You have to have certain traffic volumes to justify 11 ft. You can request signals to control the traffic flow...

Talking to ODOT’s bicycle and pedestrian planner whose office is located in Central Ohio, the 12 feet requirement only applies to a state route that is also an evacuation route. Interestingly, there have been no complaints in Columbus at all about mandated lane-width. Being asked about that discrepancy, ODOT’s bike and pedestrian planner referred to conflicts of personalities. The local bicycle advocate gave some additional insights:

*Well, ODOTs role is really interesting. They are pretty much the ones making sure that the planning process follows ODOTs guidelines. This was actually one of my biggest critique points. There are design exemptions that ODOT or FHWA can approve but most of the TLCI planning just follows the guidelines and doesn't even bother to go for the exemptions that doesn't lead anywhere.*

A little bit of critique was brought up in terms of the coordination of ODOT and NOACA projects. Each agency has their own projects and the disconnectedness sometimes causes the loss of opportunities to implement more bike and pedestrian elements. But the TLCI Program Manager also pointed out

*that's what TLCI is trying to do: collaboration and coordination. That includes the implementation plan. Having all information at your disposal makes it easier. Sometimes we are too late though. The public input process is really important for us and we need appropriate time to weigh pros and cons therefore some projects that are too far down the line, do not get changed anymore.*

Overall, it would be beneficial for the region to improve the relationship between ODOT, NOACA and local jurisdictions when it comes to retrofitting urban streets. The issue of emergency routes needs to be explored in more detail and education about the “rights” of local jurisdictions could be provided through NOACA.
**Concluding.** While the goals outlined in the plans and policies illustrate awareness at NOACA for pedestrian and more so bicycle needs, the chosen strategies are lacking impact and scope. The strategies primarily focused on education and data gathering rather than on implementing new infrastructure to increase actual safety conditions on the roads. NOACA’s potential ability to guide regional transportation spending toward increased spending on bikes and pedestrians is greatly underutilized as the Bike and Pedestrian Advisory Council has no means of enforcing its comments. One potential explanation for the disconnection of awareness and chosen strategies might be the perception among the board members of bicycling being a “minority concerns”.

However, more promising is NOACA’s TLCI program that allows interested local project sponsors to address bicycle and pedestrian needs. NOACA’s approach could be best described as creating the conditions for project sponsors that are interested in enhancing their bicycle and pedestrian infrastructure, but NOACA is not working towards incentivizing the consideration of all users by all local project sponsors.
CHAPTER VII

RESULTS - COMPARISON OF BOTH APPROACHES

Both planning approaches cast an interesting light on regional transportation planning. Throughout the document review it became apparent that MORPC more often uses language that talks about integrating the needs of all users of the street while NOACA’s planning is much more single-mode based. While the users focus seems to allow looking at one street section and talking about each user’s needs, the modal approach seems to focus the attention more towards segregated solutions - bike and pedestrians needs are separately discussed from transit or vehicular needs. The following table illustrates the main differences between both planning approaches and the following sections discuss the strength and weaknesses of both approaches using the main differences as reference points.
Table VII  
Summary of Main Differences between MORPC’s and NOACA’s Approach

<table>
<thead>
<tr>
<th>Comparison based on</th>
<th>MORPC</th>
<th>NOACA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Commitment</td>
<td>All users (life-long communities &gt; it’s important for economic viability of communities)</td>
<td>All modes (Focus on pedestrian and bike needs &gt; it’s a “good thing” or it’s a minority concern)</td>
</tr>
<tr>
<td>Position of MPO staff</td>
<td>Advocacy for Complete Streets</td>
<td>Serving requests of local communities / Facilitating with planning</td>
</tr>
<tr>
<td>Structural differences</td>
<td>Regionally/ MPO driven; Institutionalized through policy; Comprehensive (region wide) and context-sensitive</td>
<td>Locally driven; Driven by people in charge; Incremental (single jurisdictions needs) and project-based</td>
</tr>
<tr>
<td>Approach to planning</td>
<td>Vertically (subjects) and horizontally (spatially) integrated &gt; working with local communities but also with all kinds of agencies (Health, Energy…)</td>
<td>One concern at a time; one dimensional</td>
</tr>
<tr>
<td>Tools/ Planning Mechanisms</td>
<td>Policy, review</td>
<td>TLCI, BPAC</td>
</tr>
<tr>
<td>Review process</td>
<td>Integrative &gt; feedback loops and several options are discussed; stronger leadership role &gt; Process driven</td>
<td>Exceptions-based/ technical &gt; making sure the members are happy, time limits &gt; Exemption driven</td>
</tr>
<tr>
<td>Founding sources</td>
<td>CS policy integrates STP funds &gt; funding available didn’t change with MAP-21</td>
<td>Focus on TE/ TA</td>
</tr>
</tbody>
</table>
7.1 Core Commitment

As outlined above, NOACA’s planning approach is more modal than user based. That is reflected in having a planner that specifically is concerned with bicycle and pedestrian issues and by making that topic part of a special review committee. Given that at NOACA, bike and pedestrian planning is still very controversial, partially perceived as a minority concern, the strength of their approach resides in being able to give the so perceived “minority” a voice within the organization. However, one of the weaknesses is that it is not integrated in every road or street project. Both board members interviewed kept stressing the importance of spending public dollars wisely (on the majority) and to be cautious about minority wishes. By framing bicycling as a minority concern it is easily taken off the charts of concerns since minority concerns will seemingly not impact voting outcomes. Although having a BPAC and a planner focused on bike and pedestrian issues is a first step in the right direction, looking at the strength of the process, there are loopholes to not consider bike and pedestrian needs. For instance, there are no means of enforcing comments of the BPAC. It comes down to the local jurisdictions to consider bicycle infrastructure. Through the TLCI process NOACA can extend some influence on the local communities to consider bicycle and pedestrian amenities, however, there is no structured general education or outreach program. During the interviews with the two staff members it became clear that it would exceed their capacities.

Again, MORPC’s approach has a different focus. Instead of concerned with transportation modes, MORPC’s Complete Streets policy and planning efforts are about all users of the road. By talking about users (and voters), they manage to make Complete Streets more about economic development and aging communities than a simple minority
concern. Through the framework of “life-long communities”, they found grounds to convince local governments of the need to plan streets with all users in mind. Arguing based on the elderly population (an increasing demographic) and life-style-changes among young families, they were able to make a case for walkable neighborhoods.

Furthermore, they illustrated what Complete Streets mean in an urban, suburban, and rural setting. By emphasizing the different options and by addressing pedestrian needs in different contexts (urbanized, suburbanized, rural) they were able to gain wide support and traction. While cyclists are a more vulnerable group in terms of being perceived as minorities, every person at one point of the day walks - even if it is just the walk from the parking garage to the office building. MORPC’s user-focused approach allows for distinguishing between different pedestrian needs rather than just generally talking about the pedestrian mode “walking”.

While cyclists are perceived as a minority whose needs are only considered out of safety or recreational reasons, the elderly population and young families seem like sufficient buzz wordy voter groups that politicians can care about and act on. If Complete Streets are about “all-users of the road of all ages and abilities,” MORPC chose a set of arguments that truly makes street planning encompass all users. Making it about all users makes it difficult to wipe away “minority” concerns because even a minority is part of a group of users of the road.

The awareness of both organizations of the needs of all users of the road, is reflected in their long-term planning documents. Looking in more detail, MORPC’s plan closely connects issues such as safety and sustainable land-use to Complete Streets and
lifelong communities (MTP; p. 131). Complete Streets are integrated throughout MORPC’s plan as a major strategy to achieve all of their goals relating to health, economic vitality, and sustainability. A relevant bargaining point for Complete Streets appears to be the elderly population for MORPC.

In NOACA’s planning efforts, the issue of aging population as well as bicycle and pedestrian concerns seem completely disconnected from each other. Bike and pedestrian concerns are considered an issue separately from vehicles and transit. That is reflected in the notion of “priority routes” compared to more or less “all streets.” NOACAs plan calls for “identifying priority routes” which would mean that bike trails and lanes would be limited to a couple of streets that are deemed to be most important. Within the mind-set of multi-modal planning, identifying priority routes makes perfect sense as it is about finding streets that suite the requirements of the mode. On the other side, looking at each street and the safety of all users of the street focuses the intention differently. Concluding, it seems that Complete Streets and the consideration of all users is much more integrated in MORPC’s plans which seems to indicate a higher priority for the issue.

7.2 Position of the MPO staff

During the interviews with staff members and board members there was a sense of advocacy at MORPC and of facilitating at NOACA. While MOPRC’s staff clearly has been advocating the approach of Complete Streets previously for the adoption of the Complete Streets policy, NOACAs staff seemed very concerned with serving the needs of the board members, such as making the application process as convenient as possible.
The two different philosophies were reflected by the interviews with the board members. While there was a clear appreciation of the staff’s work and advocacy on MORPC’s side, there was a clear expectation at NOACA that the staff would give their “technical inputs” if asked and that the staff would facilitate processes.

When it comes to Complete Streets planning, which is a newer concept, it seems beneficial to have a staff that is advocating for doing-things-differently or at least for bringing other options to the table. MORPC’s staff took time within the process of drafting a Complete Streets policy to sit down with public officials and explain what Complete Streets mean. It is remarkable that the policy was passed with nearly 100 percent agreement. Only one member voted against the policy. MORPC’s staff was careful though, to point to the limitations of their roles as advocates. MORPC's Senior Engineer explained:

*We are so much about collaboration that it is sometimes hard for us to take on a leadership role as organization. We might want to do it but we can’t before we get the request. We were interested but couldn’t start unless we were asked to.*

That goes along with one of the board member’s perception who described the staff as facilitator and as technical professionals. She explained the high value of having staff member research and prepare the information in order for the board to make an educated decision. She said:

*I do not recall that in the beginning they were very big advocates. In the beginning they were more there to get information for us. Now they are more advocates. Now they know where most communities are with regards to Complete Streets. They know that Complete Streets are a component of lifelong communities so they act more as advocates. You know, you can’t get too far ahead of your board as staff member. They were appropriate in their roles as experts without getting too far ahead.*

Nevertheless, the other board member indicated the leadership of the staff:
MORPC’s staff definitely has promoted it. Complete Streets are built into their DNA. They actually have done a great job. Basically, they are coming to the board and explaining the concept to us. Really, in our perception it is nothing but positive. I think by now, everybody realizes the importance of the Complete Streets program.

Concluding, the staff in an MPO fulfills two roles, one is to administer processes but the other one is to assist mostly elected officials with their technical knowledge. The case of MORPC shows how assisting with technical knowledge and re-framing a discussion can shape organizational discourses. It seems that much of the staff’s role relates to their own planning philosophy either as advocacy planners or as rationality-based planners (Brooks, 2002). One of the general limitations that became clear during the interviews with the board members in both organizations was that the staff is clearly bound to requests (and to being hired) by the board.

7.3 Structural differences

Looking at the organizational culture, practices, and structures, the set-up of an organization can highly influence the implementation of plans. That means, a long-range plan can only go as far as the organizational structures and cultures allow. Through its Complete Streets policy, MORPC institutionalized the consideration of all-users of the street into every single new transportation project. During the application, project sponsors enter a contractual obligation to “comply with the Complete Streets policy by accommodating all users as reasonably as possible”. The policy ensures that there is a process in place to not just talk about the needs of vehicle drivers but to talk about the needs of pedestrians, young mothers, seniors, cyclists, disabled, public transit riders and people walking their dogs, but also the regions need for freight traffic. It is a balanced approach that regionally ensures that roads and streets can be used in a variety of different
ways. It aims for comprehensiveness and gives room for context sensitivity, as for instance, MORPC’s Complete Streets toolkit makes sure to distinguish between the different land-use and type of jurisdiction and outlines types of Complete Streets that make more sense in a rural setting vs. an urban setting.

In contrast, NOACA is following a more locally driven and transportation-mode-focused approach. To begin with, among the board members there seems to be a sense that a majority of the money should be spent on vehicular traffic because that concerns the majority of voters. Although projects are reviewed by the BPAC, there is no requirement to address the concerns raised within the comments. In other words, there is no strong mechanism in place to ensure the consideration and implementation of bicycle and pedestrian infrastructure when doing, for instance, a repaving project. Bike and pedestrian related projects are up to local jurisdictions which, as shown through the TLCI efforts, can actually care a lot about bikes and pedestrians but do have a lot of other priorities and issues on their plates. That means if people in charge of a transportation project care about the needs of pedestrians and bicycles the project is likely to include amenities, however, if there is no one to make a case in the process, the concerns fall behind. This is a good start, but it is far from being institutionalized. One benefit of NOACA’s approach is that it allows for room for project sponsors that do care about all-users or even who just care about cyclists, to be able to raise awareness for their project. That means there is room for project-based funding of bike and pedestrian infrastructure but it needs to be driven by local communities. However, compared with MORPC’s region wide, more comprehensive approach, NOACA’s approach seems incremental and single project based.
One reason for this might be the different organizational culture at MORPC. There seems to be a stronger regional ethos that balances local and regional interests. One potential explanation for the stronger regional commitment by local members might be that MORPC was originally formed as a regional planning commission over 60 years ago. As local communities joined MORPC voluntarily, there is an unspoken upfront commitment and appreciation for regional planning. That legal authority shapes how MORPC can interact with its member communities and it shapes the perspective towards more comprehensive regional planning. At the same time, one of the board members clearly articulated that the policy is not about one-size-fits-all solutions but that it was important to design the solution so the different needs of each community were met. That means, although there is an appreciation for the region, there is a mentality to differentiate between the different needs of each community and to come up with “tailored” approaches.

The set-up of the TLCI studies point to the relevance of local communities for NOACA. NOACA’s TLCI Program Manager made a compelling case for the variety of different actions that local planning officials can take. However, there is no means of ‘enforcing’ the consideration of needs of all users of the road.

MORPC’s planner kept stressing that right now they are working on encouraging all MORPC members to implement Complete Streets policies in an effort to extend the institutionalization of the consideration of all-users and to make it independent of single stakeholder concerns.
7.4 Approaches to planning

Figure 11 summarizes the findings of this thesis and illustrates the two different approaches to planning for transportation choice identified by the author. When it comes to transportation planning, there are roughly five different layers of concern that are all addressed on a regional and local scale. The illustration of the topics as layers was chosen to illustrate the geographic scope of each of the layers. The three immediate layers are the vehicle network, the transit network, as well as the bike and pedestrian network within the region. They reflect the transportation modes addressed by NOACA’s planning documents. While each layer addresses different transportation modes, it also includes different types of users and uses of the street. Each layer would potentially have to be
addressed at any point within the region. Additional spatial layer of relevance for the transportation networks are the land-uses and demographics that determine what type of user’s will be at a point in space. Additionally, other networks such as green and open spaces, air quality and water/ sewer issues and the energy grid are addressed or touched by street planning. The list of “other networks” in Figure 11 is by no means exhaustive but it gives a good first idea of the complexity of planning for transportation choice.

As described above, NOACA’s approach to planning is to address each of the layers as modes with different projects that are scattered throughout the space. Bike and pedestrian planning is located on the layer of the “Bike and pedestrian network” and it depends on each jurisdiction to address that layer. The vehicle network is sufficiently addressed throughout the NOACA region. The transit network has a higher standing through GCRTA. However, the projects are not spatially integrated. If there is a road surfacing project, there is potential to address bike and pedestrian needs and to address transit needs at the same time. Nevertheless, projects are often focused on one single layer and spatially non-integrated. As the local planner pointed out, he is working on funding for a couple miles of sharrows within parts of his jurisdiction which does not guarantee a connection to Cleveland.

On the other hand, MORPC’s approach is to integrate all the different layers and concerns within one project. They are taking a comprehensive approach to streets. Through the Complete Streets policy and the review process they are ensuring that transit needs, the vehicle needs, the bike and pedestrian needs are part of the conversation, but also that adjacent land-use, in regards to context sensitivity and water and other issues are also talked about. MORPC’s planners recalled that the Ohio Board of Health had an
increased interest in the policy which points to the different groups and concerns that can be addressed through Complete Streets.

Both regions and MPOs share a perception of bicycle and pedestrian issues being more important to more urbanized areas than to rural or suburbanized communities. Nevertheless, both representatives from more rural NOACA communities and more rural MORPC communities showed a definite interest in recreational biking and trails. That points to an important need to distinguish between different types of bicycle and pedestrian trips and to not just treat it as one ‘mode’.

This thesis was able to show the differences between Complete Streets and multi-modal planning. While Complete Streets planning argues along the lines of the needs of all-users of the road for each single project, multi-modal planning focuses on each mode and has more mode-based and mode-specific projects rather than integrated modes. While multi-modal planning that was introduced with ISTEA in the 1990s was an important first step to draw attention to other transportation needs than just vehicular needs, Complete Streets planning calls for integrating all modes or more so the concern for all potential users of the road is brought into every single project in a context sensitive manner. When it comes to bicycle and pedestrian planning, there are two options: it can either be handled as multi-modal planning or it can be considered as part of Complete Streets planning. Both will give a vastly different direction and will require a different organizational set-up.
7.5 Tools and Planning Mechanisms

The difference between integrated (Complete Streets) and separated (multi-modal) transportation planning is reflected in the planning tools and mechanisms that MORPC and NOACA use. MORPC’s comprehensive approach uses a policy that every project needs to follow. The idea of institutionalizing the concern for all users of the road has strong implications for the success of Complete Streets planning.

While the consideration of active modes of transportation depends on the good will of the local project sponsor at NOACA, MORPC’s staff has a strong negotiation base during their project review process. Although the staff members were hinting that they could be more assertive or demanding towards local project sponsors, there was a sense of negotiation when they explained that local project sponsors had to come up with two or three different proposals.

NOACA’s approach really flourishes through the TLCI process. Instead of achieving regional agreement on the importance of Complete Streets or cycling, the TLCI process leaves it up to local jurisdictions to plan for their “Livable Community.” The program is set-up in a way that “livable” is ultimately tied to walkability. That means, NOACA’s tool is to allow for a more local comprehensive planning level that identifies future road projects which then will consider other elements, not just vehicle regulations. There is a high level of discretion left to consultants and to local jurisdictions and planners and local planning is not required to do transportation planning so the local capacity is lower in Ohio than in other states. That is why MORPC’s proactive approach makes such a difference.
7.6 Review process

The review process is outlined in NOACA’s and MORPC’s policies that had previously been compared on a national level. While NOACA’s policy has fairly strong language when it comes to bicycles and pedestrians, it is in organizational practice where the weaknesses in NOACA’s policy compared to MORPC’s can be seen.

NOACAs policy “requires to consider” bicycles and pedestrians whereas MORPC’s policy “requires to implement as appropriate.” Another major difference is that MORPC’s policy does not use exceptions. NOACA’s policy offers loopholes with cases where bicycles and pedestrians do not need to be considered. As MORPC’s board member asserted, having a policy that allows the necessary flexibility for different types of jurisdictions and different needs is most important. MORPC does not achieve that through use of exceptions, but instead through designing a comprehensive process. As NOACA’s new director was talking at a bicycle advocacy meeting in Mid-April, she emphasized that NOACA will be working on reviewing the project scoring system (review process) and making it more objective and based on the regions assets.

7.7 Funding Sources

The advantage of MORPC’s Complete Streets policy is the availability of STP funds for all-users of the road. According to MORPCs planners and to the National Complete Streets Coalition, integrating the needs of all-users of the road from the beginning of a project does not significantly increase the costs of a project. Most bike lanes, for instance, only require paint.
In contrast to opening up a wide funding source such as STP for “all users” of the road, NOACA finances most bike and pedestrian projects through limited Transportation Enhancement/ Transportation Alternative (TE/TA) funds. These are what most MPOs, throughout the U.S., use to fund bicycle and pedestrian projects. Using a limited source of funds means that there is a perception that even less money will be available to be spent on “minority concerns”. Additionally, treating these as separate funding concerns fails to acknowledge the variety of users on the road including those that aren’t motorized drivers.

The impact of both approaches is reflected in the total number of projects with bicycle components that are going to be funded between 2012 and 2015. While MORPC has a total of 72 projects with a bicycle component, NOACA only has 29 projects out of which only 11 are located within the MPO’s core county - Cuyahoga County. That is a fairly low number in terms of making progress, especially in comparison to the 60 projects that will include bicycle components in Franklin County. A likely explanation is reflected by the use of STP funds for bicycle components of projects within the MORPC region. 63 percent of all STP funds are spent on projects that include a bicycle component while NOACA only spends 7 percent of its STP funds on projects with a bicycle component. Not surprisingly, NOACA spends the majority of its Transportation Enhancement dollars on bicycle components while MORPC spends only 70 percent on bicycle components, which suggests that the remaining 30 percent is spend on pedestrian or scenic views related projects.

Overall, these numbers give more support to MORPC’s Complete Streets approach than NOACA’s bicycle and pedestrian planning approach. It suggests that the Complete
Streets policy, if properly promoted by the staff and included in the planning process, can actually achieve better outcomes in terms of increasing the bicycle network within the region.

### 7.8 Relationship with ODOT

During the interviews with MPO board members and staff, there seemed to be a clear expectation that ODOT should change their funding mechanisms to be more appropriate for urban streets. The interview with ODOT’s bicycle and pedestrian planner gave insights that illustrate a disconnect between the perception of what ODOT ought to be concerned with and ODOT’s own perception of their role. Being asked about whether ODOT is more concerned with recreational or commuter cyclists, ODOT’s planner replied:

> It’s definitely more recreational. We don’t own a lot of urbanized streets and most of them are highways anyways that cannot accommodate bicycles. I mean commuting by bike is really just relevant in urbanized communities. We mainly focus on recreational. Most commuter routes fall under the MPO’s that are more concerned with the urbanized areas.

The statement illustrates that commuter bicycling is perceived as an urban concern. Given the context of the state of Ohio, ODOT does serve, land-wise, more rural areas and therefore has more highway needs. The conversation about ODOTs Bicycle and Pedestrian Accommodation policy confirmed the same perception. ODOT’s planner admitted that the policy has little effect as “we don’t own a lot of the streets” in urbanized areas.

That places an interesting question and perspective on the issue. While local and regional planners and political officials blame ODOT for the misery of having troubles to
retrofit streets, ODOT does not perceive it as their job to work on urban streets. One possible explanation might be that even though state and federal routes only make up a fraction of urbanized streets, usually these routes are the major thoroughfares through the urbanized region.

The discussion over the required 12ft lane width on state routes seems a little disconcerting since government activities on all levels should be transparent, coherent, and predictable. If one ODOT district follows different standards than another, there seems to be a need for local and regional officials to make it a priority to address that disconnect. While ODOT has a bicycle and pedestrian accommodation policy, it became clear during the interviews that it is not used very frequently. As ODOT is an important partner to MPOs and local governments, there needs to be a statewide collaboration in redefining design guidelines for state routes in urbanized areas.
CHAPTER VIII

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

The literature review illustrated the challenges of funding bicycle and pedestrian infrastructure in a car-biased transportation funding system. As society faces challenges such as the obesity crisis and climate change, planners become increasingly interested in re-designing the built environment with a more balanced transportation system. Local planners are faced with land-use decisions, design reviews, and transportation studies that can either increase the auto-dependency of their communities or enhance the transportation choice of their residents. When it comes to transportation investments that future generations will have to live with, MPOs are important partners for local jurisdictions. As federal funds for transportation projects are directed through MPOs to local jurisdictions, MPOs are in a crucial position. Accordingly, they have been chosen as a unit of analysis for this paper. Four factors were identified that influence the implementation of Complete Streets and multi-modal planning (see Figure 4): (1) MPO
intention and commitment, (2) MPO culture, structures and practices, (3) actual available funding, and (4) operating context. Through conducting interviews and reviewing plans and policies, this thesis was able to identify the planning tools that can enhance the implementation of infrastructure that facilitates active modes of transportation. Figure 12 illustrates the complex system of how organizational practices of MPO’s shape the built environment.

The MPO as an organization is shaped by mindsets and state and federal legislation. The set-up of boards, committees, councils, and staff positions is partially required and partially depends on the mindset of regional collaboration or focus on local interests. The set-up of the organization and its members impacts the commitment to certain kinds of users of the road. The approach to planning (Figure 11) is impacted by the preferences of the board members of the MPO. The board and the intention shape the practices and tools chosen to allocate funding to local projects. The structure of the review process can vary tremendously between MPOs as Figure 13 will illustrate. Those differences can be attributed to the different set-up and commitment of MORPC and NOACA. Both have access to the same federal and state funding programs but both choose to use and apply them differently. The practices and tools then shape the framing of choices and decisions made about specific projects. If there is a stronger vehicular focus within the MPO, the analysis of the TIP has shown that there is a tendency to fund more vehicular focused projects (or fewer projects with a bicycle component). Choice framing is the most complicated variable within the system. The choice is not just impacted by the MPO but also by the operating context of state requirements, advocates and project sponsors. That means the MPO has to navigate a variety of different interests.
Figure 12
How Organizational Practices Shape the Built Environment

How organizational practices shape the built environment

Operating Context
MPO internally
built environment

— indirect effect
direct effect

State and Federal
LEGISLATION

FUNDING
PROGRAMS

MINDSETS
local vs regional

INTENTION/COMMITMENT
cars vs. all users
vs. all modes;
Approach to Planning

SET-UP:
MPO Structure
Board, Committees,
Staff, Councils

PRACTICES/TOOLS
Review Process,
Working Groups, Topics,
Funding Mechanisms

ADVOCATES

PROJECT SPONSORS

CHOICE FRAMING
Decisions about
specific projects

ODOT
REQUIREMENTS

ACTUAL IMPLEMENTATION
Type of project, components,
funds used

LAND-USE +
DENSITY

STREET DESIGN

More details in separate diagram
Once the decision over projects is made, then the actual implementation follows. The project engineering implies a street design that either allows for ample space for all users of the roads or does not. The street design then impacts land-use decisions. As streets with high traffic volumes are less desirable for residential development, the width of sidewalks or sufficient buffers between cars and pedestrians can make a big difference as to what is possible in terms of land uses. Figure 12 illustrates the complexity of regional planning and the potential different leverage points. As it is easier for the MPO to address aspects within the MPO structure, the core commitment/intention was discussed in Figure 11 and the practices and tools will be discussed in the next paragraph (Figure 13).

Figure 13 summarizes the planning tools that can be used by MPOs to increase active modes of transportation within their regions. Depending on the type and level of regional collaboration, that can either be done through bike/pedestrian planning or through Complete Streets planning. Figure 13 models the project review process and the related tools that NOACA and MORPC use, and proposes an “ideal” process that has several checks and balances to ensure transportation planning for active modes of transportation. While the planning tools used by NOACA are applied previously to the project exception (permission), MORPC’s planning tools are applied through a contractual obligation that is in effect before and after the funding permission is granted. More specifically, a local project sponsor applying for a road surfacing project at MORPC agrees to design the road with all users in mind (Complete Streets Policy). That gives MORPC leverage after the funding permission is granted to work on specific design details with the project sponsor (staff review process). MORPC provides additional
education opportunities to create a general sense that Complete Streets are important for lifelong communities (Complete Streets Toolkit). At NOACA, the project sponsor either identifies needs for pedestrian and bicycle infrastructure during early planning phases (TLCI studies) or takes the feedback of the Bike and Pedestrian Advisory Council (BPAC) seriously. There are no mechanisms in place once the funding is granted.

The “ideal” process would ensure upfront and past-permission interventions. Starting with the education of board members, local planners, and engineers is a first step to bring everyone who is working with the MPO on the same page. Additionally, TLCI studies can enhance the network perspective on the transportation system. When local jurisdictions apply for funding, incentives to include facilities for active transportation can be set through a project scoring sheet. At the national conference of the American Planning Association (2013, Chicago) several speakers mentioned the option of including active transportation measures into the project scoring criteria for the review process. It was suggested to award 10 out of 100 points for bicycle and pedestrian facilities. If local project sponsors want to be competitive with their projects, including amenities for bicycles and pedestrians can enhance their position. Additionally, the contractual obligation fostered by MORPC through their Complete Streets policy opens up the opportunity to work with local project sponsors during the engineering phase. That would either eliminate the need to do a full size review before the permission, or the BPAC review could be greatly enhanced by requiring comments are addressed during the engineering phase.
Figure 13
Tools and Planning Mechanisms for Active Transportation Planning during the Project Review Process

Priorities identified in plans and policies

NOACA Planning Tools
- Planning
  - TLCI Studies
- Application
- Review
  - BPAC

MORPC Planning Tools
- Education
  - Complete Streets Toolkit
- Planning
  - Complete Streets Policy (Sign Contract)
- Application
- Review
  - Engineering
  - Implementation

“Ideal” Planning Tools
- Education
  - Complete Streets Toolkit
- Planning
  - TLCI Studies/Technical Assistance
- Application
  - Scoring + Contract
- Review
  - Mandated BPAC

Permission

Implementation

Complete Streets Policy (Work with MORPC staff on solutions)

(Work with MPO staff on solutions)
Restructuring the project review process by including some of the above outlined tools has the potential to greatly enhance the number of active transportation projects that actually get implemented. However, this research has shown that the issue is much more complex than just finding the right tools. The analysis of the MPO’s commitment was able to show that there is a major difference between multi-modal and Complete Streets planning. While the focus on modes tends to create projects that are only focused on one single mode, the focus on users of Complete Streets helps to integrate the different modes into one single project (see Figure 10). The different mindset between multi-modal and Complete Streets planning is reflected in the set-up of plans, policies and the projects that eventually receive funding. A review of plans and policies based on whether modes are treated separately or in an integrated manner is highly recommendable. As NOACA’s new director indicated in a presentation for a bicycle advocacy group in mid-April, there are opportunities in Northeast Ohio to use excess capacities: “there is a lot of room for us to put bicycle lanes on the streets that we already have”. She also stated that she wants to bring more complete streets planning into the region. That means first steps towards an organizational change in mind-sets might well be underway.

Another challenge confirms previous research that found differences in the types of projects that get funded based on the affiliation of board members. During the interviews it became obvious that the MORPC area had a much stronger regional ethos which seemed to facilitate agreement on issues such as planning for all ‘users’ of the road, while the NOACA region lacks that regional ethos. While both organizations are aware of the importance to be sensitive to the needs of each single jurisdiction, it plays out in different ways. While MORPC frames local efforts under the context of “lifelong communities”
and “Complete Streets”, NOACA’s projects are driven by local jurisdictions and transportation planning becomes much less about regional strategy but about local priorities. To avoid conflict among board members it seems as if NOACA’s project review process is set up in a way to not cause conflict and to allow local jurisdictions to do what they think is best for their municipalities. Comparably, MORPC as a region was able to agree on a common denominator that is “lifelong communities” and “Complete Streets”. As mentioned previously, that difference in regional ethos might be explained by the fact that MORPC started as a regional planning commission rather than a regional transportation agency. However, that does not mean it would be impossible for NOACA to create a regional ethos by focusing on the commonalities rather than differences between local communities.

Eventually, all those differences in planning practices and organizational cultures are reflected in the funding that is used for various transportation projects. The multi-modal focus tends to first look to TE/TA funds to fund bicycle mode and walking mode improvements. A regional Complete Streets policy can make improvements on bicycle and pedestrian infrastructure part of every single project that uses STP funds. That means a much larger number of infrastructure facilities can be implemented in a shorter timeframe. The analysis of the TIP of both MPOs confirms that finding.

Based on the research, an MPO can evolve through a five step process to become an MPO that facilitates active transportation planning that involves health benefits, serves seniors and young families, and increases the economic value in communities. The first stage includes the point in time when nobody in the organization knows or cares about Complete Streets and active transportation. Business is done as usual based on old
paradigms. Projects that bring forth active modes of transportation are much more driven by local interests than by the MPO. The second phase was started for MORPC through a presentation that sparked the initial interest in the concept of Complete Streets which eventually led to the assignment of staff to do more in depth research on the topic. It seems probable that the ways in which this first interest is sparked might vary significantly throughout different regions. The interest for MORPC was sparked at a time when they were considering rewriting old policies so there was an increased perceptiveness to new ideas. The second phase in general seems to be marked by education and by becoming more familiar with what the concept of Complete Streets might encompass and imply. Within this phase the preparation of information by the staff seems crucial. The third phase is the adoption of a policy and the institutionalization of an agreement on how business is to be done within the MPO. This is MORPC’s open confession to planning for “all users of the road” and not just for vehicle drivers. Since the concept is new at this point, there is not much experience with the implementation. An MPO might also chose to restructure the project review process and implement a new project scoring system to set incentives. As outlined above, there are a variety of different tools. However, it seems crucial that those tools actually lead to real changes and are somewhat enforceable. In this phase, the biggest challenge might be to find a compromise that deals with concerns of local jurisdictions. The third phase then is characterized by an increased use and increased experience by local project sponsors and MPO staff members. Most likely, active modes of transportation are becoming a valid option and alternative to car-based and car-focused planning. The following phase or stage would be the complete institutionalization of the concept which would mean that it becomes the new business as usual approach. Figure 14 summarizes the steps.
Figure 14
Stages towards Active Transportation Planning

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
</table>
| Stage 1 | Business As Usual  
|        | Car and Mode focussed |
| Stage 2 | Education about Active Transportation Planning  
|        | Input presentation, local examples |
| Stage 3 | Institutionalizing Active Transportation Planning  
|        | Adoption of policy and restructured review process |
| Stage 4 | Experience Increase  
|        | Gaining experience with retrofitting streets and the policy |
| Stage 5 | New Business as Usual  
|        | All users of the street are considered in every project |

However, NOACA’s approach to bicycle and pedestrian planning illustrates a potentially different regional path. Their approach is especially valuable in regions with diverse interests and where consensus building is more difficult. It puts more emphasis on the local needs, which makes local jurisdictions drivers of the process. It is a good first attempt to get around gaining regional consensus. However, the broad strategic impact of incremental planning is limited, and bike and pedestrian planning probably requires more time to achieve similar results than a more comprehensive Complete Streets policy ensures.

As the research was done for Metropolitan Planning Organizations in Ohio, there are some limitations to the generalizability of the findings. For instance, states in which the DOT has its own Complete Streets policy might have different dynamics. It became also clear that the relationship between ODOT District representatives, MPO members
and local jurisdictions can influence planning outcomes significantly. That means, that an MPO with less jurisdictions and a good relationship with their DOT district could potentially be much more successful with a bike and pedestrian approach.

That means future research would be needed, using the framework of planning layers developed in Figure 11, to quantify approaches of MPOs throughout the U.S. The data provided in the TIP can be helpful to analyze which approaches lead to more bike miles implemented and more spending on the concerns of all users of the road. Also, most likely the list of planning tools provided in Figure 13 is not an exhaustive list of all the tools that are used by MPOs throughout the U.S. Therefore it would be viable to do an assessment of specific regional planning strategies to increase active modes of transportation.

Nevertheless, as health care concerns and costs for the treatment of obesity and stroke patients increase, as the baby boomers are aging and young families are rediscovering active lifestyles, there is a strong case to be made for federal, state, regional and local investment in increased transportation choice. This thesis discussed the advantages and disadvantages of two vastly different regional planning approaches and mechanisms to foster increased regional transportation choice.

The findings of this research are limited as they specifically apply to two Ohio MPOs. It would be interesting to extend the scope beyond state boundaries to analyze the impact of state policies and practices. Additionally, this research did not address the issue of land-use planning and the relation to transportation decisions. Both are incrementally related and can facilitate the increase of active transportation modes. Therefore, it would
be interesting to examine examples of regional land-use coordinating efforts by transportation agencies. Another limitation resided in the method. Future research could include participatory observations of the review process, more interviews with local and state planners, and a survey of the MPO board. Additionally, if one of the MPOs was to choose to change policies and practices, it would be interesting to design a long-term study of how the changes were done and the actual impact. Furthermore, a smaller study could examine the mindset change happening after giving workshops with officials on the MPO’s board about complete streets planning and transportation choice to test the hypothesis that education matters.

However, this research was able to identify planning mechanisms and organizational practices that can either facilitate transportation planning for all users or inhibit it. Based on this research, the most crucial aspect of the MPO is the project review process that shapes what type of project receives funding. But also the general set-up and structure of the MPO, as well as a core commitment to the needs of all users of the road, can impact the MPO’s ability to positively influence the regional transportation system in a way that leads to more transportation choice.

This thesis concludes by recommending to both MPOs to revisit their planning tools and process in terms of their incentives to local jurisdictions for planning of active modes of transportation. As health care studies have shown, investment in mode alternatives can greatly enhance the overall well-being of Americans. Nevertheless, MPOs do not operate in a vacuum and have limited power due to state funding and local interests. Accordingly, a process to really impact positive change needs to bring everybody to the table and seek a win-win-situation rather than a one-size-fits-all solution.


127


U.S. Department of Transportation. (2010). *Policy statement on bicycle and pedestrian accommodation regulations and recommendations*. Signed on March 11, 2010 and...

U.S. Department of Transportation. Federal Highway Administration. (2012). Bicycle and
Pedestrian Program. Retrieved August 10, 2012, from
www.fhwa.dot.gov/environment/bicycle_pedestrian/

http://www.fhwa.dot.gov/map21/

Alternatives Program fact sheet. Retrieved April 10, 2013, from
http://www.fhwa.dot.gov/map21/tap.cfm

Mitigation and Air Quality Program fact sheet. Retrieved April 10, 2013, from
http://www.fhwa.dot.gov/map21/cmaq.cfm

Transportation fact sheet. Retrieved April 10, 2013, from
http://www.fhwa.dot.gov/map21/stp.cfm

The National Center for Bicycling and Walking. (2003). Taking steps: An assessment of
Metropolitan Planning Organization support for bicycling and walking. Retrieved,