Institutions and Information Technology to Support Service Integration in Multimodal Employment Transportation

Carolyn McAndrews
Alexander Allon

FINAL REPORT

CEDD
Center for Transportation Equity, Decisions & Dollars

INSTITUTIONS AND INFORMATION TECHNOLOGY TO SUPPORT SERVICE INTEGRATION IN MULTIMODAL EMPLOYMENT TRANSPORTATION

FINAL PROJECT REPORT

By:

Carolyn McAndrews
Alexander Allon
University of Wisconsin–Madison

Sponsorship:
CTEDD

For:
Center for Transportation, Equity, Decisions and Dollars **(CTEDD)**
USDOT University Transportation Center
The University of Texas at Arlington
Woolf Hall, Suite 325
Arlington TX 76019 United States
Phone: 817-272-5138 | Email: C-Tedd@uta.edu

In cooperation with US Department of Transportation-Research and Innovative Technology Administration (RITA)

Acknowledgments

This work was supported by a grant from the Center for Transportation Equity, Decisions, and Dollars (CTEDD) funded by U.S. Department of Transportation Research and Innovative Technology Administration (OST-R) and housed at The University of Texas at Arlington. Additional support was provided by provided by the Office of the Vice Chancellor for Research and Graduate Education at the University of Wisconsin–Madison with funding from the Wisconsin Alumni Research Foundation

Disclaimer

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the U.S. Department of Transportation's University Transportation Centers Program, in the interest of information exchange. The Center for Transportation, Equity, Decisions and Dollars (CTEDD), the U.S. Government and matching sponsor assume no liability for the contents or use thereof.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
CTEDD 019-18		

4. Title and Subtitle	5. Report Date
Institutions and Information Technology to Support Multimodal Integration in Employment Transportation	August 2020
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
Carolyn McAndrews (ORCID: 0000-0002-0809-4449), Alexander Allon	
9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Center for Transportation, Equity, Decisions and Dollars (CTEDD) USDOT University Transportation Center The University of Texas at Arlington Woolf Hall, Suite 325 Arlington TX 76019 United States	11. Contract or Grant No. USDOT - 69A3551747134
12. Sponsoring Organization Name and Address	13. Type of Report and Period Covered
University Transportation Centers Program United States Department of Transportation 1200 New Jersey Ave, SE Washington, DC 20590 United States	14. Sponsoring Agency Code

15. Supplementary Notes

Additional project information available at <https://ctedd.uta.edu/research-projects/integrated-taxi-and-transit-demonstration-project-transportation-for-low-income-workers-in-dane-county-wisconsin/>. Project funded under a grant from the U.S. Department of Transportation's University Transportation Centers (UTC) Program.

16. Abstract

Transportation disadvantage is an underlying cause of low household earnings. In our recent experience implementing a shared ride program with taxicabs and vanpools we have found that transportation disadvantage cannot be solved by mobility alone. In our pilot project, we recognized a need for a type of organization—similar to a Transportation Management Association (TMA)—to address transportation disadvantage through private sector and philanthropic support, information technology, and multimodal transportation. Communities have implemented transportation countermeasures to spatial mismatch for decades, primarily in the form of trip-based services. Yet there is a fundamental gap in knowledge about the role for specialized institutions, such as a TMA, to coordinate information technology and advocate for supportive policies. This report presents findings from our action research project. We discuss how our own local initiative was enabled by upstream policy and funding mechanisms, such as a grant program coordinated across the state departments of workforce development and transportation. Yet, the federal, state, and local governments have not yet developed an institutional framework to support these forms of transportation services. The gaps in regional planning, in particular, were salient in our experience. We think this has implications for mobility-as-a-service and ridesharing more broadly. The regional institutions that could support employment transportation, non-emergency medical transportation, and other human services transportation or pay-by-mile services would benefit from a public option information technology system and a coordinating organization. Moreover, we have found that collaboration is not enough. The pilot program needed access to established vertical planning processes, policy networks, and institutional supports that enable scaling transportation services. We propose several ways forward for future research, which we derive by examining the challenges we faced and the questions that arose.

17. Key Words	18. Distribution Statement
Transportation, Equity, Job Access, Transportation Management, Multimodal	

19. Security Classification (of this report)	20. Security Classification (of this page)	21. No. of Pages	22. Price
Unclassified.	Unclassified.	43	

Table of Contents

Abstract

Transportation disadvantage is an underlying cause of low household earnings. In our recent experience implementing a shared ride program with taxicabs and vanpools we have found that transportation disadvantage cannot be solved by mobility alone. In our pilot project, we recognized a need for a type of organization—similar to a Transportation Management Association (TMA)—to address transportation disadvantage through private sector and philanthropic support, information technology, and multimodal transportation. Communities have implemented transportation countermeasures to spatial mismatch for decades, primarily in the form of trip-based services. Yet there is a fundamental gap in knowledge about the role for specialized institutions, such as a TMA, to coordinate information technology and advocate for supportive policies. This report presents findings from our action research project. We discuss how our own local initiative was enabled by upstream policy and funding mechanisms, such as a grant program coordinated across the state departments of workforce development and transportation. Yet, the federal, state, and local governments have not yet developed an institutional framework to support these forms of transportation services. The gaps in regional planning, in particular, were salient in our experience. We think this has implications for mobility-as-a-service and ridesharing more broadly. The regional institutions that could support employment transportation, non-emergency medical transportation, and other human services transportation or pay-by-mile services would benefit from a public option information technology system and a coordinating organization. Moreover, we have found that collaboration is not enough. The pilot program needed access to established vertical planning processes, policy networks, and institutional supports that enable scaling transportation services. We propose several ways forward for future research, which we derive by examining the challenges we faced and the questions that arose.

Chapter I: Introduction

Transportation disadvantage (i.e. not having affordable transportation to get to work, school, medical care, or the grocery store) is an underlying cause of low household earnings. It limits intergenerational access to opportunity as children can experience its negative outcomes later in life (Ralph, 2018). Spatial mismatch between jobs and housing disproportionately burdens people who experience transportation disadvantage (Ong and Miller, 2005). Communities try to mitigate this problem through housing, land use, economic development, and transportation countermeasures, but for millions of workers, solutions such as taking public transit to work are still not an option.

To address this important issue in Dane County, Wisconsin, since December 2018 our team has piloted an integrated taxi–vanpool pilot program to help workers reach jobs located beyond the bus system's service area. Union Cab of Madison Cooperative (Union Cab) first piloted the new program with taxicabs alone. Then, Union Cab partnered with the existing and successful YWCA JobRide vanpool program. Over the past two years, the two programs have given more than 20,000 rides to over 200 riders. But the taxicab rides have generally not been shared rides. Also, despite having a common vision, the programs have not had opportunities to implement an integrated model for their employment transportation operations. Similarly, despite employers' support for the concept, few have been willing to invest resources to sustain the program in the long term. In this report, we describe the evolving approaches of the pilot employment transportation program, our experience implementing it and trying to scale it up, and lessons learned.

The main lesson we learned through implementation is that we should not define the employment transportation problem as one that can be solved only by giving rides. Instead, expanding transportation services, i.e., giving rides, needs support from an information technology system—a type of linkage system (Rodman et al., 2106)—that helps reach new riders, collect payments, and connect ride scheduling systems across service providers. We also found that our program needs specialized institutions to coordinate outreach, technology, and operational integration. To address the first problem, our team has worked with a technology startup, the Madison Card, to envision the necessary information technology platform. To address the second problem, our team is establishing an organization similar to a Transportation Management Association (TMA) to coordinate the affordable transportation services, outreach with employers, and regional transportation advocacy. Addressing operational integration is a known challenge in the transportation sector, and the team can rely on existing toolkits (Goldman et al., 2014).

Prior research has shown that organizations, such as a TMA, are an important part of the solution to transportation disadvantage (Schlossberg, 2004). Our experience additionally highlights how employer investment, information technology, and advanced mobility

technologies may be keys to long run sustainability. However, because our pilot has operated outside of traditional transit service provision models, it lacked connections to certain forums such as regional and local plans, that would normally support such a program's sustainability. These formal connections could also benefit the program by allowing more comprehensive public engagement. Establishing connections to these existing policy frameworks is a next step for the project.

In this report, we discuss the employment transportation model that we developed, our vision for repurposing TMAs to address transportation disadvantage (traditionally used to reduce single-occupancy vehicle trips in congested regions), as well as approaches to information technology and regional collaboration.

Chapter II: Project Description

In 2018, Union Cab of Madison Cooperative (Union Cab), the largest taxi company in the Madison area, piloted a new workforce transportation program supported by Commute to Careers (CTC), a grant program jointly developed by Wisconsin's Department of Workforce Development and Department of Transportation. It was awarded $130,000 over two years to provide rides for low-income workers to access employment opportunities.

The program's model was based on the idea that workers and employers both benefit from the commute trip and have an interest in providing financial support. The pilot sought to partner with employers to design the program's features and to subsidize a portion of their employees' fares, creating a sustainable financial model (Allon et al., 2019). The program also tried to create a shared-ride operational model by combining rides when workers had similar origins or destinations. We expected this to create efficiency for serving suburban job centers.

After five months, the Union Cab CTC program had more than 80 riders (some off and on), had given more than 2,700 rides, and had three contributing employers. Most of the rides, however, were not shared and the service had high administrative costs because, being a new program, it was not entirely absorbed into Union Cab's existing scheduling and dispatch routines. Many riders needed to directly contact Union Cab's management to arrange rides, change schedules, or deal with other specialized tasks that fell outside of standard operating procedures. Seeking efficiencies and scale, in 2019, Union Cab sought to coordinate its rides with an existing vanpool service, the YWCA JobRide operated by YW Transit. JobRide is a successful program with a long waitlist of riders. If the Union Cab CTC could provide feeder service, then JobRide could ply the trunk routes to suburban job centers, and both could realize operational efficiencies.

Union Cab and YW Transit refined their business models and explored options for scaling, integrating, and financing their operations by joining a philanthropic challenge. The two service providers formed a team with other organizations in Dane County to respond to the Alliance for the American Dream's "Dream Up" challenge. The initiative, known as DreamUp Wisconsin, sought proposals that would increase the net income of 10,000 Dane County households by 10% by the end of two years. This challenge seemed like a good fit; indeed, the project advanced to the semi-finals.

The team's partners included the Union Cab, the University of Wisconsin–Madison, the YW Transit, the Madison Card (a technology startup), the region's MPO Madison Area Transportation Planning Board (MATPB), and the Community Development Director for the Village of DeForest, a local government in an expanding job center located at the suburban edge of the region.

Ideal proposals would increase household income directly or reduce costs of living, reach a diversity of people and communities, and rely on cross-sectoral capacity. To expand transportation options for Dane County households, the team proposed a solution, Mobilize Dane, comprising three parts:

1. *Service Provision.* A taxi–vanpool, trunk-and-feeder transportation system that connects residents to suburban and exurban job centers.
2. *Institutional Strength and Organizational Capacity.* A regional network of Transportation Management Associations (TMA), each involving area businesses, coordinating the taxi–vanpool system, engaging in knowledge and information sharing, and developing solutions for local workforce development, transportation, housing, childcare and health care issue.
3. *Information Technology*. A multimodal platform, the Madison Card, providing trip planning and fare collection for riders and coordinating dispatch, optimizing scheduling and providing real-time vehicle telematics for transportation service providers.

Why Here, Why Now? The Regional Context of Mobilize Dane

Since 2010, Dane County has been the fastest growing county in Wisconsin and has outpaced national growth rates (Wisconsin Department of Workforce Development, 2019). Municipalities on the suburban edge of Madison have experienced the highest population growth rates within the county. Six of these suburbs had double-digit increases, including the Village of DeForest (14%), one of the project partners. Employment is also projected to substantially increase around the periphery of Madison. The MPO's 2050 Planning Forecast anticipates the outer urbanized area to have double the employment growth rate of the central urbanized area, with DeForest experiencing the 3rd-highest rate of these peripheral municipalities at 61% (Madison Area Transportation Planning Board, 2017). Between 2002 and 2017, employment in DeForest grew from roughly 4,000 jobs to 5,500 jobs, a 38% increase.

Commuting by single-occupancy vehicle represents the highest share of work trips in the state of Wisconsin, though commuters the core urbanized area of Madison have relatively higher walk, bike, and transit mode shares because of favorable urban form and decades of investment in these components of the transportation system. Currently, the area with highest population density, the isthmus core, supports a bus service running every 5 minutes. The less dense surrounding areas can only support a service that runs every half hour to one hour, though it provides essential access for workers, students, and older residents. One of the biggest challenges facing Madison is to develop an integrated transportation network linking dispersed residents to employment and activity centers across the region. The number of employees working in Madison and living within 10 miles of their place of employment has decreased from 58% to 52% since 2007.

Multimodal transportation options are particularly important for nondrivers in Dane County. National Household Transportation Survey data from the Wisconsin Add-On and the Census show that 46,000 residents ages 15 and up do not drive, and more than 16,000 households do not own a car (U.S. Census, 2018; FHWA, 2017). These represent fundamental challenges to accessing work and opportunities.

Precedents and Policy Context

Regional public transportation is one of the major issues facing the Madison region. The City of Madison's Metro Transit service, which is relatively robust for a small city, operates primarily within the city's jurisdiction, with limited additional routes contracted by neighboring local governments. Three separate organizations carry out regional planning.

- The Madison Region Economic Partnership (MadREP) specializes in regional economic and workforce development and includes all eight counties in the region, which is a reasonable approximation of the commute shed.
- The Madison Area Transportation Planning Board (MATPB) is the region's Metropolitan Planning Organization responsible for federally mandated regional transportation planning, however its limited spatial scope includes only the more urbanized portion of Dane County.
- The Capital Area Regional Planning Commission (CARPC) specializes in land use, is the state-designated Regional Planning Commission, and its geographic scope includes the entire Dane County.

The major institutional barrier to transit expansion is the lack of a public authority empowered to raise revenue for and coordinate regional transit. To address regional transportation, the 2009 state biennial budget authorized the creation of several Regional Transit Authorities (RTAs), one of which would support Dane County transit expansion. Each RTA would be enabled to operate transportation systems (or contract with organizations such as Metro Transit to provide service) within its jurisdictional area; impose sales and use taxes; acquire property; and issue tax-exempt revenue bonds (A.B 75, 2009). Yet, this authorization was repealed in the 2011 state biennial budget and the nascent RTAs never materialized. Thus, efforts to address transportation disadvantage with traditional public transit solutions for the growing Madison region face a structural policy constraint, albeit one that may change with future policy agendas.

This policy context for regional transportation, land use, and economic development in the region has motivated complementary programs, such as the integrated taxicab–vanpool system that we proposed in Mobilize Dane, to address gaps in employment transportation and transportation disadvantage. In addition to the successful YWCA JobRide program, the MPO operates a ride matching and guaranteed ride home program (rideshareetc.org), which is positioned as a transportation demand management program rather than an employment

transportation program. Similarly, the Wisconsin Department of Transportation operates a state vanpool system. These various employment-focused programs overlap with the heterogenous landscape of specialized transportation services that target diverse riders (e.g., non-emergency medical transportation, veterans transportation, seniors, etc.) and use multiple transportation service providers in the region.

The following section discusses findings from the literature about the nature of transportation disadvantage, solutions to address it (including employment transportation), and the operational and organizational requirements to successfully implement the solutions.

Chapter III: Literature

The questions of transportation disadvantage and strategies to address it have been in the literature for decades, yet this perennial problem requires new consideration as demographic, political, and technological conditions change. This review presents a multi-level framing of: (1) how transportation disadvantage is defined as a problem, (2) the policy context in which regions attempt to mitigate its negative effects, and (3) how we worked at the community-level to mobilize and organize stakeholders to design and deliver an employment transportation program in Dane County, Wisconsin. These three levels—problem definition, regional policy context, and community mobilization and organizing—represent the major factors that shaped the Union Cab Commute to Careers program as well as its evolution into the Mobilize Dane program.

Problem Definition: Transportation Disadvantage

Transportation disadvantage means not having affordable, safe, and reliable transportation to get to work, school, medical care, or the grocery store. Transportation disadvantage disproportionately affects older residents, individuals with disabilities, people with lower socioeconomic status, women, and people of color. Transportation disadvantage limits intergenerational access to opportunity as children can experience its negative outcomes later in life (Ralph, 2018).

In combination with social disadvantage (e.g., low income, ill health, poor housing, or low skills) transportation disadvantage becomes *transportation poverty* when an individual or community is "locked out" from accessing essential goods, services, and public decision making. These inaccessible opportunities contribute to underlying economic and social exclusion (Lucas et al., 2016; Lucas, 2012; Social Exclusion Unit, 2003). Regional spatial mismatch between jobs and housing disproportionately burdens people who experience transportation disadvantage (Ong and Miller, 2005). Rural communities with lower density settlement patterns have even higher dependence on motor vehicles also experience transportation poverty.

One research approach quantifies transportation disadvantage with measures of access to transit. Allen and Farber (2019) analyzed inequalities in transit access to employment in eight urban regions in Canada to estimate the national extent of transportation poverty. They found that 40% of low-income residents are at risk of transportation poverty, which is 5% of the total population. Their main policy conclusion was to improve access to transit in low accessibility neighborhoods, particularly those that also have more low-income households. Other studies have investigated heterogeneity in transportation disadvantage and its implications for policy priorities and intervention strategies. For example, Carleton and Porter (2018) evaluated methodologies and metrics for identifying transportation poverty for Corvalis, Oregon, examining different ways of representing the problem's reach and comparing outcomes across multiple measures. They found that aggregate measures of transit access easily concealed

differences across disadvantaged groups such as youth and older residents, suggesting that equity analysis and metrics need to be carefully matched to the underlying context.

Another approach to transportation disadvantage centers on the availability of private cars, particularly in regions with dispersed and decentralized urban form without dense transit networks. Prior research from the Moving to Opportunity program shows that car access was the most important factor that enabled people to access work and increase their income—more than transit and housing alone (Blumenberg and Pierce, 2017). It is critical to note that car access can take multiple forms, including a pay-by-mile model and does not require car ownership to realize the mobility benefits of a demand-responsive transportation option. Emerging topics in this field include diverse models of ridesourcing, ridesharing, and micromobility.

The significance of car dependency is not only true for the poor, but also the middle class. Research specifically addressing middle class car-deficit households shows that cars—that is, forms of motorized, on-demand mobility—are essential for maintaining work and income (Blumenberg et al., 2018; King et al., 2019). Yet, there is a gap for the fragile middle class: households earning between $10,000 and $50,000 per year have higher odds of maintaining car-deficit status even as the number of workers in the household increases, likely because the high cost of car ownership does not justify the expense, especially if one can get by with sharing (Blumenberg et al., 2018). In Dane County, 29% of fully equipped households, 34% of car-deficit households, and 88% of car-less households have incomes below $50,000 (Federal Highway Administration, 2017).

This presents a paradox: Cars provide the most accessibility for regions such as Dane County with dispersed settlement patterns, but the cost of car ownership is unsustainable. A typical household in the U.S. spends more than $5,000 per year to get to work, to the grocery store, and to pick up children (Pew Charitable Trusts, 2016). Averages for Dane County's households are similar to national figures; a middle-income household spends between $7,000 and $13,000 per year on cars (Center for Neighborhood Technology, 2020). This is the motivation for developing a demand-responsive, pay-by-mile mobility service to help workers access more jobs, higher paying jobs, and jobs that offer more work hours.

Transportation Disadvantage Policy Context for Employment Transportation

The U.S. federal policy context offers a programmatic definition of transportation disadvantage based on the *human services transportation* or *specialized transportation* programs that intend to serve people with disabilities, older travelers, and low-income travelers (Executive Order 13330, 2004).

The Enhanced Mobility of Seniors and Individuals with Disabilities program (49 U.S.C. Section 5310) is the major source of support for these programs. Section 5310 funding was established in 1975 to help social service agencies and non-profit transportation service providers purchase vehicles. Its current formula funding allows "traditional" projects (e.g., buses, vans, wheelchair lifts, ramps, transit-related information technology systems, and mobility management programs) as well as "nontraditional" projects such as volunteer driver programs, sidewalks, ridesharing and vanpool programs, and mobility management (U.S. Federal Transit Administration, 2020). In 2016, it created discretionary funding (Section 3006b) for innovative projects that focus on the coordination of transportation services for the transportation disadvantaged.

In the context of welfare reform, in 1998, the FTA established the Jobs Access Reverse Commute (JARC; 49 U.S.C. Section 5316) to expand employment transportation options. JARC had the dual purpose of supporting mobility for low-income workers and providing transportation access to suburban and exurban job centers (Blumenberg and Manville, 2004; Transportation Equity Act for the 21st Century, 1998; GAO, 2003; GAO, 2012; Thakuriah et al., 2013). The objective was to reduce work-related transportation barriers that were exacerbated by settlement patterns and the distribution of transit services (Blumenberg and Manville, 2004). JARC was repealed in 2006 and its objectives were consolidated under Section 5310 programming.

Evaluations of the FTA 5310 and 5316 programs have consistently found that they are fragmented, difficult to manage, and difficult for users to access (NCHRP, 2011; Federal Register, 2004). They are governed by multiple layers of coordinating councils, such as the Interagency Transportation Coordinating Council on Access and Mobility, which includes federal departments of Transportation, Health and Human Services, Education, Labor, Veterans Affairs, Agriculture, Housing and Urban Development, among others. Similar coordination occurs at the state level. Federal funding also requires regions that receive this funding to undertake transportation and human services coordination planning. The Madison region's most recent *Coordinated Public Transit-Human Services Transportation Plan for Dane County* was adopted in 2019 (Madison Area Transportation Planning Board, 2019).

Wisconsin was an early mover in welfare reform early in the 1990s (Alfred and Martin, 2007; Ehrle et al., 2001). The state departments of Workforce Development (DWD) and Transportation (WisDOT) have worked together to fund employment transportation projects through the Wisconsin Employment Transportation Assistance Program (WETAP) since 1998. The first few iterations of WETAP helped fund expansions in transit services, mobility management, childcare-related transportation, and shared-ride taxis (Chen, 2001). In 2018, Wisconsin added the Commute to Careers (CTC) grant to its employment transportation programs, providing $8 million to *private companies and nonprofits* that could demonstrate a need to provide transportation to recruit and retain workers (Wisconsin Department of

Workforce Development, 2018). Grant recipients included workforce development nonprofits, community and economic development corporations, as well as private firms that organized employee vanpools. CTC funds served as the financial foundation for the Union Cab program; YW Transit's JobRide program received CTC funding and has been supported by FTA 5310 as well.

Strategies and Services to Address Transportation Disadvantage and Employment Transportation

Auto ownership is the implicit public and private policy framework for employment transportation. For the dispersed settlement patterns in the U.S. suburbs, exurbs, and rural areas, private cars are a costly necessity and represent the *de facto* transportation solution (Nutley, 1996). The fragile middle class faces a painful tradeoff: Having a car provides the greatest geographic access to opportunities, but it comes at a high price. Although households can economize on transportation and own fewer cars, the costs still represent about 12% of household expenditure for a median-income household with two earners and two children.

Public transit is one framework for solving transportation disadvantage. Efforts have centered on public transit service expansion, but the question of expansion can be interpreted in two ways. Transit systems face a tradeoff between concentrating services along corridors with the highest overall need for public transit or distributing it to a larger geographic area to reach people who have fewer transportation options, including access to suburban job centers. Facing resource scarcity, transit systems often elect to consolidate services along key corridors with complementary changes in land development to support mobility in these corridors. This has implications for transportation disadvantage, potentially offering better access for certain riders while reducing access for others. In addition, network restructuring can have unintended negative consequences at the neighborhood level, resulting in local economic degradation (Blair et al., 2013). Expanding transit also faces political uncertainty and the growth of suburban jobs not accessible by transit has prompted communities to mitigate this problem through housing and other types of transportation countermeasures (Raphael and Stoll, 2010; Levine, 1992).

Early rideshare models, such as vanpools and taxis, have been applied to transportation disadvantage, though they were originally developed within the framework of transportation demand management. In 1991, Bellevue, Washington implemented a rideshare demonstration project, Easy Ride, to encourage workers to stop driving alone to work by offering personalized commuter assistance, marketing, vanpool discounts, and taxi rides home (Frederick and Kenyon, 1991). After two years, the program did not increase rideshare and public transit use. Employer interest was "lukewarm at best" (Frederick and Kenyon, 1991: 18). Ultimately, it is extremely challenging to change the commuting habits among drivers.

An evaluation of reverse commute programs in California found that door-to-door shuttles, though more expensive than fixed-route bus service, offered riders more options and

support entire households with expected additional benefits to women (Cervero and Tsai, 2003). The Santa Cruz County Connections Shuttle was the most robust service and provided rides to families to access child-care centers, counseling services, schools, medical clinics, and drug stores. The majority of rides were taken by children; 54% of trips were to day care and 3% were to schools (Cervero and Tsai, 2003). The Commute to Careers model adopted a similar perspective and accommodated trip chaining for workers that needed to accompany younger or older dependents, or for workers who needed to access health care. Only a small number of riders took advantage of this option.

Practical literature and toolkits for transit, paratransit, and mobility management providers detail many of the challenges of operational integration facing these services (Rodman et al., 2016; Goldman et al., 2014). The coordination costs of implementing these services are a limitation virtually everywhere. Though this literature addresses concerns that our project team recognized as familiar, it stops short of offering guidance on the multilevel problem that we identify. As an informal group of organizations working outside of traditional transit, many of the policy, planning, and funding systems that structure public transit decision-making were not explicitly part of our work. Because of this, our problem definition is somewhat larger and it connects upstream patterns in policy with downstream operational problems.

Significance of Regional Planning and Collaboration for Employment Transportation

The key local agencies responsible for developing solutions to transportation disadvantage include public transit, human services agencies, and workforce agencies. Each brings unique capabilities and understanding to the solutions. At the same time, these agencies typically remain specialized without much change to their larger agendas, which, ultimately, does not serve people particularly well or institutionalize novel solutions to transportation disadvantage. (Guthrie et al., 2018; Blumenberg, 2002). Federal, state, and regional policy frameworks—as well as funding constraints and organizational cultures—create programmatic boundaries (sometimes *problematic* boundaries) that define the options for how communities plan and implement countermeasures.

King and Saldarriaga (2017) highlighted the piecemeal, relatively informal system of nonprofit, public, and private service providers, such as the taxis and dollar vans in New York City, that serve the transportation disadvantaged workforce. Even in smaller cities and regions such as Madison, Wisconsin, the service landscape for transportation disadvantaged workers is similarly uneven and informal. Indeed, it seems that piecemeal, uneven, and informal are the signature characteristics of the institutional, operational, and spatial mobility landscape of transportation disadvantage.

Though unique, the public problem of transportation disadvantage resembles certain other cross-sector challenges that face regions, especially at the intersection of transportation, affordable housing, jobs, and equity. In fact, regional collaboration (and challenges to

collaboration) follows relatively predictable patterns that influence decision making for and implementation of transportation programs in this arena (Scaira, 2017; Crosby and Bryson, 2010; Weir et al., 2009; Innes and Gruber, 2005; Goldman and Deakin, 2000). Indeed, this has been the experience of the Mobilize Dane project.

Blumenberg (2002), in observing the power structures and struggles in localized transportation planning, suggests that policy needs to further equalize power and incentivize stakeholders to transcend their organizational agendas to engage in productive collaboration. Broadening the scope of use for federal funding may also empower more non-traditional stakeholders to enter into collaborative planning with traditional institutions. Crosby and Bryson (2010) move away from policy and funding measures as solutions to creating better collaborative planning and, instead, see integrative public leadership as essential to building cross-sector bridges. They argue that leaders skilled in bringing diverse stakeholders together and democratizing the planning process are what is necessary to effect broader changes. Their evaluation of a collaborative planning effort between public and private partners in the Minneapolis area is, perhaps unintentionally, informative in that the process was taking place outside traditional public planning spheres; A completely new, collaborative organizational structure was created comprising both traditional and non-traditional planning entities. Within that context, democratic leadership skills were evaluated. It is an open question as to whether those leadership skills would be sufficient if operating from within traditional, siloed institutions.

Weir et al (2009) examined the connections between collaboration at the constituency level and institutional and policy reform. They argue that in order for collaboration efforts to have policy level impact, there need to be traditional, powerful stakeholders involved. The multi-tiered policy and institutional context presents significant challenges and exerts influence upon the formation of constituencies, the ability to change institutions and the development of policies. The concept of networked governance, linking groups into influential horizontal networks, may bring a diverse range of viewpoints to the planning table, but without vertical integration with the institutions responsible for policy decision-making, there is no mechanism through which the new constituencies can affect outcomes. In other words, effective policy should be crafted through a meeting of top-down and bottom-up influencers.

The authors argue that the strengthening of Metropolitan Planning Organizations (MPOs) in the 1990s as regional entities for coordinating transportation planning, which was thought to give local constituencies a “leg up”, has been largely ineffective in doing so because it is not the exclusive organization making decisions and can have its agenda co-opted by traditional powerful stakeholders. This is not to say that local constituencies are hapless in creating change. In fact, when there are multiple institutions competing for decision making responsibilities, grass-roots constituencies may play an important role in continuing to exert pressure and make sure progress is not subverted. The degree to which these local constituencies are provided the

opportunity to tap into vertical power through collaboration with an established institution may correspond to the likelihood that reforms would occur.

Chapter IV: Data and Methods

The DreamUp 2020 competition set the parameters of the problem we have tried to solve: increase the net income of 10,000 Dane County households by 10% by 2022. The collective knowledge and experience of the project team allowed it to frame the solution in terms of transportation and access to jobs (i.e., spatial mismatch). Nearly all of the major internal stakeholders were involved in employment and transportation issues in some capacity. In order to meet the scale and economic impact required of a DreamUp proposal, however, the team had to expand the definition of the problem beyond employment transportation. The team redefined the scope of the problem and envisioned reconfiguring a fragmented transportation system, especially at the urban edge. This process of defining the problem, visioning, and actions taken to organize around the shared vision form the unit of analysis of this study.

The study was carried out within an *action research* framework. Action research "seeks to bring together action and reflection, theory and practice, in participation with others in pursuit of practical solutions to issues of pressing concern to people" (Reason and Bradbury, 2007). It involves a team that defines the problem it seeks to address, creates knowledge about the problem, learns, takes actions, and interprets and reflect on those actions (Greenwood and Levin, 2007).

- The Commute to Careers project and its evolution into Mobilize Dane were the **actions** studied in this project. The actions include designing and implementing an employment transportation system.
- The process involved **reflection** on the higher purpose of the project, the capacities of the organizations and individuals who brought the program into being, the opportunities we could see, as well as mistakes we made.
- The project's **theoretical insights** arise from the point of view that transportation service providers have on the specific multi-level issues that influence their experience of success and failure.
- Our knowledge is based on the **practical work** of partners on the project who know every detail of the transportation system, from the mundane task of invoicing to the profound task of working with individual riders as they navigate their own challenges.
- The lessons of the study are those of a **team** of practitioners who manage and supervise drivers, operate and maintain fleets of vehicles, engage in policy making processes as lobbyists and advocates, and who partner with government employees, technology entrepreneurs, and university researchers to create a shared vision and work toward a common goal.

The study design uses a social science approach to understand transportation as social-technological system in which enhancing mobility directly affects physical, institutional, economic, technical, and social spaces. These processes always have political implications, too,

because they involve values and decision making for scarce resources. In social science, the idea of *phronesis* describes scholarship that accounts for social values and the rationality of lived experiences and actual behaviors, which also form the basis of expertise (Flyvbjerg, 2001). This perspective on the production of knowledge goes along with a variety of specific research methods and approaches that can be deployed collaboratively, including evaluation, narrative analysis, ethnography, and techniques of policy analysis. The action research framework is the setting in which these tools are applied.

Data

Data about actions, reflection, theoretical insights, and practical work is captured in the writing that we did for the project. Some of this writing is formal, such as the project proposal to the DreamUp challenge, which represents our collective thinking on problem definition and problem solving. Other formal writing included communication with riders, such as the rider policy we developed. Other writing is less formal, such as email exchanges and meeting notes that capture our ongoing concerns, relationship building, and evolving strategy. These qualitative text data are similar to what is collected through interviews, focus groups, and ethnographic field notes. These are archived in project files by the project PI.

Other data include the actions we took as a group. These included meetings, discussions, outreach, proposal development, service provision, troubleshooting rider issues, visioning, and strategizing.

Team Members, Roles, and Expertise

The project data reflect the voices and interests of members of the team. In this section, we summarize their roles and expertise, which are salient in the data.

- Transportation Service Providers: Union Cab: Business Manager and Assistant to Finance; YWCA Madison: Director of Employment Services and Transit. Two transportation service providers were represented on the team: the private taxi company, Union Cab, and the nonprofit YWCA Transit. Union Cab is Madison's largest taxicab company with a reputation for civic engagement. YW Transit would be providing rides through its JobRide program, a vanpool specifically for low-income individuals to get to and from work. Team members with experience in providing transportation services faced the challenge of implementing new systems, potentially integrating their services to serve new riders and collect payments from employers, as well as developing the long-run sustainability of the new systems. The potential changes would entail substantial coordination on logistics and cost structuring, as well as new practices requiring adjustment within every level of the organization. Each company had incentives to add the program as another contract-based source of revenue and both understood that their

collective prices must be attractive enough for employers and other entities to want to use their services. These are among the practical questions raised in this research.

- Local Government, Community and Economic Development: Village of DeForest, Wisconsin: Community Development Director Leadership from local government took several forms, including the ability to liaison between the project team, area businesses, and other regional stakeholders. The local government's new community development authority will be the organizational home of the TMA that we establish with grant funding from the DreamUp competition.

- Regional Government, Transportation: Madison Area Transportation Planning Board (MATPB). The Madison Area Transportation Planning Board (the region's MPO) manages the Rideshare Etc. program in Dane County and works with individuals, employers, and property owners to promote transportation demand management (TDM) activities that support alternatives to single-occupancy vehicle trips. The Madison Area Transportation Planning Board supports the development of Mobilize Dane with data, technical assistance, and collaborative opportunities with the Rideshare Etc. TDM program, such as outreach to users and co-marketing.

- Technology: Private sector technology entrepreneur. To facilitate coordination between service providers and regional transportation stakeholders and reduce administrative overhead, the team sought to create a user-friendly, mobile and web-based platform. The Madison Card is an integrated, multimodal fare payment card with the possibility of becoming a platform for several other sources of data.

- University: Department of Planning and Landscape Architecture, University of Wisconsin–Madison: project PI and graduate students. The project PI served as a point of connection and convenor for the team and other stakeholders in the area, reaching out and conducting informational meetings with representatives from various sectors.

Stakeholders

Private Businesses, Consortia, or Associations

- Fifteen Village of DeForest Businesses: The team presented the project to a group of businesses at a meeting scheduled by the team's DeForest representative. Additionally, the team maintains contact with these stakeholders individually. Some have been exploring the idea of contracting employment transportation through the taxi–vanpool system, but the exploration has not yet resulted in a decision.

- Staffing agencies: Union Cab had periodic contact with staffing agencies. The team had hypothesized that these agencies may have incentive to participate in a cost-sharing role

in order to facilitate job placement for their clients. Staffing agency contacts were the source of many of Union Cab's riders, but the agencies did not elect to provide financial support. Nevertheless, the program learned from the experience of serving these riders, many of which were working in the DeForest area and would not otherwise have had transportation to work.

- Two restaurant associations: Union Cab conducted outreach with local restaurant associations. The team felt that these two groups, with a history of supporting their employees, would see the project as adding to their employee benefits and may want to participate in cost-sharing roles in order to reduce notorious service industry turnover. Restaurants and bars located in the center of Madison are accessible by transit, but not for all employees. Parking is expensive downtown. These two factors characterize a second market that we had not anticipated: service workers in the central business district.

- Two business associations: Union Cab attended association meetings and met with leaders from the groups. The team presented information about TMAs to these groups.

- Hotel and lodging association: Union Cab met with the association to discuss the program. At the meeting, they described the DreamUp project and the association expressed a desire to participate in TMA formation but needed further direction.

Public Sector Agencies and Government Contractors

- DWD JobService: The team member from Union Cab reached out to a representative to determine what, if any, statistics are collected regarding transportation barriers to work. The representative communicated that these kinds of statistics are not collected by DWD and, further, employers do not usually inquire about these barriers.

- Madison Metropolitan Transit (Metro): The multimodal, taxi–vanpool would need to integrate directly with the existing bus transit system.

Economic Development Agencies

- Madison Regional Economic Partnership (MadREP): The regional economic development organization recognized the significance of employment transportation and was working with another grantee of the Commute to Careers program. Future work could involve learning from the various grantees.

Nonprofit Organizations

- 1000 Friends of Wisconsin: The organization advocates for legislation focused on positive health, economic, and environmental outcomes for Wisconsin residents and has interest in seeing the creation of a regional transportation entity. The representative

provided the team with further insight into the political climate surrounding the project's goals and objectives, but reduced participation as the team progressed.

- CarePool: At the suggestion of one of the DreamUp grant coordinators, the technology entrepreneur reached out to, and met with, representatives from CarePool, a private company providing non-medical, specialized transportation to area seniors and those with disabilities. The team was interested in seeing whether there was an opportunity to include their services in the framework of the proposal, but such inclusion never materialized.

- Greater Wisconsin Agency on Aging Resources (GWAAR) and Wisconsin Council of the Blind and Visually Impaired: Organizations across the state have organized around *nondrivers* as a cross-cutting constituency that includes people with disabilities, ageing travelers, younger travelers, people with temporary or permanent medical conditions, people with limited access to cars, and people with limited access to drivers licenses.

Chapter V: Results

Vision for Mobilize Dane

From the perspective of the riders, we envisioned that when someone searches for jobs at Job Center, through a workforce intermediary, at the library, or on hiring websites like indeed.com, they would encounter certain employers offering Mobilize Dane transportation benefits, similar to the way employers might offer other types of benefits. Thus, Mobilize Dane would link the service to jobs instead of widely offering it to the public. This is how people would know about the service.

If one were to apply for a job or become an employee with an organization with the benefit, then one could access affordable rides to work, training, or interviews (estimate: $5.00/round trip to suburban destinations). Riders would create a profile in the Mobilize Dane system through its user interface, indicating their origin, destination, and ride time. They could pay using the app or by setting up an account. Devolving some of this decision making and data collection to the rider would reduce the administrative burden. The system will also include phone and in-person options to be as accessible as possible. Accessibility was an issue for riders in the pilot program. Many of the riders we served had uneven access to smartphones, and sometimes to any telephone at all. Similarly, riders in the pilot program used cash and have a likelihood of not using formal banking systems.

The service would take them door to door, and the ride would make stops along the route to pick up other riders. Workers could accompany their older or younger dependents on stops at schools or other locations, to make it easier to integrate care work and paid work. The pilot project had very few of these trips, but they were a significant component of the successful program in Santa Cruz, California.

From the perspective of employers who were involved in this project, managing transportation services for employees, particularly for entry level workers who may be contracted through staffing agencies, was seen as an administrative burden that should be minimized. Human resources departments preferred to not oversee individual rides, riders, or transactions. Human resources departments also face administrative barriers to working directly with transportation service providers for commute services, even though some of these firms have accounts with Union Cab for other types of business travel.

Therefore, coordination and information sharing were key elements of the vision to solve transportation disadvantage for Dane County residents and to increasing their household income by 10%. Our strategies would use information technology and an organization—a Transportation Management Organization (possibly a public-private partnership)—to reduce administrative costs for transportation service providers, increase labor market access for workers, and

employee retention for employers. In combination, this would create a flexible transportation option as an alternative to cars.

Implementing this model would require specific strategies, such as:

1. **Transportation Service.** We would coordinate fleets of taxis and vans, which are currently siloed, to combine them into a transit system that complements the existing Metro Transit bus service. We attempted to do this with the Union Cab and JobRide fleets and imagined the model would be expanded to include other providers. We did not have a chance to combine both modes into trips. In the cases where Union Cab and JobRide shared operations, they fully transferred a ride order and it did not involve any automation, only phone calls and emails.

   With respect to competition across providers, there is often more demand for retail rides during peak hours than the services can independently provide, and they have incentive to work together. We expect there would be somewhat more competition for off-peak rides. The inter-organizational coordination would include scheduling, route planning, payment transfers, and communications among transportation providers that have fleets of taxis, vans, and paratransit vehicles. This new network would provide service to regional employment centers around Dane County. The lower transportation costs, time-savings, and convenience for riders, coupled with access to previously inaccessible job opportunities could increase net incomes.

2. **Coordination by Transportation Management Associations (TMAs).** TMAs act as third parties to contract with transportation service providers, liaison with employers, license transportation management technology, and perform essential coordination and advocacy activities (see Figure 1; NETC, 2019; Pendall et al., 2016; Ferguson et al., 1992). Our team is establishing a TMA in DeForest, within the newly established Community Development Authority, to initiate this type of coordination. The TMA would be the information intermediary.

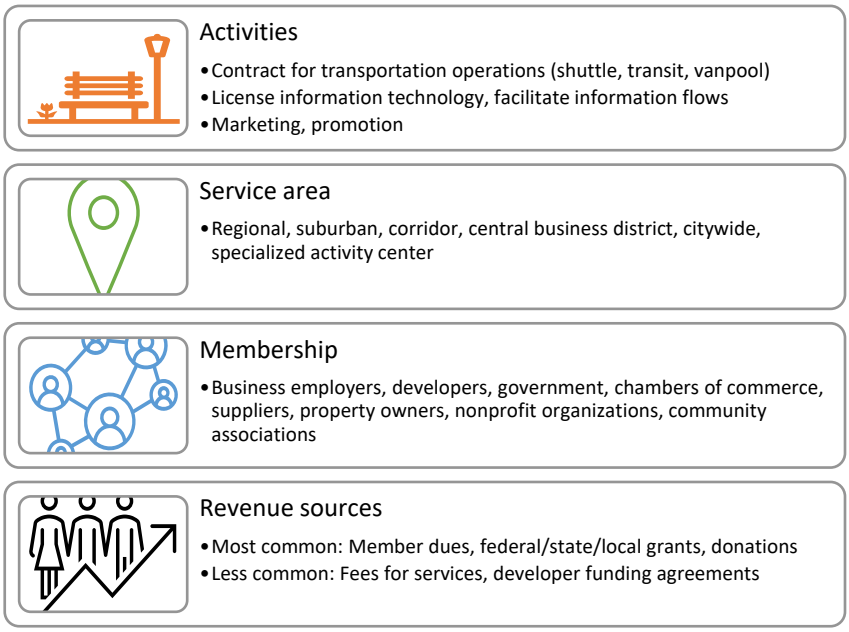
   Employers and workforce intermediaries around DeForest will be able to become dues-paying TMA members and offer Mobilize Dane services as a transportation benefit. After proving this concept in DeForest, we intend to reach the regional scale of 10,000 people by creating other TMAs in strategic locations across Dane County (e.g., Verona, Sun Prairie, Stoughton, Oregon, Middleton, Waunakee and others). By creating a network of regional TMAs and initiating further coordination and information sharing, we expect to achieve the scale necessary to achieve efficient transportation services.

   Member-based TMAs throughout Dane County will coordinate transportation information, as well as strategically coordinate business members' shift schedules to increase efficiency of

shared-ride services, establish funding partnerships to sustain and develop innovative employment transportation services, and act as an advocacy platform for regional transportation and housing issues. Employers discussed housing and childcare as two issues that prevent them from recruiting and retaining workers. This comprehensive level of coordination expands the institutional capacity of the region's transportation system, without needing legislative authorization, with the goal of reducing transportation disadvantage. The TMA achieves the integration by implementing the mobility management platform.

3. **Information Technology.** The TMA's role in licensing and deploying information technology is a critical element of the system. We would use information technology to reduce the administrative burden for service providers, capture efficiencies, and increase convenience and access for riders. This is what makes the service a competitive substitute for car ownership. A cross-platform, mobile application and website will enable individuals to combine route and trip planning with fare collection in one user-friendly interface. Transportation service providers, municipalities, and other organizations will utilize the back end of the application to coordinate dispatch, optimize scheduling, and provide real-time arrival information. The mobility management platform would combine data from Mobilize Dane users and vehicle telematics with third-party sources to perform multiple functions. It would match riders by their origins, destinations, and schedules and connects them directly to their drivers and vehicles. With additional information about regional traffic patterns, it would provide dynamic scheduling and routing information to transportation service providers, which plugs in to their existing dispatch software. Users could plan trips using multiple modes of transportation (such as Metro bus and Mobilize Dane transit providers) and can purchase transportation fares with a single account.

Figure 1. Characteristics of Transportation Management Associations



Expected Impact

The Mobilize Dane should be evaluated for success across three areas: service adoption by riders and employers, lower household transportation costs, and increased access to, and retention of, job opportunities.

1. Service adoption would be evaluated with data collected from transportation service providers, employers, and other partners who facilitate the reach of the service. Our mobility management technology would support this process by automatically aggregating ride use data. The network of TMAs can facilitate this process by assisting employers, staffing agencies, and other organizations in compiling personnel data. Service quality will be indicated by its reliability, frequency, and customer satisfaction.

2. Reduced transportation costs would be evaluated by monitoring household-level costs. Ideally, household members travel frequently because they are engaged in many economic and social activities. The key is to reduce the per-unit cost of this travel, in dollars and time, not to reduce travel itself. The mobility management technology facilitates this process by automatically aggregating transportation fare data and total trip time data for users. Household surveys with riders and comparison groups would also be necessary for evaluation. The TMAs support this evaluation process by working with employers to conduct employee travel surveys, which are common in transportation planning.

3. Increased quality employment would be evaluated with data collected from riders, employers, employment agencies, intermediaries, and other partners. For riders, the geographic scope of job opportunities should increase and income from work should increase with expanded choices. Our network of TMAs, through their business-membership structure, would aggregate information about new hires and retention rates. Representatives from TMAs work with staffing agencies throughout Dane County to monitor job placement numbers for individuals using Mobilize Dane services.

Challenges to the Vision

Data from both the Commute to Careers and the Mobilize Dane pilot program shows that it received an enthusiastic response from dozens of regional employers around Madison, but only a handful contributed resources to support it in the long term. As our team moves forward, we want to understand the barriers to a sustainable TMA for affordable transportation.

- What types of resources are regional employers (or other private sector actors) in the Madison region willing to contribute to the TMA? What is the value of these resources?

- What barriers prevent regional employers, philanthropists, and government agencies from contributing resources to the TMA? Under what conditions do they do these partners contribute resources?

Preliminary data also show that, after five months, the taxicab component of Mobilize Dane had close to 90 riders and had provided nearly 3,000 rides, but fewer than five percent of the trips were, in fact, shared.

- Under what operational and behavioral conditions does the program support shared transportation?

One of the success stories of the Mobilize Dane pilot program involved a rider who stopped needing rides because they arranged a housing solution and relocated closer to their work. The underlying question of affordable housing is another aspect of spatial mismatch that a program focused only on rides would potentially omit. One of the team's challenges would be understanding the limitations of mobility as a solution for a problem that involves other systems such as housing

- How can a TMA framework for addressing the spatial mismatch of jobs and housing be replicated across the region or even nationally?

The DreamUp structure motivated us to think about the scale of the program and its expected benefits to workers, indicated by an increase in net household income. But this frame may be too constrained. The impact of the JobRide program affects multiple levels. The rides provide access to jobs, but when there is positive social support among riders in the vans during the rides, this is also be beneficial to individuals. At a community scale, the benefits of having reliable transportation to work has a positive benefit on members households as well as networks of households in a community. The JobRide program was understood as something socially distinct from traditional bus service, much more focused on community impact and sensitive to values of care and racial justice. A challenge to the team would be understanding and replicating these features, to the extent they are replicable. Lessons from the project suggest that these benefits arise from longstanding community support and trust, not the rides themselves.

- What are the relative benefits and costs to workers of mobility, housing, and job access outcomes experienced through the program? What is the social benefit (e.g., income, time, transportation) that workers transfer to their families and communities?

The requirements of the DreamUp 2020 grant competition, and the fact that it provided funding outside the traditional regulatory environment, resulted in the team configuring its proposal in a much different manner than it would have had it been subject to traditional planning processes. One of the gaps was the absence of a thorough public engagement process. Although the team interacted directly with a range of potential riders and organizational partners,

it was not what we would have designed had we started with principles of public engagement. Through this experience we have identified three key components to civic engagement for future development of the program:

- We would participate in formal planning and policy processes to center the project in participatory public processes and connect us to public agencies. Transportation collaborations that tap into vertical power structures (e.g., federal-state-local intergovernmental relationships) result in more concrete changes that networks that remain horizontal (Weir et al., 2009).
- We would develop stronger relationships with private sector leadership. Our challenge is to create these lines of communication in Madison with decision makers across sectors.
- We would engage directly with diverse populations to manifest shared values and desired outcomes. This includes learning from historical experience. Transportation systems have been the source of intended and unintended inequities such as racial, ethnic, and gender discrimination. We are aware of this problem and are creating rider advocacy boards as a possible model of shared governance. We would also work with community advisors who can give us feedback that prevents our work from reproducing transportation injustice.

Chapter VI: Discussion

The privately funded DreamUp competition allowed the project team to operate independent of the traditional transportation policy stream. This may have been a major reason why our team worked outside of the typical parameters for employment transportation, such as developing a system based on public transit. In cases where we worked with traditional transportation stakeholders, the lack of funding and policy in this specific arena meant our interactions were less about compliance and more about information seeking, knowledge sharing, or program development.

"Collaboration Is Not Enough"

We borrow this declaration about regional collaboration from Weir et al. (2009). In their study of regional transportation policy development in Chicago and Los Angeles after ISTEA, they found that the vertical, intergovernmental networks of Chicago supported stronger changes in transportation policy agendas than the more horizontal networks of Los Angeles. Although previous research about employment transportation described the potential benefits of collaboration (Guthrie et al. 2018), our experience indicates that our pilot needed *specific types* of collaboration to be effective in creating meaningful change.

Because we worked outside of the existing policy and planning frameworks, we lacked their ability to formalize our ideas and to bring them into a public discourse. The team was actively attempting to identify and recruit partners to create a collaborative vision that would yield tangible results. Most stakeholders, however, participated only in sharing information. Collaborative planning, the likes of which the project at the heart of the proposal would normally require that stakeholders devote significant time and resources to building the program. Without dedicated positions, this work happens outside the normal scope of organizations' operations. In addition, our team members were participating in designing the proposal outside the scope of their traditional professional scope, i.e., transportation specialists working in workforce development.

Commute to Careers, the program upon which the DreamUp proposal was built, was an outcome of the reformation of welfare transportation in the 1990s. The federal government devolved responsibility for employment transportation to local and state governments with the hope that this would reduce regulatory overhead and spur innovative collaboration projects. Effectively, there is an absence of institutions and policy frameworks to support systems of human services transportation or employment transportation. Our combined experience with Commute to Careers and DreamUp indicates that innovative projects from these funding sources may not amount to anything lasting or durable and may not create meaningful change, especially compared to transit-based interventions that are both enabled and constrained by federal policy and funding programs.

Commute to Careers was a state grant program that focused on supporting employment transportation initiatives from the private sector. The myth, which many believe is true, is that there are underutilized church vans that could be repurposed to serve this sector. Yet, Commute to Careers had a limited duration, no coordination across grantees, and no integration with long-range planning processes. Additionally, the idea that local organizations can afford to coordinate and implement these kinds of programs has limits. The administrative burden associated with running a program in addition to normal operations was seen to have been detrimental to the business in the Commute to Careers project. This is also a limitation. Leaving local entities to work independently can be ineffective when it requires that organizations work outside the scope of what they are built to do. The DreamUp proposal was an acknowledgement that there needs to be a coordinating entity that takes on that administrative burden and allows service providers to operate normally.

The DreamUp grant was structured similarly to Commute to Careers in that there was a two-year period for project implementation, and it had no ties to long-range strategic planning. Transportation programs need an institutional framework, high-level coordination, long-range planning and a democratic process for making decisions. Our team was comprised of, and consulted mostly with, entities that perform implementation, not planning activities.

The literature on collaboration in the transportation sector points to the siloed nature of its institutions and agencies. Federally mandated policies, particularly post-welfare reform, abstractly call for collaborative efforts to solve transportation problems and have devolved coordination, project approval, and funding responsibilities in metropolitan statistical areas to MPOs. While MPOs have authority to approve transportation projects and disburse federal funding, in practice they have been limited in their planning and collaboration and may become co-opted by DOTs and public transit agencies to further their respective agendas (Sciara, 2017).

Our DreamUp team did not engage in collaborative planning with any of the traditional transportation organizations, although we did consult with Madison's MPO during the development of the proposal and they have remained part of the team. Even with this connection, we have had limited involvement with the MPO's core planning activities. Although it is not currently within its work plan, the MPOs may be a suitable regional entity to undertake the kind of coordination we sought to create. The DreamUp 2020 proposal sought to create a network of new institutions (TMAs) in lieu of an RTA (or an MPO), due in part to the fact that the team recognized the political sensitivity and limitations of regionalism.

Devolving responsibility for employment transportation to a hyper-local level was thought to stimulate innovation and speed up implementation. In both the Commute to Careers and DreamUp 2020 grant programs, however, we observed the challenges that local organizations have with that responsibility. The administrative burden of coordinating a new service and managing grant requirements can be onerous when performed alongside normal

operations. A more efficient process is one that allows each entity involved in the program to function as close to normal operations as possible. To accomplish this, third party coordination is necessary. This could be considered a limitation of upstream policy that eliminated these kinds of institutions.

We are observing complementary organizing at the state level around non-drivers, led by the aging and disability resources constituencies, in efforts to address car deficiency and develop new models for providing mobility, especially in rural areas. If one includes younger travelers and older travelers, as well as people without access to a vehicle and people who do not drivers because of a disability or medical reasons, then 25% of the state of Wisconsin would be considered non-drivers. At the national level, this discussion also involves the sizeable non-emergency medical transportation sector. Without intergovernmental institutions to help build transportation for nondrivers, local innovations are difficult to sustain and scale.

Need for Formal Approach to Public Engagement

By working outside the traditional planning processes, our team was unable to access state and federal funding streams, yet it was also largely free of their requirements. Our team initially began an employment transportation project with state funding through the Commute to Careers grant program. The DreamUp 2020 grant competition was outside traditional public funding mechanisms, allowing us more freedom in proposing to create the institutions we thought would help solve the challenge, but it also meant we were not required to perform public engagement or undertake a democratic planning process. We may have still performed those tasks had we progressed, given that our team members value undertaking this project to serve the regional community and that we have members with planning backgrounds. It is likely that, although we were involved in “programming” and not necessarily “planning”, our work would have benefited from public engagement.

At one stage in developing the proposal, our team met with an equity consultant provided by the DreamUp grant who identified shortcomings in our methodology and asked why we believed we could create affordable transportation in suburbs that have reputations for historical and contemporary racial exclusion.

We not only worked outside of transparent, democratic planning processes, we had limited access to business leaders in the region whose support we would have needed. These leaders are involved in regional economic development discussions where transportation has been a topic. Our team did not focus on getting access to these decision makers, but to move forward, this is precisely the support we would have needed. In fact, this top-down, business sector support is what other transportation programs need too, which implies that we would have needed to coordinate with local priorities such as the new bus rapid transit system, to create a unified “ask” to avoid appearing fragmented (the programs are, in fact, fragmented).

Incentives and Capacities for Stakeholder Participation

Following the literature on network power and collaborative planning, we can understand the mix of stakeholders involved in the process by analyzing their interests and incentives to participate. The Commute to Careers grant incentivized Union Cab to develop a program of reduced-fare rides to employment, upon which the proposal was built. The DreamUp grant competition incentivized the team to participate with the potential for receiving up to $1 million in program funding. In the absence of these two funding streams, it is likely that the incentives would not have existed to bring this group of stakeholders together. Additionally, the partnership of private business and public government with a university institution facilitated access to these grant funding mechanisms. The Institute for Research on Poverty at the University of Wisconsin had the capacity to win the Schmidt Futures (DreamUp) contract to further their mission-related work in social welfare and equity. The project was framed in the context of these values and may have been markedly different in their absence.

Regardless of grant funding, stakeholders still demonstrated that there were strong incentives for their participation. Union Cab and YW Transit both identified service provision opportunities and the potential for guaranteed contract revenue. Additionally, Union Cab had the added incentive of getting more vehicles on the road during off-peak hours. The company had seen reduced activity due to the rise in popularity of Transportation Network Companies (TNCs) like Uber and Lyft and had taken cabs off the road during nights and weekends. However, this hypothetical opportunity may not have existed if Union Cab had not had the funding stream to perform the rides.

Though a small group, the project team exhibited elements of establishing network power through the connections and activities of participants. The team was comprised of individuals from diverse sectors: private transportation, nonprofit transportation, local government and economic development, education and research, and technology innovation. We observed a group utilizing network connections to innovate at a grassroots level with the long-term goal of institutional change. Success for each participant was contingent upon group success and genuine dialogue and knowledge sharing was taking place at a high level. The inclusion of all the relevant regional stakeholders in project participation was not fully realized to this point in the project. However, it was expected that should the team continue to progress and secure further grant funding, the powerful regional stakeholders, like Madison Metro Transit, would become more involved.

Chapter VI: Conclusion

Transportation disadvantage (i.e. not having affordable transportation to get to work, school, medical care, or the grocery store) is an underlying cause of low household earnings. People who are transportation disadvantaged are disproportionately burdened by the spatial mismatch between jobs and housing. In our recent experience implementing a shared ride program with taxicabs and vanpools we have found that transportation disadvantage cannot be solved by mobility alone. In the near term, our shared ride program needs information technology to reach new riders, collect payments from employers, and connect our separate ride scheduling systems. In fact, what we actually need is a specialized institution to coordinate across the information technology and outreach that will help us solve transportation disadvantage.

In our pilot project, we recognized a need for a type of organization—similar to a Transportation Management Association (TMA)—to address transportation disadvantage through private sector and philanthropic support, information technology, and multimodal transportation. Communities have implemented transportation countermeasures to spatial mismatch for decades, primarily in the form of trip-based services. Yet there is a fundamental gap in knowledge about the role for specialized institutions, such as a TMA, to coordinate information technology and advocate for supportive policies.

Employment transportation, along with other types of human service transportation (aging, disability, veteran, non-emergency medical), rely on coordination and collaboration by statute and by their interdisciplinary nature. This presents certain unique challenges because it combines sectors with different agency incentives and obligations (e.g., workforce, children and families, transportation). It also faces certain known challenges to collaboration within a regional context. In fact, we experienced many of these challenges, which is what prompted our idea for the TMA.

In this report, based on our action research project, we discussed how our own local initiative was enabled by upstream policy and funding mechanisms, such as a grant program coordinated across the state departments of workforce development and transportation. Although the existing institutions in this sector created opportunities, some also posed challenges for the startup's initiatives, such as working outside of established regional planning efforts that are optimized around traditional transit and paratransit service. This meant that we did not need to carry out any formal public engagement to develop our program, which we consider a weakness.

The organizational landscape of taxicabs and vanpools is rather piecemeal and relatively informal despite the existence of public regulation. The fragmented system of nonprofit, public, and private service providers that serve the transportation disadvantaged workforce is uneven. Federal, state, and local governments have implemented transportation countermeasures to

spatial mismatch for decades, primarily in the form of trip-based services without developing an institutional framework to support them. The gaps in regional planning, in particular, were salient in our experience.

As we reflect our activities in the employment transportation sector, we think this has implications for mobility-as-a-service and ridesharing more broadly. The regional institutions that could support employment transportation, non-emergency medical transportation, and other pay-by-mile services would benefit from a public option information technology system and coordinating organization. Moreover, we have found that collaboration is not enough. We needed access to established vertical planning processes, policy networks, and institutional supports that enable scaling transportation services. During this process, we did not use lobbying or these other techniques to directly influence policy. Nor did we have access to regional business leadership, which is another area in which we would need representation and cooperation.

We see several ways forward for future research, which we derive by examining the challenges we faced and the questions that arose. We want to understand what types of resources regional employers (or other private sector actors) in the Madison region would be willing to contribute to the TMA as well as the value of these resources. The resource could be direct financial support, but it could take other forms. Similarly, we need to better understand the barriers that prevent regional employers, philanthropists, and government agencies from contributing resources to the TMA. Under what conditions do they do these partners contribute resources?

Preliminary data also show that, after five months, the taxicab component of Mobilize Dane had close to 90 riders and had provided nearly 3,000 rides, but fewer than five percent of the trips were, in fact, shared. Under what operational and behavioral conditions does the program support shared transportation? What is the scale that we would need to achieve? We are also interested in understanding the multi-level benefits of mobility, housing, and job access outcomes experienced through the program, including the complex social co-benefits that might arise.

Future work will also involve seeking out linkages to existing formal planning and policy processes to center the project in participatory public processes and connect us to public agencies. This could involve the planning process for coordinating human services transportation and public transportation, but we also imagine a role for more robust and creative thinking around planning for non-drivers, employment transportation, and novel transit systems in the traditional long-range planning processes at the regional level.

References

Alfred, M.V., Martin, L.G. 2007. The development of economic self-sufficiency among Former welfare recipients: lessons learned from Wisconsin's welfare to work program. International Journal of Training and Development 11(1), 2-20.

Allen, J. and Farber, S., 2019. Sizing up transport poverty: A national scale accounting of low-income households suffering from inaccessibility in Canada, and what to do about it. Transport policy, 74, pp.214-223.

Allon, A., Ruth, A.M., Davis, T., Carter, B. and McAndrews, C., 2019. Union Cab Cooperative of Madison Commute to Careers Program Evaluation, 2018–2019. Center for Transportation Equity, Decisions, and Dollars.

Assembly Bill 75, 2009. 2009 Wisconsin Act 28.

Blair, N., Hine, J. and Bukhari, S.M.A., 2013. Analysing the impact of network change on transport disadvantage: a GIS-based case study of Belfast. Journal of transport geography, 31, pp.192-200.

Blumenberg, E. 2002. Planning for the transportation needs of welfare participants: Institutional challenges to collaborative planning. Journal of Planning Education and Research, 22(2), 152-163.

Blumenberg, E., Manville, M. 2004. Beyond the spatial mismatch: Welfare recipients and transportation policy. Journal of Planning Literature, 19(2), 182-205.

Blumenberg, E. and Pierce, G., 2017. Car access and long-term poverty exposure: Evidence from the Moving to Opportunity (MTO) experiment. Journal of transport geography, 65, 92–100.

Blumenberg, E., Brown, A. and Schouten, A., 2018. Car-deficit households: determinants and implications for household travel in the US. Transportation, 1–23.

Booher, D., Innes, J. 2002. Network power in collaborative planning. Journal of Planning Education and Research, 21(3), 221-236.

Carleton, P.R. and Porter, J.D., 2018. A comparative analysis of the challenges in measuring transit equity: definitions, interpretations, and limitations. Journal of transport geography, 72, pp.64-75.

Center for Neighborhood Technology. 2020. H+T Index. https://htaindex.cnt.org/

Cervero, R. and Tsai, Y.H., 2003. Job access and reverse commuting initiatives in California: Review and assessment. Transportation Research Record, 1859(1), pp.78-86.

Chen, Y.V. Wisconsin Employment Transportation Assistance Program (WETAP). Retrieved from https://wdr.doleta.gov/conference/pdf/wetap.pdf.

Church, A., Frost, M. and Sullivan, K., 2000. Transport and social exclusion in London. Transport policy, 7(3), pp.195-205.
Crosby, B.C. and Bryson, J.M., 2010. Integrative leadership and the creation and maintenance of cross-sector collaborations. The leadership quarterly, 21(2), pp.211-230.

Ehrle, J. Seefeldt, K., Snyder, K., McMahon, P. 2001. Recent changes in Wisconsin welfare and work, child care, and child welfare systems. The Urban Institute State Update 8, 1-24.

Federal Highway Administration. 2017. Wisconsin Add-On to the National Household Travel Survey.

Ferguson, E., Ross, C. and Meyer, M., 1992. Transportation management associations: Organization, implementation, and evaluation. Transportation Research Record, (1346), 36-43.

Flyvbjerg, B., 2001. Making social science matter: Why social inquiry fails and how it can succeed again. Cambridge university press.

Frederick, S.J. and Kenyon, K.L., 1991. Difficulties with the Easy Ride project: Obstacles to voluntary ridesharing in the suburbs. Transportation Research Record, (1321).

General Accounting Office. 2003. Transportation-disadvantaged populations: Many federal programs fund transportation services, but obstacles to coordination persist. GAO-03-698T.

General Accounting Office. 2012. Transportation-disadvantaged populations: Federal coordination efforts could be further strengthened. GAO-12-647.

Goldman, T., Deakin, E. 2000. Regionalism through partnerships? Metropolitan planning since ISTEA. Berkeley Planning Journal, 14(1).

Goldman, J., Murray, G., Sullivan, C. et al., 2014. Improving Transit Integration Among Multiple Providers: Volume I: Transit Integration Manual. TCRP Report 173. Washington, D.C.: National Academy of Sciences.

Greenwood, D.J. and Levin, M., 2007. An epistemological foundation for action research. Introduction to action research, pp.55-76.

Guthrie, A., Burga, F. and Fan, Y., 2018. Collaboration in mitigating spatial and skills mismatch. Journal of Transport and Land Use, 11(1), pp.1081-1100.

Innes, J.E. and Gruber, J., 2005. Planning styles in conflict: the metropolitan transportation commission. Journal of the American planning Association, 71(2), pp.177-188.

King, D.A. and Saldarriaga, J.F., 2017. Access to taxicabs for unbanked households: An exploratory analysis in New York City. Journal of Public Transportation, 20(1), p.1-19, https://doi.org/10.5038/2375-0901.20.1.1.

King, D.A., Smart, M.J. and Manville, M., 2019. The poverty of the carless: Toward universal auto access. Journal of Planning Education and Research, DOI: 10.1177/0739456X18823252.

Levine, JC. 1992. Decentralization of jobs and emerging suburban commute. Transportation Research Record, 1364: 71-80.

Lucas, K., 2012. Transport and social exclusion: Where are we now? Transport policy, 20, pp.105-113.

Lucas, K., Mattioli, G., Verlinghieri, E. and Guzman, A., 2016, December. Transport poverty and its adverse social consequences. In Proceedings of the institution of civil engineers-transport (Vol. 169, No. 6, pp. 353-365). Thomas Telford Ltd.

Madison Area Transportation Planning Board. 2017. Regional Transportation Plan 2050 for the Madison Metropolitan Area.

Madison Area Transportation Planning Board. 2019. Coordinated Public Transit–Human Services Transportation Plan for Dane County 2019–2023.

National Cooperative Highway Research Program. 2011. A review of human services transportation plans and grant programs. Research Results Digest 354.

Northeast Transportation Connections. 2019. Bringing TDM Solutions to Communities of Diversity.

Nutley, S.D., 1996. Rural transport problems and non-car populations in the USA: A UK perspective. Journal of Transport Geography, 4(2), pp.93-106.

Ong, P.M. and Miller, D., 2005. Spatial and transportation mismatch in Los Angeles. Journal of Planning Education and Research, 25(1), pp.43-56, https://doi.org/10.1177/0739456X04270244.

Pew Charitable Trusts. 2016. Household Expenditures and Income.

Ralph, K.M., 2018. Childhood car access: Long-term consequences for education, employment, and earnings. Journal of Planning Education and Research, online at https://doi.org/10.1177/0739456X18798451.

Raphael, Steven and Micahel A. Stoll. 2001. Can Boosting Minority Car-Ownership Rates Narrow Inter-Racial Employment Gaps? Brookings-Wharton Papers on Urban Affairs, 99–145.

Reason, P. and Bradbury, H. eds., 2001. Handbook of action research: Participative inquiry and practice. Sage.

Rodman, W., Berez, D., Moser, S. Choe, J. 2016. State DOTs Connecting Users and Rides for Specialized Transportation: Volume 2: Toolkit for State DOTs and Others. NCHRP Report 832. Washington, D.C.: National Academy of Sciences.

Schlossberg, M., 2004. Coordination as a strategy for serving the transportation disadvantaged: A comparative framework of local and state roles. Public Works Management & Policy, 9(2), pp.132-144, https://doi.org/10.1177/1087724X04268562.

Sciara, G.C., 2017. Metropolitan transportation planning: Lessons from the past, institutions for the future. Journal of the American Planning Association, 83(3), pp.262-276.

Social Exclusion Unit. 2003. Making the Connections: Final Report on Transport and Social Exclusion. Accessed August 15, 2020: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_policy/---invest/documents/publication/wcms_asist_8210.pdf

Thakuriah, P., Persky, J., Soot, S., Sriraj, P.S. 2013. Costs and benefits of employment transportation for low-wage workers: An assessment of job access public transportation services. Evaluation and program planning, 37, 31-42.

Transportation Equity Act for the 21st Century. Sec. 3037 Job Access and Reverse Commute Grants. (1998). 49 USC 5309.

U.S. Census Bureau. 2017. American Community Survey, Table S0801, 5-Year Estimates.

U.S. Executive Office of the President. 2004. Executive Order 13330, Human Services Transportation Coordination.

U.S. Federal Transit Administration. 2020. Enhanced Mobility of Seniors & People with Disabilities Fact Sheet (Section 5310). Accessed August 18, 2020: https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-people-disabilities-fact-sheet-section-5310

Weir, M., Rongerude, J. and Ansell, C.K., 2009. Collaboration is not enough: Virtuous cycles of reform in transportation policy. Urban Affairs Review, 44(4), pp.455-489, https://doi.org/10.1177/1078087408322590.

Wisconsin Department of Workforce Development. 2018. Commute to Careers: Flexible Transportation Solutions for Wisconsin Workers. Grant Program Announcement.

Wisconsin Department of Workforce Development. 2019 Workforce Profile, Dane County.

CTEDD

Center for Transportation Equity, Decisions & Dollars

The **Center for Transportation, Equity, Decisions and Dollars (CTEDD)** is a USDOT University Transportation Center, leading **transportation policy research** that aids in **decision making** and **improves economic development** through **more efficient, and cost-effective use of existing transportation systems,** and offers **better access to jobs and opportunities.** We are leading a larger consortium of universities focused on **providing outreach** and **research to policy makers**, through **innovative methods** and **educating future leaders of the transportation field.**

UNIVERSITY OF TEXAS ARLINGTON

CAL POLY SAN LUIS OBISPO

Georgia Tech

USF UNIVERSITY OF SOUTH FLORIDA

WISCONSIN UNIVERSITY OF WISCONSIN–MADISON

C-TEDD@UTA.EDU | CTEDD.UTA.EDU | @UTACTEDD | @ C__TEDD | @ CENTER FOR TRANSPORTATION, EQUITY, DECISIONS AND DOLLARS | 817.272.5138