

METROPOLITAN PLANNING ORGANIZATIONS:
CHANGE AGENTS OR IN NEED OF CHANGE?

By

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ABSTRACT

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Metropolitan Planning Organizations (MPOs) allocate hundreds of billions of dollars annually for transportation projects in metropolitan areas. The decisions made by MPOs about how to allocate these funds profoundly affects the physical environment of metropolitan regions and the ability of residents to access jobs, housing, schools, and basic services. The current paradigm holds that MPOs are weak and insignificant players in metropolitan reform efforts in part due to their limited authority, voluntary membership, and the parochial tendencies of local units of government. I theorize that MPOs are critical partners in realizing metropolitan reforms. Utilizing a mixed methods research design, through interviews with MPO leadership and a quantitative analysis of a unique dataset of approximately 12,000 projects from 43 MPOs, I examine the role descriptive representation, leadership, and organizational processes play in influencing MPO decisions and regional transportation outcomes.

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CHAPTER 1. Introduction

New regionalism, which emerged in the 1990s, suggests that urban and suburban problems can be solved through new regional governments and/or greater collaboration regionally. The benefits, advocates claim, are numerous: greater governmental efficiency to combat wasteful duplication of services and uneven standards of public service; more livable and sustainable communities; greater regional prosperity and economic competitiveness; greater equity between metropolitan populations; and improved political well-being gained by enhancing political equality, civic tolerance, and liberty (Downs 1994; Drier et al. 2001; Orfield 1997; Rusk 1993; Swanstrom 2001).

It's challenging not to be swept up in the excitement, enthusiasm and promise of a brighter urban future that these metropolitan urban policy advocates and scholars advance. Frug and Barron (2013) suggest that “unleashing a new urban age involves... empowering local democracy and recognizing the impact of local decisions on neighboring localities— and the larger world” (p. 254). In the *Metropolitan Revolution*, Katz & Bradley (2013) argue that the key to healing our nation's dysfunctional political system, strengthening America's economy, and adequately addressing persistent societal problems rests on the development of innovative partnerships, ideas, and leadership at the metropolitan level. Embracing regional collaboration and building robust networks within and between metropolitan areas, they assert, are essential first steps to achieving transformative change. Katz and Bradley's claims are consistent with those of other new regionalists.

However, faith in existing regional governing bodies to help lead this change is scarce. Lefèvre and Weir (2012) suggest Metropolitan Planning Organizations (MPOs) and Councils of Governments (COGs) are incapable of leading metropolitan reforms due to their limited

authority, voluntary membership, and the parochial tendencies of local units of government. Katz and Bradley (2013) appear convinced of the impotence of MPOs and spend scant time discussing the role of existing regional governing bodies in metropolitan reform efforts. Drier, Mollenkopf, and Swanstrom (2001) argue existing institutions are “not a good starting place” for reforms. The solutions these new regionalists offer range from encouraging more federal interventions to downplaying the role of government leaders and instead emphasizing the role of private and nonprofit leaders in implementing metropolitan reforms. Frug and Barron (2013) call upon states to enhance local powers and enact fiscal reforms that will empower cities to effectively address urban issues, while also developing democratic systems of regional governance to foster a metropolitan approach to problem solving. Katz and Bradley (2013) offer a manifesto for metropolitan leaders, suggesting that when they work together, cities in metropolitan areas have the power to shape their own futures. However, they don’t mention the opportunity MPOs offer for such collaboration.

I will argue that metropolitan scholars have been too quick to dismiss the power of existing institutions. Indianapolis Mayor Gregory Ballard writes, “Metropolitan planning organizations have the geographic scope and the power — yes, power — to help regions meet these demands by planning for the transportation needs of the future rather than the past. Cities like mine can’t do what we need to do on our own; we need MPOs to step up... Success requires determined leadership willing to think outside the box and back up vision with action” (Transportation for America 2014, p. 3).

Indeed, MPOs allocate hundreds of billions of dollars annually for transportation projects in metropolitan areas, develop long-range regional plans and visions, and bring local governments together to discuss critical issues essential to the health and vitality of regions.

Despite their prevalence, we know very little about how MPOs shape important regional policy outcomes such as public safety, job accessibility, and housing affordability. Further, with some notable exceptions we know very little about how institutional design and features affect MPO outcomes (Gerber and Gibson 2009; Nelson et al. 2004)

In contrast to the dominant paradigm that views MPOs as weak players and ineffective at leading change due to institutional deficiencies, I will argue that the power MPOs have in developing Transportation Improvement Programs (TIPs) offers an opportunity to deviate from status quo transportation policies that are the source of many regional inequities. MPOs were envisioned as facilitators of regional collaboration and problem-solving. I will argue that, despite the documented institutional deficiencies, determined and innovative leaders have the power to shift institutional processes, which in turn can alter regional outcomes and transform the physical environment of metropolitan areas. They have the power to lead.

In this dissertation, I examine previously untested hypotheses about MPOs, as well as test new ones. Sanchez and Wolf (2005) documented the under representation of minorities and women on MPO governing boards. A Brookings Institution Series on Transportation Reforms recommends increasing minority representation on MPO boards to address inequities in funding distributions (Sanchez, 2006). Utilizing a novel dataset of almost 12,000 projects from 43 large MPOs, I test the impact of representation on MPO decision making. I also examine alternative factors that could be influencing MPO performance such as executive leadership and internal processes.

I begin, in Chapter Two, by tracing the development of regional planning organizations. I examine critiques of their effectiveness and lay out a case for why it's premature to dismiss them as irrelevant players in the metropolitan reforms. The problem, I will argue, isn't that MPOs

aren't influential regional actors but rather that many use their power to perpetuate the status quo. I will explore gaps in research on MPOs and lay out my specific research questions for this dissertation. Broadly speaking, I plan to examine how representation, leadership, and processes affect decision making and regional performance outcomes. I utilize a two-phase mixed methods research design.

In Chapter Three, I discuss phase one, my exploratory qualitative research phase to develop and refine my hypotheses. Through interviews with leadership at the Nashville Area MPO and Southeast Michigan Council of Governments (SEMCOG), I present an argument for exploring two bureaucratic features, executive leadership and the TIP process, that I suspect may be influencing MPO and regional outcomes.

In Chapters Four and Five, I present the second and more substantive phase of my research. Using multiple regression techniques, I examine variations in MPO representation, structures, and processes and analyze how these variations impact MPO project selection (specifically pedestrian, bicycle, transit, and road projects), as well as a critical regional outcome (pedestrian safety). My research and analysis rely on three datasets. I merge two existing datasets (Gerber and Gibson 2009; Sanchez and Wolf 2005) with a novel dataset I developed, which allowed me to examine in greater detail the development and regional impact of approximately 12,000 federally funded projects across 43 metropolitan areas.

And finally, in Chapter Six, I revisit my research questions and synthesize my findings. This research aims to fill gaps in our knowledge about what factors influence MPO outcomes, the power of MPOs and the implications this has for advancing regionalism, while also practically addressing an interest of many metropolitan advocates – how we can improve

transportation equity and mobility options to enhance the quality of life for metropolitan residents.

CHAPTER 2. Regionalism and the Birth of MPOs

Despite the recent surge of academic publications promoting regional governance and collaboration as solutions to metropolitan issues, it must be noted that local and federal efforts have been underway in these areas for much of the last century. As early as the 1920s, business leaders, philanthropic organizations, and urban planners in New York were working together to develop a regional plan for New York City and the Port of New York (Solof 1998). Efforts at the federal level to encourage regional planning and cooperation followed shortly thereafter. In the 1930s, President Franklin D. Roosevelt sought to emphasize cross-jurisdictional cooperation and many New Deal programs required regional cooperation as a condition for accessing federal funding for infrastructure projects. President Roosevelt also convened a group of federal administrators and scholars to develop a set of recommendations that might help lift the nation out of its economic crisis. The committee urged the President and Congress to “promote metropolitan planning, limit metropolitan fragmentation, and restrict local governments’ authority to adopt their own zoning laws.” (Dreir et al. 2001, p. 183) However, these recommendations were largely ignored and the federal push for regional collaboration did not begin in earnest until the 1960s.

During the 1960’s and 1970’s, life in urban areas became increasingly dire. New highways, financed largely by Eisenhower’s 1956 Federal Highway Act, destroyed the fabric of many black and/or poor neighborhoods in cities across the US. Compounding this problem was the reality that poor and minority neighborhoods also faced decades of urban neglect and disinvestment (Hayward 2013). Between 1964-1968, at least sixteen cities experienced urban riots forcing Congress and cities to examine the conditions that were leading to civil unrest. The McCone Commission report, which attempted to explain the root causes of the 1965 Watts riot in

Los Angeles, explicitly pointed to role of transportation, or rather lack of transportation, in creating unrest. The report found three main reasons for the LA riots: excessive unemployment, inferior education, and inadequate transportation (Fogelson 1967; Deka 2004). A report by the Kerner Commission, appointed by President Johnson to investigate the causes of urban unrest across the nation, also concluded that limited job opportunities were a large contributing factor in the unrest. Job growth that occurred in the suburbs, not in the urban neighborhoods, was of no benefit to poor, urban residents who were unable to access these new jobs and to African Americans that faced discriminatory hiring practices if they were able to reach them.

2.1 The Emergence of MPOs

By the 1960s, the plight of cities had captured the interest of the nation and Congress responded with a variety of policy interventions. A 1961 report sponsored by the American Society of Planning Officials, noted “land use planning is in chaos. I doubt that even the most intransigent disciple of anarchy ever wished for or intended the litter that prevails in the area of land-use regulation.” Although the calls for federal control over local land use policy didn’t make headway, regional coordination with regards to transportation policy did take root. One of first substantive developments in regional planning came as a requirement of the Federal-Aid Highway Act of 1962. Driven largely by concerns about the negative externalities of rapid suburbanization, this Act required that any federally aided highway project in an urbanized area of 50,000 or more, be based on a continuing, comprehensive urban transportation planning process carried out cooperatively by states and local governments. The federal government used the “carrot of federal funding to encourage regional planning” (Dreier et al. 2001, p. 183-184).

By 1965 nearly every metropolitan area had a planning process, but they typically lacked formal planning agencies to lead and conduct the work. As a result, the Bureau of Public Roads

(which later became the Federal Highway Administration) mandated states develop formal planning agencies to facilitate the planning process; this requirement marked the formal birth of MPOs (AMPO, 2019). However, decades passed before Congress enacted legislation to grant MPOs substantive power and funding to incentivize a collaborative planning process in metropolitan areas.

In 1991, Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA). Not only did ISTEA allow transportation funds to be used for multimodal projects (transit, bike and pedestrian), it provided MPOs with discretionary funding for projects developed cooperatively through the metropolitan planning process. Furthermore, MPO executive, decision-making boards were required to be more inclusive of local and regional interests and include representatives of local governments, transit agencies, and state officials. Each subsequent reauthorization of transportation funding has reaffirmed these principles and expanded MPO governance responsibilities. TEA-21 required the inclusion of seven planning factors in regional transportation plans: economic vitality, safety and security of all users, increased accessibility and mobility, environmental protection, enhanced connectivity, greater efficiency and, ironically, preservation of the existing transportation system. SAFTEA-LU, adopted in 2005, mandated public engagement in the planning process, as well as fiscal transparency. And MAP-21, adopted in 2012, added a focus on performance-based transportation planning (FHWA 2013).

In addition to the provisions in ISTEA, a number of federal actions were taken in the 1990s to increase collaboration and address concerns about inequities in the regional planning process. In 1994, President Clinton signed into law Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*

which directed federal agencies to incorporate environmental justice into their missions. According to the FHWA, to certify compliance with Title VI of the Civil Rights Act of 1964 and address environmental justice, MPOs need to 1) enhance their analytical capabilities to ensure that the long-range transportation plan and the transportation improvement program (TIP) comply with Title VI; 2) identify residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed, and the benefits and burdens of transportation investments can be fairly distributed; and 3) evaluate and, where necessary, improve their public involvement processes to eliminate participation barriers and engage minority and low-income populations in transportation decision-making (FHWA 2017).

Today, MPOs are mandated for all urbanized areas with populations over 50,000. Their explicit purpose is to provide *multimodal transportation planning in metropolitan areas and states that is cooperative, continuous and comprehensive, resulting in long-range plans and short-range programs of transportation investment priorities*.¹ MPO executive governing boards are required to include representatives of local governments, transit agencies, and state officials but substantial discretion has been provided to states to determine the formal structure and composition of MPOs. This flexibility has resulted in significant variations in how MPOs are structured in different states. In 2006, nearly half of the 420 MPOs were housed within Councils of Government (COGs), while the other half were free-standing MPOs, county-level MPOs, or state-run MPOs. COGs are tasked with addressing a broad array of policy issues beyond

¹ 23 CFR § 450.310

transportation policy such as air quality, water quality, economic and community development (Sanchez, 2006).

Collectively, these federal actions aimed to empower MPOs, increase the participation of local decision makers in regional transportation planning, increase public participation (particularly participation of populations that have been traditionally marginalized in transportation planning), and encourage the development of more robust and equitable regional transportation networks. As such, Metropolitan Planning Organizations seem ideally suited to advance metropolitan reforms aimed at improving regional equity and livability. The question much of the current research on MPOs has asked is how well are MPOs living up to their potential and purpose.

2.2 Assessments of MPO Performance

Every MPO is responsible for developing two key documents: a long-range 20-year Regional Transportation Plan and a short-term (four-year) Transportation Improvement Program (TIP) which includes all surface transportation projects that will receive federal funding. The TIP must be aligned with the long-range transportation plan priorities². As noted earlier, MPOs are required to incorporate transportation equity, environmental justice, and civil rights concerns into their planning processes (Sanchez & Wolf 2005). However, despite federal requirements, numerous scholars have expressed concerns that MPOs fail to allocate funding in a manner that is equitable and attentive to social and environmental justice (Deka 2004; Grengs 2005; Manaugh, Badami, and El-Geneidy 2015). Research into MPO activities, and the transportation

² In metropolitan areas with a population greater than 200,000, MPOs must also produce a Unified Planning Work Program (UPWP). The UPWP outlines expenditures by an MPO over the next 1–2 years. The UPWP is basically the MPO's budget. This differs from the TIP, which shows projects that will be funded using other agencies' money. <https://ops.fhwa.dot.gov/publications/fhwahop13050/s1.htm>

reforms that resulted following the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, left many scholars feeling underwhelmed. Lefèvre & Weir (2012, p. 632) contend that reforms aimed at encouraging public participation in MPO decision making “fell far short of initial hopes.” Perhaps the most disturbing criticisms levied at MPOs charge that many have failed to adequately incorporate equity considerations in the planning process (Karner & Niemeier 2013; Sanchez 2006; Sanchez & Wolf 2005) and that MPO voting structures have resulted in significant biases that disadvantage vulnerable populations (Grengs 2005a; Lewis 1998; Nelson et al. 2004)

Scholars have utilized a number of methods to assess how effectively MPOs are integrating equity considerations into regional planning. Approaches have ranged from analyzing how equity language is used in long-range regional transportation plans (Manaugh, Badami, & El-Geneidy, 2015), comparing how equity considerations are integrated into the regional transportation planning process (Sanchez & Wolf 2005), and analyzing the methodology used by MPOs in their equity analyses (Karner & Niemeier 2013).

There is ample evidence that MPO organizational structures are not representative and are fundamentally biased against cities and minorities (Grengs 2005b; Sanchez 2006). Many MPO boards allocate votes based on jurisdiction, not population. This structure means that suburban jurisdictions have greater representation, and thus power, than cities (Grengs 2005a). This suburban bias has been found to result in different funding allocations between transit and highways. On average, each additional suburban voter on an MPO Board results in a one to seven percent decline in transit funding in MPO budgets (Nelson et al. 2004). These findings have led academics and metropolitan policy advocates to call for institutional reforms to change voting processes and the geographic composition of executive boards.

Research into the composition of MPO executive boards has focused primarily on documenting deficiencies in descriptive representation. In a 2006 Brookings Institution Report, Sanchez (2006) provided compelling evidence that MPOs overrepresent white constituents and underrepresent racial minorities. Sanchez investigated MPOs in 50 large metropolitan areas and found that over one-fourth of the governing boards were 100% white and found only a slight correlation between the racial-ethnic composition of the MPO boards and the racial-ethnic compositions of their jurisdictions. In the context of MPOs, no research exists to document how variations in minority representation on MPO governing boards may impact policy outcomes, however studies of school boards (Meier & Stewart 1992), state legislatures (Preuhs 2006), and Congress (Hawkesworth 2003) have all found that descriptive representation matters and alters policy outcomes.

Given the saliency of mobility and accessibility issues to group welfare, the underrepresentation of minorities on MPO executive boards is troubling. Indeed, Sanchez (2006) argued that the lack of descriptive representation on MPO boards was a significant hurdle to implementing desirable transportation and metropolitan reforms. He urged MPOs take immediate action to increase both racial and geographic representation on governing boards. However, it is important to note that there is currently no evidence that the poor representation of minorities on MPO boards results in different policy outcomes. While there is ample evidence descriptive representation in policy making bodies leads to different policy outcomes, more research is needed to understand if MPOs operate like traditional policy making bodies. There is reason to suspect they may not.

Since MPO board members are almost always appointed elected and administrative officials³ with other jobs they prioritize, it seems quite probable that these policy makers function more like committee members that rely on bureaucratic policies and expertise to shape their policy agendas. If MPO governing boards are operating more like bureaucratic committees, we might expect professionalization to be more influential than social origins. In bureaucracies, one of the key constraints on the attitudes of civil servants is professionalization. Meier and Nigro (1976) pit agency affiliation against social origins to see which is a better predictor of civil servant's attitudes. They conclude both are significant, but agency affiliation is a better predictor of behavior than origins. MPO boards offer a unique opportunity to explore how race and professionalization interact. The composition of MPO boards is determined at the state level, thus local representatives in some states are elected officials, in others professional public administrators, and in others a mix.

Research by Gerber and Gibson (2009) provides quantitative support for the idea that MPO governing boards may be operating more like bureaucracies than traditional policy making institutions. They found that the formal positions held by MPO board members significantly affect MPO outcomes. MPO boards with more elected officials allocate a greater percentage of their transportation funds to local projects than those dominated by public administrators which were more likely to invest in regional projects. On average, appointed elected officials tend to support local projects more often than the regional projects favored by public managers.

Gerber and Gibson's research points to a significant gap in the research on Metropolitan Planning Organizations and, by extension, the scholarly calls for metropolitan reforms. If MPOs operate less like traditional policy making bodies and more as bureaucratic institutions, then the

³ One notable exception is Metro, the Metropolitan Planning Organization for Portland.

strategies needed to empower them to lead metropolitan reforms may differ substantially from the ideas currently advanced.

There are a number of critical gaps in the research on MPOs. Given the variation in MPO board composition, MPOs are an understudied environment to explore the role of descriptive characteristics such as race, gender, and agency affiliation on decision-making. Further research into these variations and how they impact regional outcomes will allow governors, cities, and MPOs to consider the types of institutional changes that might lead to more equitable outcomes.

Also underexplored in the current literature on MPOs is research examining how institutional factors shape both MPO and regional policy outcomes. Paul Lewis (1998) writes “much of the real activity and leadership of regional organizations has rested with their executive and technical staffs rather than with governing boards” (p. 841). Neil Brenner (2002) concurs and suggests urban and regional growth management is steered mostly by technocrats. If this is the case, institutional factors such as processes and leadership may be more influential than the descriptive characteristics of board members.

Goetz, Dempsey, and Larson (2002) sought to identify the characteristics of successful MPO processes. Based on a case study of four MPOs, and survey data collected from 378 executive and policy leaders, they identified a number of key characteristics that MPO leaders associated with success. I will discuss three relevant to this study. First, they found effective leaders to be critical to strong outcomes. This aligns with an assessment made by Gerber and Loh (2010) wherein they note that MPOs are collaborative organizations and “regional efforts can be made or broken on the strength of the individuals involved in creating them” (p. 9). Second, they found that the most successful MPOs “employ staffs with high levels of technical competence and expertise” (Goetz et al. 2002, p. 100). And finally, they found streamlined and

efficient processes to be important to strong outcomes. One of the criticisms levied at MPOs was the project selection process can be “unduly cumbersome, time-consuming, and laborious” (p. 102).

The issue of process and the mechanisms for project selection are important to this study. In the next chapter, I will dive more deeply into the processes and values MPOs employ to determine what projects should be included in the TIP. What is clear from the literature on organizational change is that leaders must institutionalize processes so that new patterns replace old ones. Although institutionalizing change is difficult, modification of formal structures and procedures are key to changing organizational outcomes. “In order for fundamental change in behavior to occur, leaders must make systemic changes to the subsystems of their organization” (Fernandez and Rainey 2006, p. 173). The ranking mechanism utilized to prioritize projects that appear on the TIP is just the sort of subsystem and process change that could drastically alter MPO outcomes.

2.3 Research Goals

The goal of my dissertation is to better understand what institutional features drive MPO decision-making and regional policy outcomes. Based upon the work that has preceded mine, I have three primary research questions. First, is there evidence that descriptive representation on MPO boards results in more equitable transportation allocations? Specifically, is there evidence that the characteristics of an MPO board shift the types of projects included on the TIP and are there particular characteristics that result in more funding for transit, bicycling and pedestrian infrastructure? Second, are there observable institutional features of an MPO that influence MPO policy outcomes? And again, do any of these features result in more equitable policy outcomes? And, finally, how do MPO institutional features, and ultimately, MPO decisions influence

regional outcomes? In sum, these questions are aimed at identifying the power MPO staff and boards have to shift policy and regional outcomes. If variations are observable, I believe this finding would counter scholarly claims that MPOs are inconsequential regional actors.

CHAPTER 3. Phase 1: Exploring Factors Influencing MPO Decisions

In the spring of 2017, I conducted a series of semi-structured interviews with the staff and board members at two MPOs to explore a variety of factors that might influence decision making and learn how institutional actors perceived and addressed regional equity issues. These interviews were instrumental in guiding me towards institutional features that warranted greater analysis. As Creswell and Clark (2004) suggest, exploratory mixed methods research designs help researchers to formulate research questions and generate hypotheses about important variables and the relationship between those variables.

These interviews, which I will discuss at length in this chapter, served as the first phase in a two-phase, mixed methods research design. The rich, qualitative data I obtained helped me refine my research questions (articulated at the end of the previous chapter), and informed the development of my research design, as well as my specific data needs. The second phase, discussed in chapters 4 and 5, relied on multiple MPO datasets (one novel) and employed quantitative methods to examine a variety of factors that these interviews suggested might influence MPO outcomes.

It's important to note that these interviews were not intended to serve as case studies. Strong case studies seek to "elucidate the features of a broader population" (Gerring 2004). I do not claim to achieve this goal with my interviews. Rather, utilizing an interpretivist approach, these interviews provided important descriptive data and allowed me to gain more insight into the motivations and belief systems that influence individual decision making and aided me in "generating good hypotheses" (King et al. 1994, p. 38).

In total, eleven individuals were contacted for interviews and nine agreed to participate, demonstrating a strong response rate of 81%. The subjects were identified based on the

influential decision-making roles they served in their respective organizations. I conducted interviews with three senior level MPO staff members, five executive committee board members, and one former executive committee board member and current Michigan State Representative. Each interview was about an hour in length.

Interviews were semi-structured⁴ and differed slightly for each participant, building on insights gained in previous interviews. For MPO board members, the general structure was to explore their personal history on the board (length of time, committee service), discuss how controversial votes are handled, probe the influence of public input and political party on decision making, and examine their views on the MPO's role in improving transportation equity and accessibility for metropolitan residents. For MPO staff, interviews focused on understanding the processes and approaches utilized to advance equity planning goals, the challenges for staff of moving forward planning goals centered around equity, and how they viewed the role of staff and the MPO, in general, in advancing equity goals.

I selected two MPOs, the Nashville Area MPO and the Southeast Michigan Council of Governments (SEMCOG),⁵ for interviews and more thorough review of their long-range plans. These two MPOs were selected for greater analysis based in part on access⁶, but more so due to their reputation for innovation (Nashville) and the history of regional transportation battles (SEMCOG), as well as on their ranking in Smart Growth America's 2016 Dangerous by Design report ranking⁷ of pedestrian safety. Table 1 provides an overview of the Detroit and Nashville

⁴ Interview questions included in Appendix A

⁵ SEMCOG serves as the MPO for the Detroit metropolitan area.

⁶ As an MSU PhD student, I suspected SEMCOG staff and board members would be more inclined to provide time to aid the research needs of a fellow Michigander. My high interview response rate appears to support this hypothesis.

⁷ The Dangerous by Design ranking of all 104 metropolitan is included in Appendix B.

metropolitan areas, their MPOs, and some of the key variables relevant to the analysis conducted in this dissertation.

Table 1: MPO Comparison – SEMCOG and Nashville Area MPO

DETROIT Southeast Michigan Council of Governments (SEMCOG)	<i>Metro Population</i>	<i>Land Area</i>	<i>Ped Danger Ranking</i>	<i>2016 Ped Danger Index **</i>
	4.7 million	4,784 sq/miles	17	124.2 (1.61)
	<i>Org Type</i>	<i>% Board Elected Officials</i>	<i>% Board White</i>	<i>% Board Male</i>
	Council of Governments	98%	83%	71%

NASHVILLE Nashville Area Metropolitan Planning Organization*	<i>Metro Population</i>	<i>Land Area</i>	<i>Ped Danger Ranking</i>	<i>2016 Ped Danger Index**</i>
	1.5 million	2,859 sq/miles	37	92.9 (1.21)
	<i>Org Type</i>	<i>% Board Elected</i>	<i>% Board White</i>	<i>% Board Male</i>
	Freestanding MPO	100%	100%	96%

* In 2017, the Nashville Area MPO merged with the Greater Nashville Regional Council.

** In parantheses are the metro ranking for annual ped fatalities per 100,000. PDI offers a better assessment of ped risk. See Ch.5

Out of 104 metropolitan areas, Smart Growth America ranks the Detroit metropolitan area (SEMCOG region) as the 17th most dangerous metropolitan area for pedestrians and the Nashville Area MPO as the 37th.⁸ Pedestrian safety, as is expounded upon in Chapter 5, is a critical performance metric MPOs are required to monitor and address⁹. The number of

⁸ In Chapter 5, I provide more details on the benefits of utilizing the Pedestrian Danger Index (PDI) to rank pedestrian safety. PDI is the measure used in their Dangerous by Design reports to rank the relative risk of metropolitan areas and states. The higher a metropolitan area's PDI score the more dangerous the region is for pedestrians.

⁹ On July 6th 2012, President Obama signed into law Moving Ahead for Progress in the 21st Century Act (MAP-21). One of the key features of MAP-21 was the establishment of a performance-based transportation planning process as a prerequisite for federal surface transportation funding. Safety (and improved pedestrian safety in particular) is called out as a mandated planning goal.

pedestrians killed in traffic in the United States is the highest it has been in three decades. During the 10-year period from 2009 to 2018, the number of pedestrian fatalities in the United States increased by 53% while the number of all other traffic deaths has increased by only 2% (Governors Highway Safety Association, 2019). These deaths are not distributed equally. People of color and older adults are over-represented among pedestrian deaths. Non-white individuals account for 34.9 percent of the national population but make up 46.1 percent of pedestrian deaths. (Dangerous by Design, 2016). Improving roadway safety, particularly pedestrian safety outcomes, in metropolitan areas is critical to improving equity and addressing long-standing inequalities in transportation.

3.1 Detroit and Nashville: Similar Problems, Different Outcomes

The Southeast Michigan Council of Governments (SEMCOG) is the MPO and COG for the Detroit metropolitan area and serves 4.7 million people across seven counties. Despite concentrated poverty, transit service in Detroit remains woefully inadequate. According to a 2011 Brookings Report, Detroit ranked 73 among the 100 metropolitan areas examined on transit accessibility. In the Detroit metropolitan area, only 22% of the regions' jobs are reachable via transit in 90 minutes.¹⁰ And those traveling by transit face a dangerous terrain at the beginning and end of their commutes. In 2016, the Detroit metropolitan area was ranked the 17th most dangerous metro area in the nation for pedestrians, a small gain from its rank as 12th worst in the 2011 version of the report (Dangerous by Design, 2016).

The Nashville Area Metropolitan Planning Organization serves an area of 3,000 square miles and 1.5 million people across seven counties. In 2011, less than 50% of the streets in

¹⁰ Detroit- Warren- Livonia, MI Metro Area Transit Accessibility Profile. Missed Opportunity: Transit and Jobs in Metropolitan America. Available at: <http://www.brookings.edu/~media/Series/jobs-and-transit/DetroitMI.PDF>

Nashville had sidewalks and the Nashville metropolitan area ranked the 14th most dangerous metropolitan area for pedestrians according an analysis of pedestrian deaths and crashes between 2000-2009 (Dangerous by Design 2011). However, by 2016, this ranking had significantly improved and the region was listed as the 37th most dangerous (Dangerous by Design 2016). This chapter will qualitatively explore some of the factors that may have influenced the differing regional outcomes between these two metropolitan areas.

3.2 Utilizing existing processes to initiate systemic change

Metropolitan Planning Organizations are required by federal law to produce long-range (20-year) regional transportation plans, as well as short-term (typically four year) capital plans that describe how federal funds will be invested in the region. The short-term project plan is called a Transportation Improvement Program (TIP) and it is comprised of transportation projects (i.e. roadway expansion, bike lane/path projects, bridge repairs) prioritized by local communities and ranked and approved by MPOs. The basic process is as follows. Potential projects are introduced by MPO member organizations (local governments, transit agencies, departments of transportation). TIP projects are then ranked by MPO staff based on weights given to a variety of planning factors.¹¹ MPO technical committees evaluate recommendations. The TIP is ultimately approved by an MPO executive governing committee and adopted by a governing board comprised of all board members. MPO boards are comprised of representatives¹² of member jurisdictions/organizations and are appointed, not elected, to serve

¹¹ The list of planning factors and overview of planning process is available at: <https://safety.fhwa.dot.gov/tsp/fhwasal6116/mod2.cfm>

¹² When member organizations are local governments representatives may be either elected officials or public administrators. When member organizations are agencies, they will be professional staff. The differences in how these representatives vote was the subject of Gerber and Gibson's (2009) research.

on the MPO. Projects included in the TIP are eligible and recommended for federal and state funding. Local projects aren't eligible for the federal funding dispersed by MPOs unless they are included on the regional TIP.

Driven by concerns about rising obesity rates, safety, and equity, the Nashville Area MPO changed the method it used to rank and prioritize projects in their TIP. The call for projects for the 2040 long-range plan states, "With little chance that there will be enough funding around to pay for all transportation improvements identified over the next few months, the MPO will evaluate each candidate project for its ability to fulfill regional goals for livability, sustainability, prosperity, and diversity."¹³ The following are a sampling of the questions that helped to guide prioritization:

- How well does the project introduce, support, or reinforce multiple transportation choices for people to access jobs, schools, food, entertainment, etc?
- How can the project be scoped to incorporate facilities for and/or connections to non-motorized modes and transit?
- Does the project aid/ harm the advancement of social justice and equal opportunity to destinations throughout the region?
- How can the project be scoped to mitigate any negative impacts to predominately low-income or minority communities or persons with a disability?

The Nashville Area MPO was profiled in the Smart Growth America report *The Innovative MPO: Smart Planning, Strong Communities (2014)* for its decision to consider a broader range of the federally mandated planning factors than required by federal law. The decision to incorporate a more robust set of planning factors dramatically changed how federal funds were

¹³Nashville's 2040 Regional Plan is available online at:
http://www.nashvillempo.org/plans_programs/rtp/2040_call.aspx

allocated regionally. Traditionally, transportation investments have only considered or weighted planning factors such as congestion mitigation and roadway efficiency much more heavily than ones that might address long-standing social justice and equity issues. The decision to reconsider these planning factors and the weights they are given can have profound implications for the types of projects included in a TIP and approved by MPO boards.

The selection criteria for the Nashville MPO Active Transportation Program includes points for projects that benefit underserved areas and populations. This change in prioritizing additional planning factors in the project identification phase and the dedication of additional funding for active transportation projects has resulted in a significant shift in the types of projects jurisdictions choose to recommend for inclusion in the TIP. An MPO executive staff member shared in an interview that an examination of the Nashville Area MPO 2005 long-range plan found only 2% of projects had a walking or biking element in the project proposal. In the 2035 plan, 70% had a walking or biking element. And in the most recent, 2040 plan, 77% have a walking or biking element (personal communications, March 13, 2017).

The decision to rank projects based on criteria that include social justice and nonmotorized connections was a radical departure from past practice and has resulted in a noteworthy shift in the types of projects that jurisdictions submit and that ultimately receive federal funding in the Nashville metropolitan area. According to the Regional Plan, the changes in the TIP process were “*Shaped by extensive public and stakeholder input, the MPO established a new direction for investments made with MPO-managed grant funds received through the Federal Highway Administration's Surface Transportation Program*”.¹⁴ The claim that changes were spurred by public engagement is a topic I explored with staff and report on later in this

¹⁴ Nashville Area MPO Active Transportation Program was retrieved on April 18, 2017 from http://www.nashvillempo.org/plans_programs/tip/ATP.aspx

chapter.

The process SEMCOG employs for ranking projects varies significantly from the process used by Nashville. SEMCOG has worked with each county to develop a distinct set of criteria to judge projects. One of the challenges of each county having a distinct set of criteria is that is difficult to advance region-wide goals and policies. The following regional policies¹⁵ are intended to shape project selection and performance management:

- **Preserve Infrastructure** through fiscally-responsible, data-driven asset management practices.
- **Increase Safety** for all travelers, regardless of mode.
- **Increase Access** to jobs and core services by expanding travel choices regardless of race, gender, ethnicity, national origin, age, physical ability, or income.
- **Utilize Technology** to cost-effectively improve the transportation system.
- **Integrate Environmental Protection** into the transportation system, enhancing community health and increasing the overall resiliency of infrastructure.
- **Support the Regional Economy** through the reliable movement of goods, efficient trade connections, expanded labor mobility, and support for tourism and local placemaking.
- **Educate and Collaborate** with local governments, transportation agencies, utility providers, and residents to improve understanding and operation of the transportation system.
- **Increase Funding and Expand Local Options** to provide resources that are sufficient to meet regional transportation needs.
- **Anticipate the Socio-economic Challenges of an Aging Region** including sustaining mobility for all ages and mitigating labor shortages.
- **Measure Transportation System Performance** to facilitate strategic investment through developing, collecting, analyzing, and disseminating data.

¹⁵ More on SEMCOG's goals and principles can be found on SEMCOG's website at: <https://semcog.org/rtp#4052446-rtp-amendments>

However, without shared criteria that transcend County borders advancing some concepts, such as increased safety and access for all modes, may prove particularly hard to advance.

In an interview with senior executive staff leadership I explored why counties¹⁶ have been allowed to develop different selection criteria given the challenges this presents to advancing SEMCOG's overarching policies. I was told SEMCOG asks localities to think beyond their immediate borders and consider regional performance goals. But ultimately each county has different criteria because SEMCOG is "*not a homogeneous region... Wayne is different from Oakland which is different from Washtenaw.*" SEMCOG has allowed each county to maintain their own fiefdoms to advance projects that better meet local interests. Perhaps because of this allowance, some policy board members seem unaware of how the process is supposed to be designed to advance regional policy goals and shift the types of projects that localities submit to their MPO.

When discussing SEMCOG's responsibility and role in advancing transportation equity, one board member stated that "*SEMCOG helps to identify the problem. It can educate at the county and community level, but funding is basically formula pass through*" (personal communications, March 29, 2017). Another board member stated, "*We can't make an informed decision without considering equity as a factor, but we're not there to specifically address equity. I wouldn't try to prioritize one issue over another*" (personal communications, March 30, 2017). Although all the board members appreciated SEMCOG's role in helping to advance regional goals and enhance collaboration, for at least one executive committee board member there was a frustration with some federal funding criteria, "*Intersections are required to have*

¹⁶ SEMCOG has seven Federal-Aid Committees (FAC), one for each County in the SEMCOG region and the City of Detroit. FACs are "charged with evaluating data and recommending projects that meet regional transportation goals while satisfying local needs." <https://semcog.org/federal-aid-committees>

handicap ramps... even if there aren't sidewalks.... Localities need more flexibility.”

SEMCOG's policy of “advancing safety for all users, regardless of mode”, wasn't driving the policy perspectives of these board members.

The question is, why does the TIP process differ so much between SEMCOG and Nashville today? Is it because, as the long-range plan suggests, Nashville has faced more public pressure to shift the criteria by which projects are judged and allocate more funding to nonmotorized improvements? Or are there other factors at work? Through my interviews, I explore the role of party, the purpose of the MPO in the region, and of leadership with executive staff and policy leaders.

3.3 Role of Leaders: Staff vs. Policy Maker

Nashville's Regional Plan suggests that the changes outlined above were primarily a result of public pressure and participation. Although perhaps the democratic and planning ideal, my interview with a senior level MPO staff member in Nashville revealed other forces at work behind the scenes. The staff member suggested that while some communities may be getting pressure from their constituents, the MPO didn't experience much pressure from advocates. Instead the executive staff member I spoke to suggested reforms stemmed from changes in executive leadership that brought in new expertise and interest in tackling long-standing issues (personal communications, March 13, 2017). Additionally, Nashville added a new position to staff, Director of Healthy Communities. According to this executive staff member, it was a change in leadership and addition of technical experts that triggered the cultural shift in the Nashville Area MPO and resulted in a new, more complex TIP project ranking process which ultimately received the support of the public and policymakers alike. In addition to ranking

projects by additional planning factors, the Nashville MPO also dedicated at least 15 percent of available federal Urban Surface Transportation Program funding for walking, bicycling, or transit-supportive projects.

Unlike the Nashville Area MPO, SEMCOG has not yet introduced significant reforms that would shift what types of projects are eligible for the limited federal funds across the region. And unlike Nashville, SEMCOG has allowed each county to develop their own ranking system for projects rather than embracing a common scoring mechanism. However, there is evidence that policy leadership has been a critical factor in advocating for some change within SEMCOG.

In January 2016, SEMCOG released the report *Access to Core Services*. The report was the product of a SEMCOG committee, also creatively named *Access to Core Services*, initiated by SEMCOG staff and chaired by former Washtenaw County Commissioner Yousef Rahbi. Yousef Rahbi was a powerful advocate for equity and accessibility issues within SEMCOG. Commission members included SEMCOG board members, as well as other knowledgeable government, nonprofit, and business leaders. The final report provides data which benchmarked levels of accessibility, identifies gaps and barriers within the region, and outlines a number of policy reforms that would advance the following three core goals:

- 1) Improve and expand transportation options to safely and efficiently connect people and places;
- 2) Better align the location of core services to meet the needs and demands of residents;
- and
- 3) Increase coordination and planning to decrease barriers to accessing both transportation modes and desired destinations. (Access to Core Services in Southeast Michigan, 2016)

In interviews with staff and executive committee members, the significance of this report was noted numerous times as a basis for guiding future SEMCOG policies and actions. And though

SEMCOG staff indicated they intended to integrate the findings into future planning efforts, as well as to update and maintain the data to guide decision-making, it does not appear that these recommendations resulted in any shift in processes or altered how projects were ranked. And while the committee was initiated by SEMCOG staff, the ultimate purpose appears to be to provide data and better inform decision making, not shift how decision making occurs unless that should be initiated by someone on the SEMCOG board. (Personal communications, March 29, 2017). Unfortunately, the strongest potential champion for the report is no longer on SEMCOG's board. In November 2016, Yousef Rahbi was elected by Washtenaw County residents to serve in the Michigan House of Representatives. Unlike Nashville, SEMCOG executive staff seem uncomfortable with initiating or proposing policy changes that may be controversial. They and board members place high value on their reputation as an unbiased educator.

3.4 Tolerance for Change and Controversy

The stated purpose of an MPO is to be a forum for cooperative transportation decision making for the metropolitan area. A “comprehensive, cooperative, and continuing”¹⁷ process is required for initiatives to be eligible for federal transportation funding. In order to achieve the cooperative and continuing process, some MPOs may strive to reduce or avoid controversy within the process. In regions like Detroit, where regional divides have been particularly pronounced, there appears to be a strong desire to view the role of the MPO as an educator and to avoid actions that might be controversial.

¹⁷ Often referred to as the “Three C’s”

In the early 2000's, the City of Ferndale (a SEMCOG member) and Transportation Riders United, a transit riders advocacy group, repeatedly urged SEMCOG to change its voting structure to address issues of perceived inequality. When unsuccessful, they sued SEMCOG. As plaintiffs in *MOSES v. SEMCOG*¹⁸ they claimed that SEMCOG's voting structure, like many MPOs, was skewed in favor of suburban communities because it was not proportionally weighted to account for the population of the member jurisdictions. They claimed the voting structure disproportionately burdened African Americans, a violation of the Elliott-Larsen Civil Rights Act. However, the judge that presided over the case in the Third District Court ruled that a proportional voting system was not necessary because SEMCOG functioned like a special-purpose government and that the plaintiffs "failed to plead any clausal connection between the voting structure of SEMCOG and the underdevelopment of mass transit" (Grengs 2005a). Following this lawsuit, SEMCOG ultimately voluntarily decided to revise their voting structure. It now records two votes for all votes: a popular and weighted vote. However, the initial resistance to changing to a weighted vote suggests that resistance to change, and reluctance to engage in controversial policy conversations, may be deeply embedded in SEMCOG's organizational culture.

As noted earlier, SEMCOG serves seven counties in southeast Michigan. The counties in this region have experienced long-standing racial, policy and partisan divides. Although the final 2016 presidential election results suggest Michigan voters were fairly equally divided in their support for Donald Trump (47.6%) and Hillary Clinton (47.3%), the divide is much more pronounced in the Detroit metropolitan area where a majority of the voters in four of the seven SEMCOG counties voted for Clinton. In the region's most conservative county, St. Clair, 62.9%

¹⁸ Full case findings available at <https://caselaw.findlaw.com/mi-court-of-appeals/1331324.html>

of voters supported Trump. In Wayne County, home to the city of Detroit, 36.2% voters supported Trump and voters in the city of Detroit voted overwhelmingly for Clinton (95%). The partisan divide throughout the region and between local units of government is stark, but the policymaking environment within SEMCOG is remarkably nonpartisan. In general, SEMCOG appears to have cultivated a culture of consensus and prioritizes “finding common ground” As one senior staff member noted, “*Partisan issues don’t come up much. We all live and work here, we need to come up with a way to work together*” (personal communications, March 29, 2017). A number of executive board members independently made the same observation. When asked how much partisanship influences the decision making of SEMCOG, one board member replied “*I wouldn’t have an idea who’s what*” (personal communications, March 30, 2017). However, ideology which often is closely aligned with party, does appear to drive decision making. One executive committee board member reported, “*Party never comes up... people talk in terms of philosophy.... I think that’s good. You can reason with each other, set-up compromises, deal with each more effectively*” (personal communications, April 10, 2017). SEMCOG has cultivated a nonpartisan policymaking environment. Board members value their “rich discussions” and the expertise SEMCOG staff brings to committee and board discussions and to member communities. One board member noted that the “*process is not one that promotes controversy.*” He reasoned this was because “*the sharing of information and science is not typically controversial... How can you argue with science?*” (personal communications, March 30, 2017) and they pride themselves on evidence-based decision making.

Perhaps as a result of navigating intense regional policy divides, SEMCOG leadership has embraced its role as an educator¹⁹. In contrast, the Nashville Area MPO acknowledged that

¹⁹ SEMCOG was recognized within the *The Innovative MPO* for its role as community educator on placemaking and its SEMCOG University programming.

implementing new project prioritization criteria has been somewhat controversial, but noted they had success by moving forward slowly and initially with smaller funding streams to gain the support of members and the result is that the Nashville Area MPO is now a strong force in leading regional transportation reforms²⁰ (March 13th, 2017).

3.5 Discussion and Model Specification

Some interesting observations emerged from my interviews. Staff leadership, not policy leadership, appears to have been a factor in leading reforms in the Nashville Area MPO. Further, Nashville has utilized the TIP process to shift the types of projects submitted to the MPO for review and also utilized smaller pots of federal funding to build support for larger changes. In Nashville, this process was controversial, but staff was willing to engage in a controversial process. It appears it was the staff, not the board, that built a framework for regional reforms to take root.

SEMCOG, on the other hand, has shied away from activities that might antagonize members and has stressed the differences between regions as reason to allow systems that perpetuate the status quo to persist. With relatively frequent turnover in board members, even when policy champions emerge their relatively short terms have meant that there has not been sufficient time for policy leaders to lead change. In the face of intense regional divides, SEMCOG's long-time executive leadership has prioritized building an organization that is well-respected and trusted by its members. Both policymakers and staff, appear to place a high value

²⁰ An interview with Executive Director at the Madison Area Transportation Planning Board, the MPO for Madison, Wisconsin, voiced a similar approach and process to reforming the TIP process (personal communications, February 15th, 2017). The Madison Area Transportation Planning Board is much smaller and only serves one County.

on SEMCOGs reputation as an unbiased source of expert information and data for SEMCOG members and the region-at-large.

Support for regional solutions is strong both in Nashville and SEMCOG. When discussing the failed 2016 Regional Transportation Authority (RTA) millage, which would have generated a stable funding source for regional transit, one executive board member stated, *“To not have regional transit is simply not acceptable... SEMCOG supported the RTA... We now need to reflect on the message voters sent back, regroup, and push forward collectively with a revised proposal... Generations to come need it”* (personal communication, March 29, 2017). But in SEMCOG, there is a reluctance to view SEMCOG as an institution that can lead bold changes. It is a place for educating members on the importance of regionalism, engaging in “rich discussion”, and providing data that can help inform decision making. The Nashville Area MPO has embraced the role of innovator and staff is clearly proud of their MPOs ability to transform the types of projects that come to them for consideration.

Much of the recent literature on MPOs focuses around the role of representation and inadequate representation on MPO boards (Grengs 2005; Gerber and Gibson 2009; Nelson et al. 2009; Sanchez and Wolf 2005; Sanchez 2006). Sanchez (2006) explicitly calls for more research to investigate how poor representation on MPO boards impacts MPO policy outcomes. However, past case studies of MPOs (Goetz, Dempsey, and Larson 2002) and these interviews provide justification for examining other factors that may influence MPO outcomes. In particular, there is need to more robustly examine the role of technical expertise, staff leadership, and processes on MPO and regional outcomes. Goetz, Dempsey, and Larson (2002) suggest MPO success, in part, hinges on effective leaders, technical expertise, and streamlined processes. However, these interviews suggest that more complexity and controversy may actually lead to

better regional outcomes. Building upon these observations, in Chapter 4 and 5 I discuss and test a series of hypotheses to help me answer the three research questions I presented at the end of the last Chapter.

CHAPTER 4: Exploring MPO Policy Outcomes

As noted earlier, the overarching goal of this dissertation is to better understand the power and influence Metropolitan Planning Organizations (MPOs) wield in metropolitan areas. In the last chapter, I discussed the first phase of my research, which utilized a qualitative exploratory research design to assist in hypothesis development. In this chapter, I begin the discussion of the second phase of my dissertation and examine two of the three research questions I posed earlier. First, is there evidence that descriptive representation on MPO boards results in more equitable transportation allocations? Specifically, is there evidence that the characteristics of an MPO board shift the types of projects included on the TIP and are there particular board characteristics that result in more funding for transit, bicycling and pedestrian infrastructure? Second, are there observable institutional features that influence MPO policy outcomes? And again, do any of these features result in more equitable policy outcomes?

Federal transportation legislation requires that an MPO is designated for each urbanized area with a population greater than 50,000 to carry out the metropolitan transportation planning process, as a condition of Federal aid²¹. There are currently 404 MPOs in the United States. Table 2 lists the 43 MPOs I examined for my research. The sample of MPOs I study was purposefully selected because it allows me to utilize and merge two existing MPO datasets. The first dataset provides data on the descriptive characteristics of MPO board members (Sanchez and Wolf 2005). The second dataset is comprised primarily of data about MPO institutional features (Gerber and Gibson 2009). Both of these existing datasets were developed between 2004-2006.

²¹ MPO database: <https://www.planning.dot.gov/MPO/>

Table 2. Metropolitan Planning Organizations

MPO	STATE	MPO TYPE
Association of Central Oklahoma Governments	Oklahoma	Regional Council
Atlanta Regional Commission	Georgia	Regional Council
Baltimore Regional Transportation Board	Maryland	Regional Council
Boston MPO	Massachusetts	Free Standing
Broward County MPO	Florida	County
Chicago Area Transportation Study	Illinois	Free Standing
Denver Regional Council of Governments	Colorado	Regional Council
East-West Gateway Coordinating Council	Missouri	Regional Council
First Coast MPO	Florida	Free Standing
Genesee Transportation Council	New York	Free Standing
Greater Buffalo-Niagara RTC	New York	Free Standing
Hampton Roads Planning District Commission	Virginia	Regional Council
Hillsborough County MPO	Florida	County
Houston Galveston Area Council	Texas	Regional Council
Indianapolis MPO	Indiana	City
KIPDA	Kentucky	Regional Council
Maricopa AOG	Arizona	Regional Council
Memphis Urban Area Metropolitan Planning Organization	Tennessee	Free Standing
METROPLAN Orlando	Florida	Free Standing
Miami Valley RPC	Ohio	Regional Council
Miami-Dade MPO	Florida	County
Mid-America Regional Council (MARC)	Missouri	Regional Council
Mid-Ohio RPC	Ohio	Regional Council
Nashville MPO	Tennessee	Free Standing
New York Metropolitan TC	New York	Free Standing
North Central Texas COG	Texas	Regional Council
North Jersey Transportation Planning Authority, Inc.	New Jersey	Free Standing
Northeast Ohio Areawide Coordinating Agency (NOACA)	Ohio	Regional Council
OKI Regional COG	Ohio	Regional Council
Palm Beach MPO	Florida	County
Pinellas County MPO	Florida	County
Puget Sound Regional Council	Washington	Regional Council
Regional Planning Commission Louisiana	Louisiana	Regional Council
Regional Transportation Commission of Southern Nevada	Nevada	Free Standing
Richmond Area MPO	Virginia	Regional Council
Sacramento Area COG	California	Regional Council
San Antonio-Bexar County MPO	Texas	Free Standing
San Diego AOG	California	Regional Council
Southeast Michigan COG	Michigan	Regional Council
Southeastern Wisconsin RPC	Wisconsin	Regional Council
Southern California Association of Governments	California	Regional Council
Southwestern PA Commission	Pennsylvania	Regional Council
Wasatch Front Regional Council	Utah	Regional Council

To gain traction on how descriptive representation and institutional features affect MPO policy outcomes, I developed a novel dataset that complements the “descriptive” dataset developed by Sanchez and Wolf (2005) and the “institutional” dataset developed by Gerber and Gibson (2009). I analyzed the Transportation Improvement Programs (TIPs) of the 43 MPOs listed in Figure 1 and classified 11,864 surface transportation projects into 16 project-type categories²². I coded projects that received federal funding in the first year of the TIP because of the high certainty that these projects were funded and built. Only federally funded projects were selected because there is a great deal of variation between regions surrounding the level of state and local funding available for transportation projects.

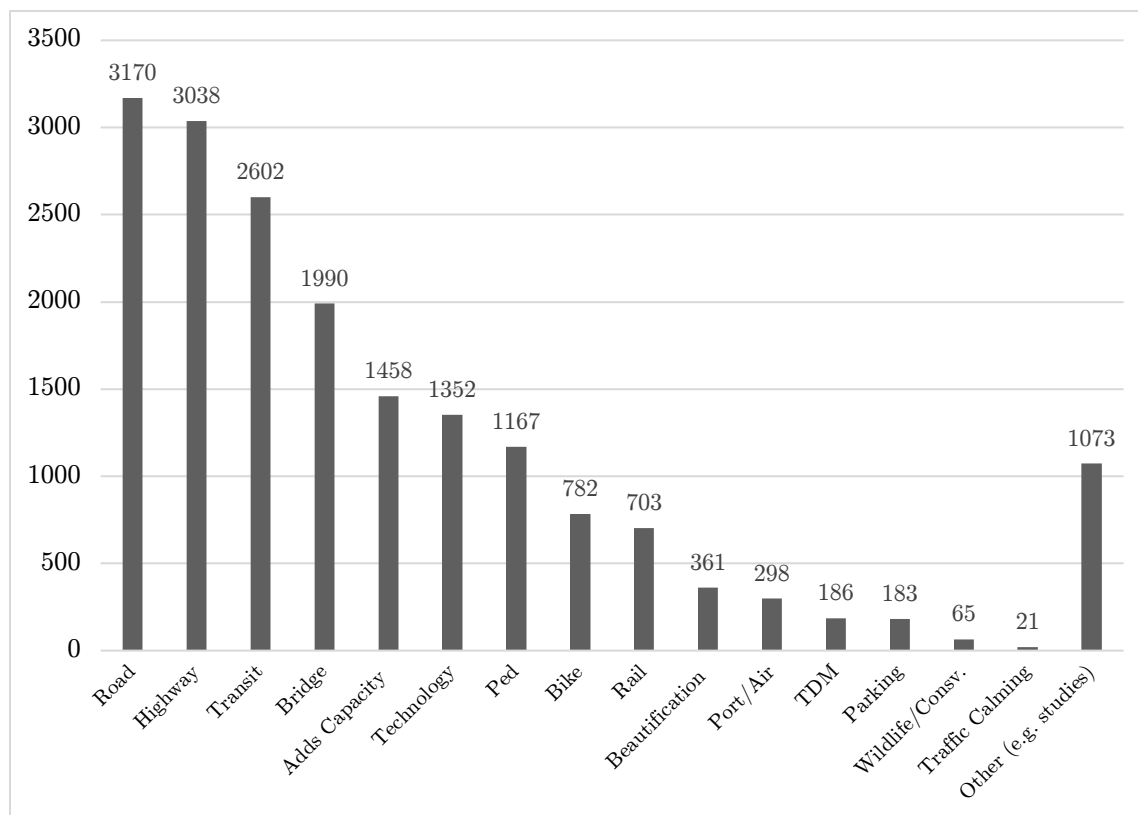
The project team for coding these projects included myself and two undergraduate students who were employed in the spring of 2019 to assist with project coding. The students were trained in the coding methodology. During training, each TIP was coded by all three team members, discrepancies were discussed by the full project team, and were resolved by the team lead (myself). A TIP typically contains a description line for each project so the primary obstacle for the undergraduate student team members was learning transportation terminology. Training was continued until there were no discrepancies between all three coders. The student coders worked collaboratively to address any questions that arose during the coding process and brought unresolved questions to me.

Projects were coded into 16 different project categories²³ to examine variations in project selection and offer the opportunity for a more fine-grained analysis of these project categories. Thirteen project categories were identified that captured the range of project types in most TIPs:

²² The TIPs studied were for the 2004-2006 or 2005-2007 time period. I concluded, as did Gerber and Gibson (2009) that there was no reason to expect that TIP allocations would vary in any meaningful way if the TIP cycle was 2004-2006 or 2005-2007.

highway, bridge, road, port/air, rail, transit, bike, pedestrian, parking, beautification projects (e.g. streetscape project), wildlife/conservation, transportation demand management, and other. An “other” category was created to capture projects that were irregular or, more often, were transportation studies and thus not necessarily resulting in built infrastructure. Three project categories were also included in the hopes that they might offer additional insight into how MPO regions were approaching vexing transportation issues. These three categories were: Add roadway capacity, traffic calming, and technology solutions. A project could be recorded to multiple categories. For example, if a project included both pedestrian and bicycle and road elements, it was recorded in all three project categories. The 11,864 individual projects were thus further divided into 18,449 project types for analysis.

Figure 1: TIP Projects by Category



As Figure 1 illustrates, over one-third of all project types were road or highway projects. And because projects were either a road or a highway project (rarely double counted), these two projects categories comprised over half (6,208) of all of the federally funded projects included in the TIPs. Transit projects were the third largest project category. The impact of transit projects is more difficult to interpret because transit funding is frequently for operational needs, not service expansion. Thus, the percentage of transit projects doesn't necessarily reflect improvements in a system or improvements in service, as the other project categories are more likely to indicate. My research did not differentiate between different types of transit funding which is likely an important element in determining commitment to the development of transit and accessibility by transit. Pedestrian and bicycle projects were often double counted if a project was a multimodal bike path. This descriptive analysis suggests that in the mid 2000's (2004-2007) MPOs were focused primarily on using strategies such as roadway and intersection expansion (captured in the add capacity category), as well as technology (e.g. signal timing) to address pressing transportation concerns such as congestion. Traffic calming was not a strategy utilized frequently, at least in projects requesting federal funding.

It is important to stress that my research focuses on the types of transportation projects an MPO funds, not funding allocations. This differs from the research conducted by Gerber and Gibson (2009). The dependent variable in their research was the percent of federal funds allocated by each TIP to regional projects. I examined projects, rather than funding, because it allowed me to gain better traction on MPO commitments to and integration of multimodal planning. My interviews with Nashville MPO executive staff suggest that commitment to nonmotorized transportation is likely to be reflected in the percentage of projects bicycle and pedestrian facilities are integrated into, rather than just the percentage of the total budget.

Further, it would have been impossible to determine what percentage of federal funding was dedicated to each element of a project and would have resulted inflated budget estimates for nonmotorized projects. For example, a road reconstruction project that included the addition of bike lanes but the loss of no car travel lanes, would be a costly capital project but the real costs for the bicycle project (paint and engineering analysis) are a relatively small component of the total project budget.

Based upon the data I gathered, four project categories are appropriate for exploring MPO commitment to the development of a more equitable, transportation system. These four categories are: road projects, pedestrian projects, bicycling infrastructure, and transit. I had hoped to find more articulated commitment, and variation, to the inclusion of traffic calming measures in transportation projects. This would have allowed me to compare outcomes for regions that put forth more projects that included traffic calming measures versus roadway expansion (adds capacity). However, at least in the subset of MPOs I studied, this was not a transportation solution frequently articulated for projects receiving federal funding. As such, my three dependent variables for the regression analysis presented in this Chapter are:

DV₁: Percentage of federally funded projects that include transit

DV₂: Percentage of federally funded projects that include pedestrian infrastructure

DV₃: Percentage of federally funded projects that include bicycle infrastructure

In the next chapter, I examine how variations in percentage of pedestrian and road projects influence regional safety outcomes.

4.1 Exploring the Effects of Representation on MPO Outcomes

In 2004, Sanchez and Wolf conducted an extensive study of the racial and gender board composition of 50 large MPOs. Their research clearly demonstrated that women and minorities

both suffer from underrepresentation on MPO boards. The boards they studied were predominately white (88%) and male (75%). Further, 13 of the 50 MPO boards were comprised entirely of white board members. They posed an interesting question in their conclusion, asking “Is it sufficient to have thorough data collection, analysis, and monitoring of equity outcomes at the metropolitan scale despite unrepresentative board members, or do representative boards (and their consequent voting) more directly influence policy and decision-making that affect distributional equity” (Sanchez and Wolf 2005, p. 18)? Fifteen years later this question remains unanswered.

There is good reason to suspect, as Sanchez and Wolf do, that descriptive characteristics of MPO board members matter. There is a vast body of literature devoted to examining the role race plays in American politics. Hutchings and Valentino (2004) conclude that “racial divisions, racial resentments, and group loyalties” profoundly influence the behavior of political elites today, just as they did at the turn of the 20th century. As Guinier (1994) writes, race has “defined individuals’ identities, opportunities, frames of reference, and relationships” (p. 137). We know that racial socialization affects individuals’ political attitudes (Carmines & Stimson 1989; Kuklinski, Cobb, & Gilens 1997) and decision-making (Meier & Stewart 1992; Naff 1998, Kastelec 2013; Boyd 2016).

Despite federal requirements, numerous scholars continue to express concerns that MPOs fail to allocate funding in a manner that is equitable and attentive to social and environmental justice (Deka 2004; Grengs 2005b; Manaugh, Badami, and El-Geneidy 2015). Yet little research has focused on examining the effects of representation in achieving more equitable metropolitan outcomes. Mansbridge (1999, p. 644) writes “the best way to have one’s most important substantive interests represented is often to choose a representative whose descriptive

characteristics match one's own on the issues one expects to emerge. One might want ... a representative from one's own geographic territory, class, or ethnicity." There is reason to believe this is true in the context of MPO decision-making. Nelson et al. (2004) found that the ratio of urban to suburban votes was correlated with the allocation of transportation funds between highway and transit modes. For each additional suburban voter on an MPO board, between 1 and 7 percent fewer funds were allocated to transit in MPO budgets.

The influence of gender is so far unexplored in the context of MPO boards, however research in the context of other institutions suggests that women vote differently than their male colleagues in policy areas of importance to women (Boyd et al. 2010; Boyd 2016). In the context of judicial decision-making, Boyd (2016) found that female judges ruled in favor of the plaintiff more often than their male counterparts in sex discrimination cases, though not for race discrimination cases. While little research has been conducted to determine if there are segments of transportation policy that are of heightened importance to women, past research has found that women are more likely than men to endorse policies that support the provision of social services for deserving and disadvantaged groups (Eagly et al. 2004). And Polk (2003) found that women in Sweden were more environmentally concerned and likely to support measures that would reduce car usage. As such there is reason to suspect that female MPO board members may be more likely to support improvements to multimodal transportation systems that would increase access and equity for vulnerable communities, improve safety for children and the elderly, and advance solutions shown to improve environmental outcomes.

Building upon the representational dataset developed by Sanchez and Wolf (2005), which provides racial, gender, and geographic (urban vs. suburban) characteristics for every MPO board member in their sample, I seek to answer part of the question they posed. Does board

representation effect distributional equity and influence policy outcomes? Based on the literature on descriptive representation and the threat dangerous streets pose to children, the elderly, and minority communities²⁴, one would expect that MPO boards that demonstrate greater racial and gender diversity would adopt TIPs with more multimodal (transit, bike ²⁵, pedestrian) projects.

H₁ (Race): As the percentage of white members on an MPO governing board increases the percentage of multimodal projects (transit, bicycle, and pedestrian projects) will decrease.

H₂ (Gender): As the percentage of male members on the MPO governing board increases the percentage of multimodal projects (transit, bicycle, and pedestrian projects) will decrease.

4.2 Exploring the Effects of Leadership and Process on MPO Outcomes

However, Metropolitan Planning Organizations are not traditional legislative bodies. Board members are typically appointed, not elected, from member jurisdictions to serve on the MPO boards. Board members may be elected officials or public administrators or transportation professionals. If Lewis (1998) and Brenner (2002) are correct and the real activity and leadership of MPOs rests with their executive and technical staffs rather than with governing boards, institutional factors such as process and leadership may be more influential at determining MPO allocations than board representation.

Meier and Capers (2012) suggest that professionalism is a major source of bureaucratic

²⁴ According to the CDC, children, elderly, and individuals living in urban areas are most likely to be victims in bike and pedestrian crashes. Individuals over 65 account for 20% of all pedestrian deaths. Children account for 1/3 of all bicycle-related injuries. According to Smart Growth America, non-white individuals account for 34.9 percent of the national population but make up 46.1 percent of pedestrian deaths.

²⁵ It is debatable whether one would expect to see boards with higher percentages of African Americans support bicycle infrastructure projects. In many African American communities, bike lanes have been viewed as a symbol of gentrification and opposed by African American community leaders. However, I hypothesize that African American elected officials and public administrators on MPO boards may be swayed by the public safety benefits better bicycling infrastructure would provide for urban residents.

<https://www.washingtonpost.com/news/local/wp/2015/11/12/why-are-bike-lanes-such-heated-symbols-of-gentrification/>

identity. They posit that professionalism includes a set of values and ways to approach a problem, but the discretion given to professionals and opportunity for advocacy allows for more active representation. Active representation, a term coined by Mosher (1968), happens when professional administrators press for the interests of those whom he/she is presumed to represent. Selden, Brudney, and Kellough (1998, p.137) contend that attitudes and an adherence to a minority representative role are strong influencers of administrative behavior, “When administrators see themselves as representatives of minority interests, policy outcomes responsive to those interests are more likely to be achieved”.

Since the passage of ISTEA in 1991, transportation planning research has emphasized a wider variety of travel options (walking, biking, carpooling, and public transit) beyond planning simply for automobile growth. Transportation planners have been charged with evaluating the systems’ effect on emissions and land use access. And transportation planning has experienced a paradigm shift. Increasingly, transportation planners are downplaying the need for roadway efficiency, which often results in decisions such as widening roads to add more capacity, and instead emphasizing the need for greater accessibility, which often relies on lower speeds and improvements to transportation systems for vulnerable roadway users (Litman 2014). It is important to note that tensions between transportation planners and engineers exist.

Transportation engineers, who tend to rely on manuals and guidebooks to produce transportation models and recommendations, have been slower to embrace this new transportation planning paradigm. In the early 2000s, these debates would have been much more pronounced in MPOs (McCann 2013). However, despite these tensions, it is reasonable to presume that views of MPO executive directors, particularly in larger urban areas, were likely to align more closely with best practices in transportation planning. Based on this, I hypothesize:

H₃ (ED Influence): As the level of ED influence increases the percentage of multimodal projects (transit, bicycle, and pedestrian projects) will increase.

As discussed in Chapter 3, process also appears to play a significant role in what types of projects are ultimately included in MPO TIPs. MPOs, like SEMCOG that are inclined to avoid controversy, may be less likely to employ criteria that would substantively shift the types of projects that appear in the TIP. Whereas others, like the Nashville Area MPO, appear to have utilized the TIP process to fundamentally alter the types of projects submitted for consideration.

My interviews with Nashville and SEMCOG occurred in 2017. The changes Nashville reported, with regards to leadership helping to facilitate changes in the TIP process, occurred this past decade. The datasets I am utilizing draw on survey data and TIPs developed between 2004-2006. As such, I would not expect to find differences between Nashville and SEMCOG in my quantitative analysis. However, I would expect to see these relationships more broadly. For MPOs seeking to avoid controversy, there may be a desire to streamline the process to be less complex. Whereas, for MPOs like Nashville willing to push more actively for regional reforms, the process of ranking projects may be more complex. Drawing upon insights gained through my literature review, research, and interviews, I develop the following hypothesis:

H₄ (TIP Process Complexity): As the complexity of the TIP process increases the percentage of multimodal projects (transit, bicycle, and pedestrian projects) will increase.

In order to test my institutional hypotheses, I rely on the institutional dataset developed by Gerber and Gibson (2009). In the spring and summer of 2006, they conducted a web-based survey of executive directors of the nation's 100 largest MPOs and received 57 completed surveys²⁶. There are a number of advantages to using this MPO institutional dataset. First, it

²⁶ The full survey is included in Appendix C

includes questions on the complexity of TIP process and ED influence over the TIP process²⁷ that allow me to operationalize my hypotheses, as well as a number of other important institutional features useful for controls. Second, the institutional dataset was developed at approximately the same time period as the representational dataset and included a shared sample of MPOs, allowing me to merge both datasets.

4.3 Additional Explanatory Variables and Control Variables

To capture other potentially important determinants of MPO policy outcomes that are beyond the scope of my primary representation and institutional hypotheses, I draw heavily upon the findings of Gerber and Gibson (2009). Their study examined how institutional rules and the formal positions held by MPO board members influence MPO policy outcomes. Their study tested the influence of a number of potentially influential variables on MPO allocations. I have incorporated some of the most relevant control variables and propose the following hypotheses for other potentially important institutional influences:

H₅ (Elected Officials): As the percentage of elected officials on an MPO board increases the percentage of multimodal projects (transit, bicycle, and pedestrian projects) will increase.

H₆ (Staff Capacity): As the number of full-time staff members for an MPO increases the percentage of multimodal projects (transit, bicycle, and pedestrian projects) will increase.

²⁷ Key questions for my dissertation include questions (11) “Please characterize the complexity of the TIP process in your organization from initiation to final approval on the scale below” and (12) “How much influence does the structure of the MPO afford the Executive Director during the TIP process”. Both questions are on a 1 to 5 scale and include a response of “Don’t know.”

As control variables I include median area household income²⁸, number of transit miles, percentage of the region that is black, and expenditures/capita²⁹ all data available in the institutional dataset. I also include the percentage of board members representing urban areas, since this variable has been found to be influential in previous studies (Nelson et al. 2004) and these data were available in the descriptive dataset.

In 2007, there were 384 Metropolitan Planning Organizations. My sample size varies between 30 and 43 depending upon my variable. This sample is smaller than the full universe (384) and smaller than the sample size (57) studied by Gerber and Gibson (2009). A smaller sample size was chosen in order to provide greater overlap between the two existing datasets (institutional and descriptive) I draw upon to test my hypotheses. Table 3 summarizes the descriptive statistics for my dependent and independent variables.

²⁸ Following Gerber and Gibson (2009), I included two measures of the economy in my control variables. Median household income and the standard deviation of median household income to capture the effects of economic heterogeneity. The inclusion of both variables did not prove valuable in my model.

²⁹ Region and MPO structure were excluded from the controls because exploratory tests didn't demonstrate significant findings and were also not found to be significant in Gerber and Gibson (2009).

Table 3: Descriptive Statistics, Chapter 4

Variable	Mean	SD	Min	Max	Obs
% Transit (DV)	0.21	0.13	0	0.61	43
% Bike (DV)	0.07	0.05	0	0.29	43
% Ped (DV)	0.11	0.09	0.01	0.45	43
% Board White*	0.9	0.12	0.48	1	43
% Board Male*	0.79	0.11	0.5	1	43
% Urban Members*	0.32	0.18	0.08	1	43
Process Complexity ⁺	3.83	1	1	5	31
ED Influence ⁺	3	1.44	1	5	30
% Board Elected Officials ⁺	0.78	0.23	0.23	1	43
Fulltime MPO Staff ⁺	3.99	4.4	0.54	20	31
Median HH Income 2000 ⁺	45296.94	5426.636	35296.83	59179.35	43
Transit Miles ⁺	7.80E+08	2.25E+09	2.14E+07	1.42E+10	43
% Metro Black 2000 ⁺	0.16	0.09	0.02	0.44	43
σ (Expenditures/capita) ⁺	1596.65	2360.77	382.43	12978.63	43
σ (Median HH Income) ⁺	18901.9	8339.397	4312.34	40573.01	43

Data Sources: *Sanchez and Wolf (2005), ⁺ Gerber and Gibson (2009)

Table 4 offers a comparison of the means for my shared variables for this study and the Gerber and Gibson study. As the comparison demonstrates, the means of the variables in my smaller sample are quite similar to the means in the full institutional dataset. In addition, most of my control variables share quite similar means, one notable exception is that my sample appears to contain metropolitan areas with more transit miles and greater staff capacity.

Gerber and Gibson performed the Heckman selection model to test for the possibility of selection bias for the sample of 57 MPOs that participated in their web survey, compared to a larger sample of 100 MPOs for which they had collected data. Their analysis suggested that the sample of MPOs that had participated in the survey was reflective of the larger population of MPOs. Since my sample of MPOs is drawn from the same pool and the means of my main

explanatory variables are similar to those of the Gerber and Gibson subsample, I have no reason to suspect that my sample of MPOs is not generally reflective of the larger population as well.

Table 4: Descriptive Stats Comparisons Between Datasets

Variable	Study Mean	Geber and Gibson Mean
Process Complexity	3.83	3.61
ED Influence	3	3
% Board Elected Officials	0.78	0.76
Fulltime MPO Staff	3.99	3.24
Median HH Income 2000	45296.94	44413.39
Transit Miles	7.80E+08	5.66E+08
% Metro Black 2000	0.16	0.14
σ (Expenditures/capita)	1596.65	1413.05
σ (Median HH Income)	18901.9	16234.22

4.4 Findings and Discussion

Tables 5, 6, and 7 report the results of a series of OLS regression estimates. Simple linear regression is appropriate when the dependent variable has a linear relationship to the independent variables. One of the key assumptions is that the data are also normally distributed. The scatterplots demonstrated linear relationships, but a few of my variables³⁰ were not normally distributed. I present the effects of my independent variables on three dependent variables.

³⁰ I performed a skewness and kurtosis test for normality on all my variables. The following variables had distributions that were skewed: Percentage Board White, Percentage Urban Board Members, Number of Transit Miles, Percentage of the Metro Region that was Black in 2000 Census. In order to meet OLS assumption of normality, I transformed these variables so they could meet the condition of normality. The transformation used is displayed in the table.

Table 5 displays the results of the analysis where the dependent variable is the total number of pedestrian projects included in a TIP. Table 6 displays the results of the analysis where the dependent variable is the total number of bicycle projects included in a TIP. And Table 7 shows the results when the dependent variable is the total number of transit projects included in a TIP.

I set up my models to test each set of hypotheses separately, collectively, and finally with the most significant variables. Column 1 in my tables (Representation) tests my descriptive representation hypotheses (H_1 and H_2). Column 2 (Institutional Influences) tests my institutional hypotheses (H_3 and H_4). Column 3 (Representation & Institutional Influences + Controls) is my full model and tests all hypotheses (H_1 , H_2 , H_3 , H_4 , H_5 , & H_6) and control variables simultaneously on each dependent variable³¹. And, finally, Column 4 (Final model) reports a more parsimonious version of the full model that includes only the most insignificant variables from Column 3. Column 4 offers the best explanation, based on the variables I examined, for the determinates of MPO funding for multimodal projects.

³¹ Following in the footsteps of Gerber and Gibson (2009), I include two measures of Household Income in my model. Unlike, Gerber and Gibson, neither proves significant in my model.

Table 5: Determinants of Pedestrian Project Selection

Independent Variable	Representation	Institutional Influences	Representation & Institutional Influences + Controls	Final Model
(% Board White)cubed	.5352 (.6353)		1.0533 (1.1461)	
% Board Male	-2.1385 (1.3889)		.0814 (2.4420)	
ln(% Urban Members)			-.1362 (.6133)	
Process Complexity		.2518 (.1849)	.1649 (.2281)	
ED Influence		.0354 (.1296)	.0449 (.1811)	
% Board Elected Officials			1.7016 (1.1626)	1.3507** (.6194)
Fulltime Staff			-.2580 (.4378)	
Median HH Income 2000			-.00007 .00005	
ln(Transit Miles)			.3401 (.2610)	.1275 (.0992)
σ (Expenditures/capita)			.00005 (.00009)	
σ (Median HH Income)			-.00002 (.00003)	
sqrt(% Black 2000)			-1.5998 (2.3109)	
Constant	-1.2960	-3.7032***	-8.1623	-6.0715***
Adjusted R ²	.0140	.0039	-.0503	.0818
N	43	30	30	43

DV = % of all TIP projects for ped facilities; ln(ped); Model = OLS Regression *p < .10; ** p < .05; ***p < .01. Standard error in parenthesis

Table 6: Determinants of Bike Facility Project Selection

Independent Variable	Representation	Institutional Influences	Representation & Institutional Influences + Controls	Final Model
(% Board White)cubed	.1830 (.5369)		.2330 (.8381)	
% Board Male	-1.1193 (1.1736)		1.1300 (1.7743)	
ln(% Urban Members)			.3489 (.4453)	
Process Complexity		-.0884 (.1611)	-.2979 (.1773)	-.2902* (.1416)
ED Influence		.19137** (.0813)	.2555* (.1362)	.1562 (.0974)
% Board Elected Officials			2.4786** (.9061)	.3325*** (.1091)
Fulltime Staff			-.5628* (.3197)	-.4531** (.1782)
Median HH Income 2000			.00003 (.00004)	
ln(Transit Miles)			.2754 (.1907)	.3325*** (.1091)
σ (Expenditures/capita)			-1.20e-06 .00007	
σ (Median HH Income)			.00002 (.00002)	
sqrt(% Black 2000)			-.2262 (1.7707)	
Constant	-2.1453**	-2.9416***	-11.2554**	-10.1156***
Adjusted R2	-.0269	-.0389	.2019	.3488
N	42	29	29	29

DV = % of all TIP projects for bicycle facilities; ln(bike); Model = OLS Regression *p < .10; ** p < .05; ***p < .01.
Standard error in parenthesis

Table 7: Determinants of Transit Project Selection

Independent Variable	Representation	Institutional Influences	Representation & Institutional Influences + Controls	Final Model
(% Board White)cubed	-.3601 (.4316)		-.2324 (.6100)	
% Board Male	-1.158 (.9602)		1.1786 (1.2899)	
ln(% Urban Members)			.2282 (.3254)	
Process Complexity		.19294* (.1120)	.2716** (.1213)	.2549** (.1015)
ED Influence		.19137** (.0813)	.1845* (.0961)	.1518** (.0733)
% Board Elected Officials			0.7254 (.6152)	
Fulltime Staff			0.4474 (.2325)	-.1269 (.1333)
Median HH Income 2000			-0.00003 (.00003)	
ln(Transit Miles)			.4434*** (.1378)	.2473** (.0838)
σ (Expenditures/capita)			-0.00004 (.00005)	
σ (Median HH Income)			-0.00005*** (.00001)	-.00004*** (.00001)
sqrt(% Black 2000)			-.0386 (1.2217)	
Constant	-0.5219	-3.14054	-10.1711***	-7.0449
Adjusted R2	0.02	0.2283	.3790	.4490
N	41	29	29	29

DV = % of all TIP projects for transit; ln(transit); Model = OLS Regression *p< 10; ** p < .05; ***p < .01. Standard error in parenthesis

As Tables 5-7 demonstrate, I find no support for my two representation hypotheses (H_1 , H_2). In the case of gender, the direction of the relationship is as predicted. As the percentage of male board members increases, the percentage of total pedestrian, bicycling, and transit projects decreases. However, the relationship is a bit more confusing for the race-based hypothesis. In the case of transit funding, the direction of the relationship is as predicted. An increase in the percentage of white board members is associated with less transit funding. However, the opposite is true for pedestrian and bicycle projects. An increase in the percentage of white board members is associated with more bicycling and pedestrian projects. But none of these relationships proves to be statistically significant.

My models find mixed support for my institutional hypotheses (H_3 & H_4) though this support varies substantially by mode share. In the case of pedestrian projects, I find no support for H_3 or H_4 . But as we move to Tables 6 and 7, which examine the determinants of bicycle and transit projects, we find some support for my claim that leadership and process are predictors of MPO outcomes.

Table 6 explores the determinants of support for improved bicycle infrastructure. We see in this case that process complexity matters, but not as predicted by my hypothesis. Instead, as the complexity of the TIP process increases, the percentage of bicycle infrastructure projects actually decreases ($p < .10$). This finding was surprising and runs contrary to what my interviews led me to suspect. In the full model executive director leadership was influential, but in the final model the variable was statistically insignificant though the direction of the relationship was as predicted. For bicycling projects, two other institutional features were found to be significant in the final model—the percentage of elected officials and staff capacity. Interestingly, as staff capacity increased the percentage of bicycle facility projects actually decreased, which was the

opposite of the predicted relationship. However, we see that the percentage of elected officials on the board is an influential institutional feature. On average, as the percentage of elected officials increases the percentage of bicycling projects also increases.

Table 7 explores the determinants of support for transit. Transit is the only mode where both of the main institutional hypotheses (H_3 and H_4) find support. Unlike bicycle and pedestrian projects, it appears that executive leadership and process are significant and positive determinants of transit funding. The effect is substantial in magnitude as well. This model predicts that the difference between a ranking of 1 (lowest) to 5 (highest) in TIP process complexity is a 25% increase in the percent of transit projects ($p < .05$) included in a TIP. The impacts of an influential executive director are substantial as well. This model predicts that the difference between a ranking of 1 (lowest) to 5 (highest) in ED Influence over the TIP process is a 15% increase in the percent of transit projects ($p < .05$) included in a TIP.

One additional significant finding is that this research finds continued support for Gerber and Gibson's hypothesis that elected officials are more likely to support local projects. This variable is the only one that receives support across all three dependent variables. On average, MPOs with a higher percentage of local elected officials are more likely to support pedestrian, bicycle, and transit projects. While racial and gender diversity don't appear to be influential to MPO project outcomes, representation by local officials does for the advancement of multimodal transportation.

One unexpected finding from this research is that the institutional factors influencing the development of multimodal systems varies significantly across modes. Transit, bicycling, and pedestrian projects appear to benefit from different processes and leadership. Even within nonmotorized transportation, the influences vary. As such, building processes and support for a

the development of a multimodal system is likely to require thoughtful and deliberate action on the part of MPOs.

CHAPTER 5: Exploring MPO Influence over Regional Outcomes

In 2015, James Robertson's commute garnered national attention. At the time, James lived in Detroit and worked at a factory in Rochester Hills, Michigan. What made his personal story so compelling were the challenges he faced and overcame every day to reach a job that paid \$10.55/hr. James spent eight hours a day working and twelve hours a day commuting to his job 23 miles away from his home. Because the Detroit metropolitan area lacks regional transit, James was forced to cobble together two disconnected transit services with a dangerous walking route to get to his job. Five days a week James left home at 8am and returned at 4am. Round-trip he walked 21-miles a day. He did this for ten-years, rarely missing a day of work, before his story attracted media attention and resulted in an outpouring of financial support from people across the world. These donations allowed James to purchase a car³². Today, he works at the same company and earns \$12.30/hr. Fundamentally, access to efficient and reliable transportation, not changes in his economic condition, greatly improved his quality of life and substantially improved his personal safety³³.

Few are willing to go to the lengths James did to reach his job, but the challenges he faced are shared by many. As noted in Chapter Three, over 70 percent of black residents in the Detroit metropolitan area live in Detroit and one in three Detroit residents lives below the poverty line. Historically, high insurance rates in Detroit and poverty have made legal car

³² A 2015 Detroit Free Press article about James Robertson's personal story brought James some relief. <https://www.freep.com/story/news/local/michigan/oakland/2015/01/31/detroit-commuting-troy-rochester-hills-smart-ddot-ubs-banker-woodward-buses-transit/22660785/>

³³ "Most pedestrian fatalities take place on local roads, at night and away from intersections, suggesting the need for safer road crossings and increased efforts to make pedestrians and vehicles more visible. During the past 10 years, the number of nighttime pedestrian fatalities increased by 67%, compared to a 16% increase in daytime pedestrian fatalities." (Governors Highway Safety Association, 2020)

ownership³⁴ challenging for many. And yet, access to efficient and reliable transportation, is essential for job security. In Detroit, four out of every five jobs are located further than ten miles from the central business district. Despite concentrated poverty, limited job opportunities, and extreme barriers to car ownership, transit service in the Detroit metropolitan area remains woefully inadequate. In 2016, voters in Macomb and Oakland County (where Rochester Hills is located) voted down a regional transit millage proposal despite the great regional need. This helps to explain why almost 2/3 of Detroit residents must own a car and nearly 60% forgo insurance, despite the great financial burden and legal risks of these decisions.

The Detroit metropolitan transportation system appears designed to perpetuate inequality and keep families in poverty. According to a 2011 Brookings Report, Detroit ranked 73rd among the 100 metropolitan areas examined on transit accessibility. In the Detroit metropolitan area, only 22% of the regions' jobs are reachable via transit in 90 minutes.³⁵ And those traveling by transit often face a dangerous terrain at the beginning and end of their commutes, or the middle of their commutes for residents trying to connect two transit systems on foot. In many ways, James was one of the lucky ones. He found a stable job he enjoyed and he survived his dangerous commute for ten years. Others haven't been so fortunate. In 2019, the Detroit metropolitan area was ranked the 18th most dangerous metro area in the nation for pedestrians (Dangerous by Design 2019).

³⁴ In 2019, car insurance premiums in Detroit were the highest in the country. The average premium was \$5,414, which was twice the state average, and four times the national average. For a resident earning the median income of \$30,344, insurance premiums comprised about 18% of the household budget. As such, an estimated 60% of Detroit residents opted not to purchase auto insurance, a decision resulting in great legal and financial risk. In May of 2019, Governor Whitmer signed into law a new no-fault auto insurance bill aimed at reducing insurance premiums. The new law takes effect in July 2020, so the impacts on Detroit residents are not yet known.

³⁵ Detroit- Warren- Livonia, MI Metro Area Transit Accessibility Profile. Missed Opportunity: Transit and Jobs in Metropolitan America. Available at: <http://www.brookings.edu/~media/Series/jobs-and-transit/DetroitMI.PDF>

Pedestrian safety, however, is not just an issue in Detroit. The number of pedestrians killed in traffic in the United States is the highest it has been in three decades. During the 10-year period from 2009 to 2018, the number of pedestrian fatalities in the U.S. increased by 53% while the number of all other traffic deaths has increased by only 2% (Governors Highway Safety Association 2019) And these deaths are not distributed equally. People of color and older adults are over-represented among pedestrian deaths. Non-white individuals account for 34.9 percent of the national population but make up 46.1 percent of pedestrian deaths (Dangerous by Design 2016).

Metropolitan Planning Organizations are the required forum for cooperative transportation decision-making for metropolitan areas.³⁶ While it is abundantly clear from a birds-eye view that some regions are more successfully cooperating to produce functional transportation systems for the residents they serve, there has been very little research examining how MPO decisions and institutional features impact regional transportation outcomes. Instead, studies have focused primarily on documenting inequities (Sanchez and Wolf 2005, Sanchez 2006), examining MPO outputs such as funding allocations (Deka 2004; Gerber and Gibson 2009; Grengs 2005; Manaugh, Badami, and El-Geneidy 2015); or studying the planning process (Lefèvre & Weir 2012; Karner & Niemeier, 2013). In this Chapter, I examine my final research question. How do MPO institutional features and MPO decisions influence regional outcomes?

5.1 Performance-based transportation planning

On July 6th, 2012 President Obama signed into law Moving Ahead for Progress in the 21st Century Act (MAP-21). One of the key features of MAP-21 was the establishment of a

³⁶ 23 CFR 450.104

performance-based transportation planning and programming (PBPP) process³⁷ as a prerequisite for federal surface transportation funding. Performance-based planning is a strategic approach that uses performance data to support decisions to help achieve desired performance outcomes. In a PBPP process, MPO goals are developed with a focus on outcomes, rather than on activities or policies (FHWA, 2013). In addition to regional goals, as a result of MAP-21, the following seven national goals were established³⁸:

- **Safety:** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure Condition:** To maintain the highway infrastructure asset system in a state of good repair.
- **Congestion Reduction:** To achieve a significant reduction in congestion on the National Highway System (NHS).
- **System Reliability:** To improve the efficiency of the surface transportation system.
- **Freight Movement and Economic Vitality:** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental Sustainability:** To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced Project Delivery Delays:** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project

³⁷ “Performance management will transform the Federal-aid highway program and provide a means to the most efficient investment of Federal transportation funds by refocusing on national transportation goals, increasing the accountability and transparency of the Federal-aid highway program, and improving project decision-making through performance-based planning and programming ”[§1203; 23 USC 150(a)]

³⁸ These goals and planning factors were reaffirmed in the 2015 Fixing America’s Surface Transportation (FAST) Act.

completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

In addition to these national goals, MAP-21 provided eight national planning factors that all MPOs must demonstrate compliance with when preparing their long-range transportation plans:

- **Economic Vitality:** Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
- **Safety:** Increase the safety of the transportation system for motorized and non- motorized users
- **Security:** Increase the security of the transportation system for motorized and non-motorized user
- **Accessibility:** Increase the accessibility and mobility of people and for freight
- **Environment:** Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns
- **Connectivity across Modes:** Enhance the integration and connectivity of the transportation system, across and between modes, people and freight
- **System Management and Operation:** Promote efficient system management and operation
- **System Preservation:** Emphasize the preservation of the existing transportation system

These national goals and planning factors provide the common planning framework all MPOs share when developing performance-based plans. While none of the goals or planning

factors is ranked more highly than another, clearly saving lives is paramount to the values of most public officials. Given the drastic rise in pedestrian fatalities over the last decade and the disproportionate distribution of pedestrian deaths among vulnerable populations, more research is needed to better understand how to improve pedestrian safety in metropolitan areas.

5.2 Exploring the Effects of MPO Decisions and Features on Regional Safety

Although a substantial body of research documents the environmental factors that decrease pedestrian safety (distracted driving, speed, vehicle size, time of day), very little, if any, research has focused on the role MPOs play. Since MPOs distribute over hundreds of billions of federal transportation dollars annually, greater attention is warranted. One of the significant gaps in research is examining how MPO transportation decisions affect performance outcomes. Using the unique database of over 18,000 MPO projects I developed, I am able to examine how the prioritization of certain types of projects affects regional outcomes. As elaborated on in Chapter 4, I coded TIP projects into 16 different categories. In this Chapter, I examine if and how the types of projects an MPO selects, as well as the institutional features that guide those selections, influence pedestrian safety. Improving pedestrian safety is not only a required safety planning factor and goal for MPOs, it is also critically linked to improving regional equity outcomes.

In order to examine the influence of project selection on regional outcomes, I focused on two of the sixteen TIP project categories elaborated upon in the previous chapter. Based upon, transportation research, it is logical to assume that investments in pedestrian infrastructure and road projects should have some impact on pedestrian safety. It is clear from the large body of

literature on pedestrian safety that road design matters. Wide roads with high speeds are deadly for pedestrians.³⁹ These findings formed the basis for my first two hypotheses:

Pedestrian Infrastructure Hypothesis (H_{1B}): As the percentage of pedestrian infrastructure projects in a TIP increases the relative risk of pedestrian fatalities in a region will decrease.

Road Project Hypothesis (H_{2B}): As the percentage of road projects in a TIP decrease the relative risk of pedestrian fatalities in a region will decrease.

In Chapter 4, I found no support for my hypotheses that racial or gender diversity influences TIP development. However, I did find that a number of other institutional features appear to be influential on the variety of transportation projects an MPO includes in their TIP and, ultimately, selects to receive their limited pool of federal transportation dollars. In this Chapter, I examine the effects of four institutional features on safety outcomes:

Process Complexity Hypothesis (H_{3B}): As the complexity of the TIP process increases the relative risk of pedestrian fatalities in a region will decrease.

Executive Leadership Hypothesis (H_{4B}): As the level of ED influence over the TIP increases the relative risk of pedestrian fatalities in a region will decrease.

Elected Officials Hypothesis (H_{5B}): As the percent of elected officials on an MPO board increases the relative risk of pedestrian fatalities in a region will decrease.

Staff Capacity Hypothesis (H_{6B}): As the number of full-time staff in an MPO increases the relative risk of pedestrian fatalities will decrease.

One of the challenges of studying the impact of MPO decision-making on regional outcomes is determining an appropriate timeframe for evaluating impacts. Projects an MPO approves today will not be built for one or two road construction cycles. As such the impact of

³⁹ *Evaluation of Lane Reduction "Road Diet" Measures on Crashes*, FHWA-HRT-10-053.

processes, leadership, and investments must be examined using longer time frames. In this study, I examine the impacts of decisions and institutional features between 2004-2006 made on pedestrian deaths that occurred between 2009-2014. This time lag allows time for projects to be built and, hopefully, observe the impacts of these decisions. It is certainly possible that their magnitude might be better observed using a different time frame, however if variation is observed these findings would be quite compelling.

My dependent variable is a Pedestrian Danger Index (Smart Growth America, 2016). I considered a more commonly used pedestrian safety statistic, pedestrian deaths per 100,000 residents⁴⁰, however this statistic does not account for relative risk. Urban areas have more pedestrian deaths, in part, because more people are walking which exposes them to risk. Smart Growth America developed an index to provide a more accurate picture of risk. The Pedestrian Danger Index (PDI) is the measure used in their Dangerous by Design reports to rank the relative risk of metropolitan areas and states. The higher a metropolitan area's PDI score the more dangerous the region is for pedestrians. Out of the 43 MPOs I studied, the highest PDI score (most dangerous) was the Palm Beach MPO with a ranking of 235.2.⁴¹ The Northeast Ohio Areawide Coordinating Agency (the MPO for the Cleveland area) ranked the least dangerous for pedestrians with a PDI score of 30.3. PDI⁴² is calculated by:

⁴⁰ I performed these analyses also using the more commonly used statistic Pedestrian Deaths/100,000 as my DV and had very similar findings.

⁴¹ In a ranking of 100 metropolitan areas, the Palm Beach metropolitan area ranked as the 2nd most dangerous in the nation.

⁴² See Appendix D for a fuller description of Smart Growth America's methodology, as well as the strengths and weaknesses of the data sources for this statistic. They utilize the American Community Survey estimate for population from 2009 to 2014 and US Census Travel to Work data for commuter data.

$$\frac{\frac{\text{Average annual ped fatalities 2009 – 2014}}{\text{total population (in 2014)}} \times 100,000}{\text{Percentage of commuter who walk to work}}$$

Table 8 summarizes the descriptive statistics for all the variables included in this analysis. In addition to the independent variables used to test my six hypotheses, I have included two control variables that are generally believed to be associated with pedestrian risk (household income and minority population) and one control variable that measures external pressures on a metropolitan area (regional growth). I would expect that risk would increase in metropolitan areas with larger black populations and lower incomes, as well as in metros experiencing growth. I also included a dummy variable for MPOs located in the southeastern region of the United States since many of MPOs with the highest PDI rankings are located in Florida.

Table 8: Descriptive Statistics, Chapter 5

Variable	Mean	SD	Min	Max	Obs
Pedestrian Danger Index* (DV)	1.72	0.66	0.79	3.07	43
% Road Projects in TIP	0.29	0.14	0.05	0.72	43
% Pedestrian Projects in TIP	0.11	0.09	0.01	0.45	43
TIP Process Complexity ⁺	3.83	1	1	5	31
ED Influence on TIP ⁺	3	1.44	1	5	30
% Board Elected Officials ⁺	0.78	0.23	0.23	1	43
Fulltime MPO Staff ⁺	3.99	4.4	0.54	20	31
Median HH Income 2000 ⁺	45296.94	5426.63	35296.83	59179.35	43
% Black Pop 2000 ⁺	0.16	0.09	0.01	0.44	43
% Change in Pop 1990-2000 ⁺	0.07	.06	-.04	.30	43

Data Sources: *Smart Growth America (2016), ⁺Gerber and Gibson (2009)

Table 9 provides the results of two OLS regression estimates. My dependent variable is the Pedestrian Danger Index. Column 1 includes estimates for all explanatory variables. Column 2 removes the least significant variables (all had a $P > .20$) from the first regression and offers the best indicators for MPO features impacting pedestrian safety. In this final model, four of the ten variables I test demonstrate statistical significance at $P < .05$: TIP process complexity, percentage of board elected officials, % population change in the region between 1990-2000, and the regional dummy variable.

Table 9: MPO Determinants of Pedestrian Risk

Independent Variable	Full Model	Final Model
% Road Projects	-90.36 (71.77)	
ln(% Ped Projects)	-71.35 (91.60)	
TIP Process Complexity	-24.35** (9.50)	-21.75*** (7.22)
ED Influence on TIP	.90 (5.67)	
% Board Elected Officials	117.34** (41.44)	90.31** (34.27)
Fulltime Staff	-24.29* (11.90)	-14.13 (9.36)
Median Household Income 2000	.0002 (.001)	
% Pop Change 1990-2000	325.23** (142.46)	298.75** (125.41)
sqrt(% Black 2000)	160.28 (107.56)	146.07 (90.59)
Southeast Dummy	32.69 (97.43)	49.39*** (17.25)
Constant	46.32	25.50
Adjusted R ²	.66	.68
N	29	30

DV = 2016 Ped Danger Index Model = OLS Regression *p < .10; **p < .05; ***p < .01 Standard error in parentheses. Skewed variables transformed. Transformation shown.

5.3 Findings and Discussion

I find no evidence that the types of projects an MPO funds with federal transportation dollars impact the level of pedestrian safety in a metropolitan area. This analysis produces null results for both my pedestrian and road infrastructure hypotheses (H_{1B} and H_{2B}). These findings are surprising. Although statistically insignificant⁴³, the sign on both coefficients is negative. While I did not find support for my road infrastructure hypothesis when the model controlled for MPOs located in the southeastern region of the United States, it is worth noting that the direction of the relationship observed is the opposite of expected. The coefficient on percentage of roads projects is negative. This suggests that as the percentage of road projects increases, the region's ranking on the Pedestrian Danger Index decreases (safety improves). This is perplexing because this model attempts to control for pedestrian safety improvements. Although this observation deserves greater scrutiny, one possible explanation for the direction of the relationship is that regions that invest more heavily in roads send a message to pedestrians that walking is not a viable transportation choice and, inadvertently, drive down risk. A pedestrian cannot be hit and killed if they aren't out walking. However, again, this explanation isn't entirely satisfactory because the dependent variable I use (PDI) attempts to control for mode share. It's also possible, that the pedestrian danger index does not adequately address exposure and risk across a metropolitan region (urban and suburban exposure). Further, it's possible that the road project category would benefit from more differentiation between projects that included pedestrian safety improvements and those that didn't.

For pedestrian projects, the direction of the relationship is as expected. As the percentage of pedestrian projects increase, the Pedestrian Danger Index ranking drops (safety improves).

⁴³ In a model run without the regional dummy variable, the percent road projects variable was significant at the $P < .05$.

However, as noted previously, this finding was statistically insignificant. Although unexpected, there are many reasons this may be true. First, many metropolitan areas have woefully neglected investments in pedestrian infrastructure for decades. Sustained investment to close sidewalk gaps and improve pedestrian crossings may be needed for the added infrastructure to prove truly beneficial and reduce risk. Until greater investments in pedestrian infrastructure occur it may be necessary to analyze the impact of pedestrian investments at a smaller geographic scale than an entire metropolitan area. Second, this study only examines federal funding dedicated to pedestrian safety. It is quite likely that increased pedestrian safety needs both local and regional commitment. All members, not just some municipalities in the MPO region, need to invest in pedestrian safety. This study does not examine local investments in pedestrian safety or local sources of funding. Third, pedestrian infrastructure projects may be more likely to receive funding more frequently from local and state sources, since these projects are generally lower cost. And finally, regions may not be investing in pedestrian projects that actually improve pedestrian safety. A closer examination of the types of projects two MPOs invested in provides some support for these claims.

I examined the pedestrian projects included in the 2005-2006 TIP for the First Coast MPO. This MPO serves the Jacksonville, Florida area and has a PDI ranking of 228 making it the 3rd most dangerous metropolitan area for pedestrians in the pool of MPOs I examined. There were 117 projects included in the First Coast TIP that received federal funding, only eight of those projects were pedestrian projects. Almost 40% of these projects were unlikely to improve pedestrian safety. Three of the eight projects provided funding to build and/or improve multimodal trails in state parks. While these projects could potentially improve pedestrian safety, they were most likely aimed at improving recreational amenities. The remaining five projects

filled sidewalk gaps or trails that would more likely be used for transportation. None of the projects were aimed at improving pedestrian crossings. As Table 10 demonstrates, these projects received relatively little federal funding in comparison to the other projects included in that year's TIP. Instead, the MPO favored road, highway, and capacity projects.

Table 10: First Coast TIP Project Summary

Project Category	Number of Projects*	Percentage of all projects
Road	35	39.3%
Add Capacity	16	18.0%
Highway	10	11.2%
Transit	10	11.2%
Bike	10	11.2%
Other (Studies, Etc)	10	11.2%
Pedestrian	8	9.0%
Bridge	6	6.7%
Technology	4	4.5%
Port/Air	3	3.4%
Beautification	2	2.2%
Rail	1	1.1%
Parking	1	1.1%
Wildlife/Cons	1	1.1%
TDM**	0	0.0%
Traffic Calming	0	0.0%

* Projects receiving federal funding in FY04/05 TIP. N=89

** Transportation Demand Management (TDM)

Project Category	Federal Funding*	Percentage of Fed Funding
Highway	\$102,594,600.00	28.4%
Road	\$100,526,100.00	27.8%
Bridge	\$99,244,800.00	27.5%
Add Capacity	\$63,838,300.00	17.7%
Transit	\$42,745,800.00	11.8%
Other (Studies, Etc)	\$7,604,800.00	2.1%
Bike	\$5,077,000.00	1.4%
Technology	\$4,927,000.00	1.4%
Pedestrian	\$3,236,000.00	0.9%
Port/Air	\$1,980,000.00	0.5%
Wildlife/Cons	\$1,727,000.00	0.5%
Parking	\$1,547,000.00	0.4%
Beautification	\$1,357,000.00	0.4%
Rail	\$147,000.00	0.0%
TDM	\$0.00	0.0%
Traffic Calming	\$0.00	0.0%

*Funding is inflated for some categories, since entire project costs are assigned to multiple categories.

Total federal funding = \$361,293,100.00

In comparison, the Puget Sound Regional Council, the MPO for the Seattle metropolitan area, has a Pedestrian Danger Index score of 24.7, making it the second safest metropolitan area for pedestrians in my dataset. Table 11 summarizes project types that were included in the FY2004/2005 TIP, as well as how the federal funding was dispersed. Even in the mid-2000s we can see that the Puget Sound Regional Council was committed to improving multimodal transportation in the region. Over 75% of all projects had elements focused on pedestrian and

bicycling infrastructure or transit. And 32% of projects included improvements for pedestrians, compared to only 9% in in Jacksonville. While I don't find statistical support for my pedestrian infrastructure hypothesis, I believe these descriptive statistics suggest that the approaches regions are taking to infrastructure investments have important regional outcomes.

Table 11: Puget Sound TIP Project Summary

Project Category	Number of Projects*	Percentage of all Projects
Highway	224	44.2%
Pedestrian	166	32.7%
Transit	126	24.9%
Road	115	22.7%
Technology	101	19.9%
Bike	99	19.5%
Add Capacity	90	17.8%
Bridge	67	13.2%
Beautification	43	8.5%
TDM	25	4.9%
Parking	23	4.5%
Other (Studies, Etc)	20	3.9%
Rail	17	3.4%
Port/Air	13	2.6%
Wildlife/Cons	9	1.8%
Traffic Calming	0	0.0%

* Projects receiving federal funding in FY04/05 TIP.
N=507

Project Category	Federal Funding*	Percentage of Fed Funding
Transit	\$554,629,162.00	56.8%
Pedestrian	\$295,345,308.00	30.2%
Highway	\$282,483,191.00	28.9%
Technology	\$200,557,937.00	20.5%
Road	\$198,615,202.00	20.3%
Add Capacity	\$186,553,830.00	19.1%
Bike	\$165,034,468.00	16.9%
Rail	\$152,770,642.00	15.6%
Bridge	\$126,719,934.00	13.0%
Parking	\$90,373,848.00	9.3%
Port/Air	\$69,570,409.00	7.1%
Beautification	\$61,594,139.00	6.3%
TDM	\$56,119,939.00	5.7%
Other (Studies, Etc)	\$9,892,087.00	1.0%
Wildlife/Cons	\$5,183,093.00	0.5%
Traffic Calming	\$0.00	0.0%

*Funding is inflated for some categories, since entire project costs are assigned to multiple categories.

Total federal funding =\$976,904,884.00

Although I find no support for my infrastructure hypotheses, there was partial support for two of my four institutional hypotheses. First, I find evidence that the complexity of the process (H_{3B}) used to rank and include projects in an MPO is significant. The coefficient on process complexity is both significant ($P < .01$) and negative. A one-point increase in the complexity of the TIP ranking process is associated, on average, with a 21.75 decline on the Pedestrian Danger Index. These findings are consistent with my expectations and suggest that a more complex process not only results in a more equitable distribution of projects in a TIP, but also improved regional outcomes. See Figure 2 for a graphical representation of this relationship.

Figure 2: Relationship Between the TIP Process Complexity and Ped Safety

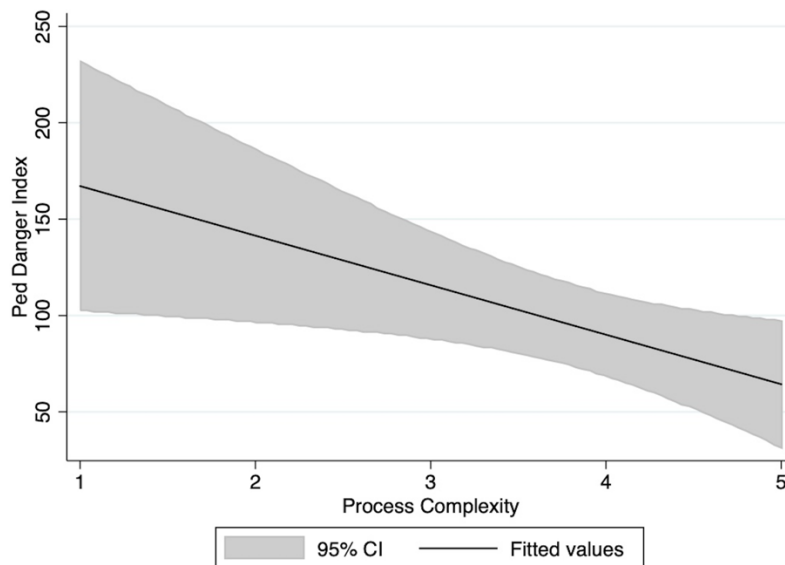
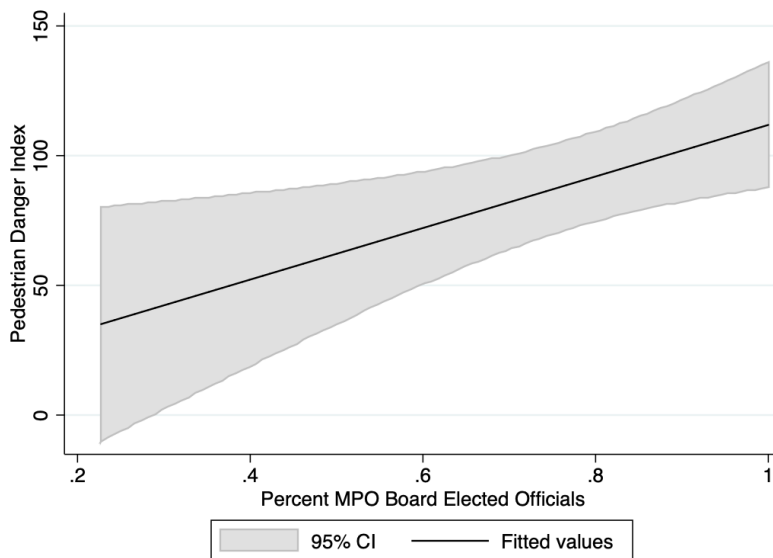


Figure 3: Relationship Between the Percentage Board Elected and Ped Safety



Second, I find support for my hypothesis (H_{5B}) that the percentage of elected officials on an MPO board influences regional outcomes, however the direction of the relationship was not as predicted. I had expected that regions with lower PDI scores (safer regions) would be associated with boards comprised of more elected officials. This expectation was based on Gerber and Gibson (2009) finding that MPO boards with higher percentages of elected officials, and fewer public administrators, spend more on local projects. I found a significant ($P < .05$) and positive relationship between the presence of elected officials on MPO boards and an MPO's PDI score. This means that as the percentage of elected officials on an MPO board increases, on average, so does the regions pedestrian danger index score. See Figure 3 for a graphical representation. This relationship was unexpected and, at first seemed contrary to Gerber and Gibson's findings. However, this relationship may simply be more complicated. Local officials

may support local projects, but the types of local projects submitted across regions are not uniformly advancing equity and safety for metropolitan residents. Boards with more public administrators appear to influence not only the types of projects included on a TIP, but ultimately the quality of projects submitted.

I found no support for my executive leadership hypothesis (H_{4B}) or my staff capacity hypothesis (H_{6B}). The direction of the relationship was as anticipated for staff capacity, but the opposite for executive leadership. The coefficient for my executive leadership variable was positive, which suggests that as executive director authority over the TIP increases the region would experience poorer pedestrian safety outcomes. However, in this analysis the relationship did not indicate statistical significance, so the role of executive director plays on regional outcomes is still unknown and warrants greater study.

It is worth discussing the results of two of the control variables I included in my model. As expected, we see that metropolitan areas that experienced rapid population growth between 1990 and 2000 are incredibly risky areas for pedestrians. And we see that region matters. For metropolitan areas located in the southeast, on average, their PDI ranking is 49.39 points higher than other regions.⁴⁴

In summary, this analysis presents some evidence that institutional design and processes affect regional outcomes. If these features influence pedestrian safety, there is reason to believe they may influence other factors such as economic vitality, accessibility, connectivity, and the

⁴⁴ Although the percentage of African Americans was not significant in this analysis, it should be noted that it was when the model was run without a regional dummy. In that analysis, I found evidence that pedestrian risk was highest in regions with large black populations. The coefficient was both significant ($P < .01$) and positive and the magnitude of this coefficient was larger (248.24) than every other variable with the exception of my regional population growth variable.

environment. Much more research is warranted to examine how these features, and other institutional features, influence MPO performance outcomes and ultimately regional outcomes.

CHAPTER 6: Insights and Conclusion

I began this dissertation by suggesting that metropolitan advocates have been too quick to dismiss the power and influence of Metropolitan Planning Organizations. Perhaps they were dismissed because advocates and scholars had such high expectations for MPOs following the reforms instituted under ISTEA. There was hope that greater control over funding, more public participation, and an enhanced emphasis on multimodal planning would position MPOs to serve as a shock to the system and bring about rapid changes in metropolitan transportation policy. When this didn't happen, when local interests continued to dominate over regional interests and inequitable transportation systems persisted, many metropolitan advocates dismissed MPOs and called for new regional bodies and partnerships to lead the transformative changes so desired in metropolitan areas.

However, as those that study path dependency and incrementalism know, institutions have strong biases towards the status quo and often resist change. Our car-centric transportation systems share all four of the characteristics of path dependency models, as identified by Pierson (2000), large set-up or fixed costs, learning effects, coordination effects, and adaptive expectations. Automobiles represent large set-up or fixed costs for individuals. Learning effects have spurred greater efficiencies in auto manufacturing and design. The coordination effects for cars include roads, highways, parking structures, gas stations, repair shops, and more. And, finally, the adaptive expectations have indeed been a large reason the system has been so hard to shift. Transportation planners predict future travel behavior based on current travel behavior, long-range plans are developed using models based on data from these transportation models, and TIPs are developed using these data. Given the long history of departments of transportation building roads and strong institutional biases in favor of automobiles and road expansion, the

path dependency model clearly suggests American transportation policy is intractable and will continue to emphasize the automobile over other transportation modes, despite the negative externalities experienced by vulnerable and disadvantaged communities.

Given these challenges and the resistance to change path dependency predicts, I believe expectations following ISTEA were unrealistic. However, that doesn't mean MPOs are irrelevant or incapable of change. Rather, it suggests it may take time for institutions to learn to overcome resistance and wield the new power they have. There is mounting evidence that the transportation system is slowly shifting as new technology is introduced, past transportation models continue to lead to poor transportation outcomes, and legislation continues to push metropolitan areas in a new direction.

In this dissertation I have challenged the claim that MPOs are inconsequential regional actors. I have sought to provide a better picture of how the hundreds of billions of dollars they allocate are distributed and how this distribution affects regional outcomes. Further, I have investigated institutional and representational factors that affect these distributions. It is critical that metropolitan advocates better understand the characteristics of an MPO that lead to stronger, more equitable regional outcomes.

The first question I explored centered on the topic of representation. Sanchez and Wolf (2005) documented the underrepresentation of women and minorities on MPO boards. Recall that 13 of the 50 MPO boards they studied were comprised of all white board members. They urged MPOs to build more diverse boards with regard to gender, racial, and ethnic composition, and suggested doing so would lead to more equitable outcomes. I investigated this proposal utilizing their representational dataset and my project dataset. Contrary to my and their hypotheses, I found no evidence that greater racial or gender diversity on MPO boards resulted in

more support for transit or pedestrian or bicycle infrastructure. It is possible that a larger dataset is needed to gain leverage on this particular question. These boards were largely comprised of white and male board members and there may not have been enough variation in this dataset to examine the impacts of descriptive representation. Although not statistically significant, the direction of the relationships that was observed was interesting. The analysis suggested that percentage of transit projects was lower for boards comprised of more white men. And women were more likely to support multimodal projects (bike, pedestrian, and transit) than their male colleagues. Since the direction of these relationships is relatively consistent with expectations, it seems worthwhile to continue to explore these questions. However, if these findings prove to be true after greater investigation, a null result is a positive finding. Clearly descriptive representation has numerous tangible benefits such as increasing institutional legitimacy and improving civic engagement. However, increasing minority and female representation on MPO boards is particularly challenging. MPOs draw their boards from local elected bodies, where minorities and women continue to be underrepresented in city councils. For MPOs dominated by elected officials, increasing board diversity will continue to prove challenging.

This leads me to a significant, but somewhat confusing finding. I found continued support for Gerber and Gibson's (2009) finding that the percentage of local officials on MPO governing boards matters. I too found that elected officials are more likely to support local projects, in this case pedestrian and bicycle projects. However, I also found that boards with more elected officials had poorer regional pedestrian safety outcomes. These findings are hard to reconcile, but I suspect the differences are influenced by local commitment to advancing a comprehensive, multimodal system across a region. While local pedestrian improvements are important, they ultimately may do little to improve regional pedestrian safety if they are not

accompanied by a commitment to regional transit. In Chapter 5, the personal story of James Robertson provides support for this theory. James was put at greater risk as a pedestrian, because the Detroit metropolitan area continues to have such a poor transit system. Further, not all local investments in pedestrian infrastructure improve pedestrian safety outcomes. Pedestrian safety relies on access along and across roads and highways, as well as the actual design of those roads. While there are certainly merits to improving recreational trails, as we saw in Jacksonville, those investments are unlikely to result in improved safety outcomes. Rather, as we saw in Seattle and was reported in Nashville, improved safety outcomes may require inclusion of elements to improve pedestrian access/experience/infrastructure in a high percentage of surface transportation projects. It appears that public administrators, rather than elected officials, who bring a more regional perspective to MPOs are more capable of advancing an MPO agenda that prioritizes equity and safety. As was noted in the last chapter, MPO boards comprised of fewer elected officials had a significantly lower rating on the PDI Index. This suggests that metropolitan areas are actually physically safer when regional agendas, rather than local agendas, are advanced.

I believe the most significant and compelling finding from my research is that MPOs have discretionary power they are not wielding. Contrary to the claim by the SEMCOG executive board member that federal funding is essentially formula pass through funding, this research offers evidence that the processes MPOs use to rank projects is an avenue for bringing about change. Transit, in particular, appears to benefit from greater focus within the TIP process. First, we see that the power an executive director has over the TIP process was a significant factor influencing the number of transit projects included on a TIP; on average, transit projects rose 15% with greater executive director influence. And even more influential, was the process

used for ranking projects. Process complexity was associated with a 25% increase in the percentage of transit projects included in a TIP. Furthermore, the complexity of the TIP process appears to matter not just for the types of projects selected, but ultimately for regional outcomes. My research also suggests that greater complexity in the TIP process results in improved pedestrian safety outcomes for the region. On average, metropolitan areas with more complexity in the project selection process were safer regions for pedestrians. This suggests that the projects that are included in the TIP and receive federal funding through a more rigorous process are better projects from an equity and safety perspective.

I, however, did not find evidence that the variation of projects included on a TIP results in different regional outcomes. This was surprising and I believe this finding warrants greater investigation. This research demonstrated that the people and processes involved in selecting projects affect pedestrian safety. Clearly, the projects they ultimately select for funding are what determines who lives and who dies. However, my analysis does not appear to be fine-grained enough to determine what types of projects or combination of projects and project funding leads to better outcomes. As noted in the previous chapter, I suspect it requires ongoing commitment to advancing multimodal projects and incorporation of these elements across modes. The Puget Sound Regional Council appears to exemplify best practices. Over 75% of their projects included pedestrian and bicycling infrastructure or transit. My interviews with the Nashville Area MPO executive staff lend support to this theory. It was only after Nashville introduced better selection criteria that they saw a shift in the types of projects municipalities submitted for funding. Their MPOs decision to prioritize equity, accessibility, and connectivity across modes has resulted in municipalities submitting more equitable projects for consideration.

Finally, my findings suggest scholars have been too hasty in dismissing the influence MPOs have in metropolitan areas. Indeed, in some places there is evidence that MPOs are quietly helping to lead regional reforms. Although it is tempting to advocate for new systems of governance, the reality is that local communities and leaders already serve upon and work regularly with MPOs and COGs. Members trust MPOs to offer expertise and some collaboration is already occurring. Even at SEMCOG, where regional transportation is abysmal, board members were vocal proponents of regionalism. They are striving to think beyond their parochial interests, though they don't yet seem to recognize SEMCOGs potential to actually lead reforms. One SEMCOG executive committee officer stated it well when discussing the importance of public transportation. He noted that, as a representative of a suburban township, he didn't place high value on transit services since they couldn't serve his township well. However, from a regional perspective and as a board member of SEMCOG, he knows transit is critical. "*We need a healthy urban environment and need it to be connected to the suburban environment.*" He argued that serving on SEMCOG pushed him to consider interests beyond his own narrower, community goals, and ask "*Can I support some plan that will help the region? It forces you to think differently*" (personal correspondence, April 10, 2017). If Frug and Barron (2013) are right, and "unleashing a new urban age involves... empowering local democracy and recognizing the impact of local decisions on neighboring localities and the larger world" (p. 254), we may be closer to this new age than we think.

APPENDICES

APPENDIX A: Interview Questions

I am a PhD student in the Political Science Department at Michigan State University conducting a study on regional governance. I have a short interview I would like to conduct with you. Your participation is, of course, entirely voluntary. The interview is anticipated to take approximately 30 minutes to complete. None of the questions are sensitive in nature, but if you prefer not to answer any particular questions, please let me know and we can move on to the next question. You will not be personally identified in any reports or materials resulting from this study. All records will be kept confidential to the full extent provided for by federal, state, and local law and Michigan State University policy.

Interview Questions for MPO Governing Board Members:

1. How long have you served on the MPO?
2. What is your role on the MPO governing board?
3. How do you view your role on this board?
 - *Probe 1...* Whose interests do you represent?
 - *Probe 2...* What are your responsibilities serving on this board?
4. Did you receive any training/orientation about what MPOs do/their responsibilities when you initially began serving on this board?
5. Please discuss how policymaking decisions occur?
 - *Probe 1...* Please discuss the formation of the TIP and long-range plans? How are these developed and elements included?
 - *Probe 2...* Would you say generally that staff guides the board or that the board guides the staff.
6. Please discuss the responsibility of the MPO and, the governing board in particular, in addressing issues of transportation equity.
7. *If not addressed in the answer to the previous question...* Individuals who lack access to cars, rely upon transit, biking and walking to gain access to jobs, services, schools, and other day-to-day activities. However, to gain access to these destinations facilities must be safe and services must be available. This region was recently ranked as the XXth in pedestrian fatalities in a recent report release by Smart Growth America. Please explain how you view the role/responsibility of the MPO and your own individual role/responsibility as a board member of the MPO in addressing these types of equity issues?

Interview Questions for MPO Executive Staff:

1. How long have you worked at this MPO?
2. What types of transportation experience did you have prior to working in this position?
3. Please explain how projects are selected and placed in the TIP.
4. Can you please discuss the selection criteria you use to prioritize investments? (obtain a copy)
5. How long has this selection criteria been used?
6. Does the selection criteria explicitly address issues of equity? If so, how.
7. In an effort to build transportation equity, federal regulations require MPOs to conduct meaningful public engagement and to ensure a fair distribution of the benefits and burdens of transportation investments, however there are no requirements to begin to close the transportation equity gap. Can you please discuss if and how your MPO may be working to close the access gap for residents that do not have the financial means to or chose not to own a car?
 - Probe: That is, selection criteria that ranks projects higher if they are multimodal in nature.

That concludes our interview. Thank you so much for your time and insights.

APPENDIX B: Dangerous by Design Metro Rankings

Table 12: Dangerous by Design 2016 Metro Rankings

2016 rank	Metro area	Pedestrian deaths (2005-2014)	Annual pedestrian fatalities per 100,000	2016 Pedestrian Danger Index
1	Cape Coral-Fort Myers, FL	165	2.55	283.1
2	Palm Bay-Melbourne-Titusville, FL	142	2.59	235.2
3	Orlando-Kissimmee-Sanford, FL	575	2.58	234.7
4	Jacksonville, FL	379	2.74	228.7
5	Deltona-Daytona Beach-Ormond Beach, FL	191	3.19	228.2
6	Lakeland-Winter Haven, FL	161	2.61	200.6
7	Tampa-St. Petersburg-Clearwater, FL	821	2.88	192.0
8	Jackson, MS	109	1.90	189.6
9	Memphis, TN-MS-AR	246	1.84	153.3
10	North Port-Sarasota-Bradenton, FL	150	2.08	148.2
11	Miami-Fort Lauderdale-West Palm Beach, FL	1,508	2.61	145.1
12	Bakersfield, CA	205	2.39	132.8
13	Birmingham-Hoover, AL	150	1.32	132.1
14	Little Rock-North Little Rock-Conway, AR	110	1.53	127.9
15	Houston-The Woodlands-Sugar Land, TX	1,026	1.65	127.2
16	Phoenix-Mesa-Scottsdale, AZ	814	1.88	125.1
17	Detroit-Warren-Dearborn, MI	693	1.61	124.2
18	Riverside-San Bernardino-Ontario, CA	858	1.97	123.4
19	Baton Rouge, LA	167	2.05	120.6
20	McAllen-Edinburg-Mission, TX	115	1.43	118.8
21	Las Vegas-Henderson-Paradise, NV	401	2.00	117.7
22	Augusta-Richmond County, GA-SC	119	2.07	114.8
23	Albuquerque, NM	194	2.16	113.6
24	Tulsa, OK	137	1.44	110.5
25	Dallas-Fort Worth-Arlington, TX	888	1.32	110.4
26	Atlanta-Sandy Springs-Roswell, GA	819	1.50	107.2
27	Raleigh, NC	165	1.39	106.7
28	San Antonio-New Braunfels, TX	421	1.88	104.5
29	Stockton-Lodi, CA	137	1.95	102.9
30	Modesto, CA	96	1.84	102.0
31	Greenville-Anderson-Mauldin, SC	162	1.92	101.2
32	Winston-Salem, NC	84	1.30	99.7
33	Charlotte-Concord-Gastonia, NC-SC	317	1.38	98.5
34	Louisville/Jefferson County, KY-IN	194	1.55	96.7

Twenty most dangerous metro areas based on PDI are highlighted in red; middle rankings are highlighted in blue; 20 least dangerous metro areas based on PDI are highlighted in green.

Table 12 (cont'd)

2016 rank	Metro area	Pedestrian deaths (2005-2014)	Annual pedestrian fatalities per 100,000	2016 Pedestrian Danger Index
35	Greensboro-High Point, NC	106	1.44	96.0
36	Fresno, CA	190	2.00	95.4
37	Nashville-Davidson-Murfreesboro-Franklin, TN	209	1.21	92.9
38	New Orleans-Metairie, LA	272	2.22	88.7
39	El Paso, TX	158	1.91	86.8
40	Oklahoma City, OK	180	1.39	86.7
41	Knoxville, TN	87	1.03	85.5
42	Tucson, AZ	197	1.98	82.6
43	Sacramento-Roseville-Arden-Arcade, CA	375	1.71	81.3
44	Richmond, VA	150	1.22	81.0
45	Kansas City, MO-KS	210	1.03	79.2
46	Charleston-North Charleston, SC	152	2.18	77.9
47	Austin-Round Rock, TX	257	1.40	77.8
48	San Jose-Sunnyvale-Santa Clara, CA	271	1.43	75.1
49	Ogden-Clearfield, UT	64	1.04	74.4
50	Indianapolis-Carmel-Anderson, IN	216	1.12	69.9
51	Los Angeles-Long Beach-Anaheim, CA	2,370	1.81	69.8
52	St. Louis, MO-IL	351	1.25	69.7
53	Wichita, KS	61	0.96	68.5
54	Youngstown-Warren-Boardman, OH-PA	64	1.14	67.3
55	Baltimore-Columbia-Towson, MD	470	1.71	65.7
56	San Diego-Carlsbad, CA	559	1.76	62.7
57	Columbia, SC	162	2.06	62.6
58	Denver-Aurora-Lakewood, CO	327	1.23	58.7
59	Chattanooga, TN-GA	58	1.08	56.8
60	Oxnard-Thousand Oaks-Ventura, CA	91	1.09	54.4
	National total	31,701	1.51	53.8
61	Salt Lake City, UT	125	1.11	53.0
62	Grand Rapids-Wyoming, MI	103	1.02	51.1
63	Des Moines-West Des Moines, IA	47	0.80	49.7
64	Toledo, OH	76	1.25	48.0
65	Allentown-Bethlehem-Easton, PA-NJ	102	1.23	47.5
66	Columbus, OH	198	1.02	46.2
67	Akron, OH	55	0.78	46.0
68	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	979	1.63	44.0
69	Washington-Arlington-Alexandria, DC-VA-MD-WV	817	1.39	43.5
70	Durham-Chapel Hill, NC	72	1.37	42.9
71	Scranton-Wilkes-Barre-Hazleton, PA	84	1.49	42.7
72	Buffalo-Cheektowaga-Niagara Falls, NY	134	1.18	40.7
73	Hartford-West Hartford-East Hartford, CT	130	1.07	39.6

Table 12 (cont'd)


2016 rank	Metro area	Pedestrian deaths (2005-2014)	Annual pedestrian fatalities per 100,000	2016 Pedestrian Danger Index
74	Milwaukee-Waukesha-West Allis, WI	169	1.08	38.6
75	Providence-Warwick, RI-MA	195	1.22	38.0
76	Cincinnati, OH-KY-IN	168	0.79	37.5
77	Virginia Beach-Norfolk-Newport News, VA-NC	189	1.11	37.1
78	Harrisburg-Carlisle, PA	69	1.24	35.5
79	Dayton, OH	71	0.89	35.4
80	Chicago-Naperville-Elgin, IL-IN-WI	1,043	1.10	34.2
81	Bridgeport-Stamford-Norwalk, CT	86	0.92	34.1
82	Urban Honolulu, HI	172	1.76	33.9
83	New Haven-Milford, CT	103	1.19	33.1
84	Worcester, MA-CT	82	0.89	31.7
85	San Francisco-Oakland-Hayward, CA	618	1.38	31.4
86	Portland-Vancouver-Hillsboro, OR-WA	251	1.10	31.3
87	Boise City, ID	40	0.63	31.3
88	Cleveland-Elyria, OH	138	0.67	30.3
89	Spokane-Spokane Valley, WA	48	0.90	30.0
90	Omaha-Council Bluffs, NE-IA	47	0.53	29.5
91	Rochester, NY	113	1.04	29.0
92	Springfield, MA	71	1.13	28.3
93	Minneapolis-St. Paul-Bloomington, MN-WI	222	0.65	28.2
94	Albany-Schenectady-Troy, NY	90	1.03	27.8
95	New York-Newark-Jersey City, NY-NJ-PA	3,216	1.62	27.0
96	Pittsburgh, PA	213	0.90	26.6
97	Seattle-Tacoma-Bellevue, WA	316	0.89	24.7
98	Lancaster, PA	45	0.85	24.4
99	Syracuse, NY	70	1.06	23.0
100	Provo-Orem, UT	44	0.80	19.5
101	Boston-Cambridge-Newton, MA-NH	444	0.95	18.0
102	Madison, WI	53	0.85	16.4
103	Portland-South Portland, ME	30	0.58	14.8
104	Colorado Springs, CO	37	0.55	13.5

Twenty most dangerous metro areas based on PDI are highlighted in red; middle rankings are highlighted in blue; 20 least dangerous metro areas based on PDI are highlighted in green.

APPENDIX C: Metropolitan Planning Organization Survey

Figure 4: Gerber and Gibson (2009) MPO Survey

CLOSUP Metropolitan Planning Organization Survey



University of Michigan
Ford School of Public Policy
Metropolitan Planning Organization Survey

This survey is part of an academic study on regional governance funded by the National Science Foundation. Your participation in the survey is entirely voluntary and should take approximately 15 minutes to complete. None of the questions are sensitive in nature, but if you prefer not to answer any particular questions, please just skip those questions and continue with the survey. You will not be identified in any reports or materials resulting from this study. All records will be kept confidential to the full extent provided for by federal, state, and local law and University of Michigan policy. Submitting the survey with your responses will imply your consent to participate.

If you have any questions about this survey or the larger study, please contact Elisabeth Gerber, Professor of Public Policy and Director of the University of Michigan's Center for Local, State, and Urban Policy (734-647-4091; ergerber@umich.edu). If you have questions regarding your participation in this research, please contact the Behavioral Sciences Institutional Review Board, Mona Moore, Assistant Administrative Manager, by phone (734-936-0933), email (irbhsbs@umich.edu), or via U.S. mail at 540 East Liberty Street, Suite 202, Ann Arbor, MI 48104-2210.

Thank you for taking the time to help with this important research project.

Question 1a: MPO Name
Please record the name of the Metropolitan Planning Organization (MPO) you represent:

Question 1b: MPO Type
Is this MPO [free standing](#), or is it part of a [regional council](#) or county/local government transportation department?

- Free standing MPO
- Regional council
- County/local transportation department
- Don't know
- Other (please specify):

Question 2a: Year MPO Established
What year was the MPO established?

Question 2b: Year Regional Council Established
If your MPO is part of a regional council, in what year was the regional council established? (Leave blank if not applicable.)

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Figure 4 (cont'd)

CLOSUP Metropolitan Planning Organization Survey

Question 4f: MPO General Membership

Does the voting membership of the body named in question 3 differ from the MPO general membership?

- Yes
If yes, please explain:
- No
- Don't know

Question 5a: Voting Rules

What **voting rule** is used for final TIP approval?

- One vote per jurisdiction
- One vote per member, but some jurisdictions have more than one member
- One vote per member, but share a vote through rotating membership
- One vote per member, but some jurisdictions (e.g., counties) have multiple members that represent different sub-units within the jurisdiction (i.e., county-wide, cities, towns, school districts)
- Multiple votes per (some) members (i.e., weighted voting)
- Other (please specify):
- Don't know

Question 5b: Counting Rules

What **counting rule** is used for final TIP approval?

- [Simple majority](#)
- [Bloc or multiple majority](#)
- [Supermajority](#)
- Other (please specify):
- Don't know

Question 6a: Initiation of TIP

What is the name of the board or committee that initiates the TIP process?

Question 6b: Committees

How many other MPO committees participate in the TIP process? Please indicate whether it is a standing or ad hoc committee:

#	Committee Name	Standing Committee	Ad Hoc Committee
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Figure 4 (cont'd)

CLOSUP Metropolitan Planning Organization Survey

1.			
2.			
3.			
4.			
5.			

Question 7: Role of the State

What role does your state department of transportation play throughout the TIP process, from initiation to final passage? Please check all that apply.

- Requests MPO input before developing state transportation policy
- Provides reliable estimates of available funding for TIP to MPO
- Suballocates federal STP funds by formula
- Suballocates federal CMAQ funds by formula
- Suballocates federal PL funds by formula
- Suballocates federal STP funds through competitive process
- Suballocates federal CMAQ funds through competitive process
- Suballocates federal PL funds through competitive process
- Mandates funding for specific uses. (i.e., highway versus transit)
- Creates project list for the MPO to include in the TIP
- Serves on MPO advisory committees
- Votes on MPO committee that has TIP approval authority
- Holds veto authority on MPO-approved TIP document
- Provides final TIP approval
- Provides direct GIS, engineering, and environmental impact technical assistance
- Other (please specify):

Question 8: Local government project proposals

At the beginning of the TIP process, do local units of government submit project proposals directly to the MPO or do they submit projects through an intermediary?

- Submit directly to MPO
- Submit through an intermediary
- Other (please specify):
- Don't know

Question 9: Staff

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Figure 4 (cont'd)

CLOSUP Metropolitan Planning Organization Survey

How many staff [FTE](#) are dedicated to supporting the TIP process?

Number of
FTEs:

Question 10a: Total Budget

What was the approximate **total budget** (in dollars) of the organization you are representing in this survey for fiscal year 2004-2005?

\$

Question 10b: Transportation Budget

What was the approximate **transportation budget** (in dollars) of the organization you are representing in this survey for fiscal year 2004-2005?

\$

Question 10c: Administrative Budget

What was the approximate **administrative budget** (in dollars) of the organization you are representing in this survey for fiscal year 2004-2005?

\$

Question 11: Process

Please characterize the complexity of the TIP process in your organization from initiation to final approval on the scale below.

- 5: Complex
- 4
- 3
- 2
- 1: Streamlined
- - Don't know

Question 12: Influence

How much influence does the structure of the MPO afford the Executive Director during the TIP process?

- 5: A great deal of influence
- 4
- 3
- 2
- 1: Very little influence
- - Don't know

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APPENDIX D: Pedestrian Danger Index (PDI) Methodology

Figure 5: Dangerous by Design (2016), PDI Measure

Methodology

The Pedestrian Danger Index is a measure developed to account for raw pedestrian fatalities, relative populations of each place we measured and the most accurate source of pedestrian data we have – the US Census reported “Travel to Work” data. The formula allows Dangerous by Design to compare data regarding pedestrian deaths, whether the count is measured in Wyoming or California, or in a place like New York City, where many people die each year on foot, but many more people are walking on a daily basis, too. The formula looks like this:

$$\frac{\text{Average annual pedestrian fatalities (2009-2014) / total population (in 2014)} \times 100,000}{\text{Percentage of commuters who walk to work}}$$

We chose to use the American Community Survey estimate for population from 2009 to 2014 to ensure that the PDI was calculated with the most up-to-date population numbers.

The measure called Relative Risk aims to compare a population-adjusted look at the disparity among certain groups of people through a lens of age, race, or ethnicity. This measure looked to calculate the rate of in-group pedestrian deaths (i.e. population over 65 years old, population that identified as non-white) as compared to that from outside the group (i.e. population not over 65 years old, and population that identified as white). We are limited to the data that is actually reported, and some states have been more diligent than others since 2009. For example, Hawaii’s population over 65 died at a rate of 4.96 people per 100,000, compared to its under-65 population, which died at a rate of 1.22 people per 100,000. This number is 4.07 times lower, so we state that the *relative risk* for the over-65 population is 4.07, or: in Hawai’i a person older than 65 is 4.07 *times more likely to die* as a pedestrian younger than 65.

Wherever possible, complete records are used for Fatality Analysis Reporting System (FARS) data and all trends are calculated using at least a 90 percent confidence interval. Trends are reported as descriptive statistics and are not necessarily validated for predictive modeling.

To calculate the number of pedestrian fatalities by state, we used the State designation as reported by FARS. We believe that these data are complete as reported. To calculate the number of fatalities by metropolitan statistical area (MSA), we performed a spatial join with the latitude/longitude as reported by FARS. Because not every entry into the database was fully complete—including some missing spatial data—there is a chance that the estimated deaths per MSA is conservative.

Socio-economic data are presented at the MSA level to generalize geographic statistics in conjunction with the larger report themes. Journey to work data, as presented in calculating the Pedestrian Danger Index, is taken to mean that the pedestrian mode share is the primary mode from origin to destination.

A Point About Our Data

The 2014 edition of *Dangerous by Design* called for better data in future versions. Unfortunately, many of the same data challenges remain for this edition.

The FARS database is often incomplete, and details on existing infrastructure are limited. We are also not sure how often people walk—the U.S. Census Bureau’s Travel to Work data is a close approximation but far from perfect.

Data on all these issues should be collected better, more frequently, be more open, and more interactive. State departments of transportation can and should measure the impact of pedestrian, bicyclist, and Complete Streets projects, both in terms of dollars spent as well as crash, injury, and mortality rates both before and after project completion. This type of reporting would create a baseline national metric, allow agencies to share ideas, and most importantly, help reduce the number of people being killed while walking on America’s streets.

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