CONNECTING EVANSVILLE, IN

IMPROVING LOW-INCOME TRANSPORTATION ACCESS

Mary Greeson
Master of Public Policy Candidate
University of Virginia
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Prepared for and in consultation with:

Chris Zeilinger,

Assistant Director,

Community Transportation Association of America (CTAA)

By Mary Greeson

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DISCLAIMER

ACKNOWLEDGEMENTS

HONOR PLEDGE

On my honor as a student, I have neither given nor received unauthorized aid on this assignment.

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EXECUTIVE SUMMARY

The greater Evansville region of Indiana includes Evansville City, Princeton City, Gibson County, and Vanderburgh County. This area is home to 215,192 residents; 2,508 households do not have access to a personal vehicle (United States Census Bureau, 2018a; US Census Bureau, 2018b; Zeilinger, 2018). The Metropolitan Evansville Transit System (METS), which services Evansville City, is the only public transportation service provider in the region. Vanderburgh County, Gibson County, and the City of Princeton do not have a public transportation provider. This lack of options defines our policy problem: *access to transportation for low-income individuals in the greater Evansville region is too low.*

The Community Transportation Association of America (CTAA) was asked by Toyota Motor Manufacturing, Indiana Incorporated (TMMI) to examine transportation gaps in the greater Evansville region. In consultation with CTAA, I have conducted the follow analysis to determine policy solutions that suit the region. This analysis seeks to close the gap between low-income individuals and transportation in the greater Evansville, Indiana region. Four policy alternatives are considered:

1. Let present trends continue.
2. Create a regional transportation consortium and simultaneously increase the capacity of Bridge Builders.
3. Change the METS service area and routes to focus service on low-income areas, optimizing routes for work access and decreased headways.
4. Institute a partnership between the governments of the greater Evansville region and Uber to subsidize low-income rides.

Each of the above options are evaluated by the following criteria: political feasibility (weighted at 35 percent), ability to implement (weighted at 30 percent), fairness/equity (weighed at 20 percent) and cost effectiveness (weighted at 15 percent). Qualitative metrics comprise the analysis of the first three criteria, while quantitative estimates determine the cost effectiveness of each option. A successful option will have high scores for political feasibility and ability to implement, as government and operational stakeholders will be key in any solution. My analysis demonstrates that Option 1, let present trends continue, has several advantages compared to the other options. For this reason, **I recommend that present trends continue in the greater Evansville region.**

LIST OF ACRONYMS

AV – Autonomous Vehicles

BB – Bridge Builders

DOT – Department of Transportation

FMLM – First Mile/Last Mile Problem

GNP – Gross National Product

METS – Metropolitan Evansville Transit System

JARC – Job Access and Reverse Commute Program

MPO – Metropolitan Planning Organization (located in Evansville, IN)

PMT – Passenger Miles Traveled

TMA – Transportation Management Association

TMMI – Toyota Motor Manufacturing, Indiana Incorporated

PROBLEM IDENTIFICATION

Access to transportation for low-income individuals in the greater Evansville region is too low.

The greater Evansville region of Indiana includes Evansville City, Princeton City, Gibson County, and Vanderburgh County. This area is home to 215,192 residents. Of this population, some 15 percent of people are aged 65+, 14.4 percent of people have a disability, and 16.6 percent of people live in poverty. Furthermore, 2,508 households do not have a personal vehicle (United States Census Bureau, 2018a; United States Census Bureau, 2018b). The Metropolitan Evansville Transit System (METS) operates fixed-route and paratransit operations within Evansville city limits, and there are no public transportation providers in the rest of Gibson County or the entirety of Vanderburgh County. Reliable access to transportation is correlated with better job attendance, more consistent preventative healthcare, and other measures of life outcomes. Low-income households that cannot afford cars rely on public transportation options, which may be too expensive or may not provide service to enough areas.

This issue can be best understood in terms of its costs to society. First, without adequate access to transportation, low-income residents of the Evansville region experience access barriers to jobs, leading to higher unemployment. This phenomenon is not unique to Evansville; a 2015 study published by NYU found that limited transit access is correlated to higher unemployment in neighborhoods in New York City (Kaufman et. al, 2015). Higher unemployment results in a loss of productivity at the individual level and a loss of GNP at the national level. Individuals without regular access to employment are a burden to contributing taxpayers both because they require governmental assistance and because they do not contribute income taxes.

Furthermore, lack of transportation access restricts upward mobility. Conversely, better access to transportation is associated with pathways out of poverty, as transportation allows impoverished individuals to access jobs and consistently participate in the labor force (Starkey & Hine, 2014). In the greater Evansville region, impoverished communities that are not served by the METS system have few options for job-related transportation, and many have no options for other transportation needs. Therefore, these individuals have limited opportunities for upward mobility, continuing the cycle of poverty.

Insufficient access to transportation is similarly associated with less access to medical care. These individuals are also less likely to pursue preventative care, resulting in worse health outcomes, more emergency room visits, and higher healthcare costs (Cronk, 2015; Syed, Gerber, & Sharp, 2013). A separate 2013 study concluded that "transportation barriers may mean the difference between worse clinical outcomes that could trigger more emergency department visits and timely care that can lead to improved outcomes (Syed, Gerber, & Sharp, 2013). This study, however, does indicate that there are some controversies in the literature about the link between transportation access and health outcomes, and also that telemedicine will compound those controversies further.

A lack of transportation among low-income populations is also correlated with a lack of food access; this in turn adversely impacts health outcomes. A study in Washington found that 6

percent of low-income residents did not have reasonable access to a WIC grocery store[1]; 78 percent of that group reported a lack of a personal vehicle as the cause (Leahy, 2017). Reasonable access to grocery stores is associated with lower obesity risk, an important health indicator. Low-income transportation gaps compound health costs through a lack of food access and tendencies toward missed appointments and lacking preventative care.

The Community Transportation Association of America (CTAA) was asked by Toyota Motor Manufacturing, Indiana Incorporated (TMMI) to examine transportation gaps in the greater Evansville region. CTAA is consulting with area stakeholders to determine what gaps exist and working to identify solutions that suit the region. Their geographic focus includes Evansville City, Vanderburgh County, Gibson County, and Princeton City. TMMI employs approximately 5,100 at their plant, located in Gibson County, in the production of 401,843 units per year (Toyota, 2017). They are considered a regional stakeholder and frequently pursue philanthropic efforts to enhance the Evansville region.

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[1] WIC: The Special Supplemental Nutrition Program for Women, Infants, and Children is a federal assistance program for healthcare and nutrition of low-income pregnant women, breastfeeding women, and children under age five (5).

BACKGROUND

Reliable access to transportation is correlated with better job attendance, more consistent preventative healthcare, and other measures of life outcomes. On average, transportation costs are a significant household expenditure, second only to housing (Center for Transit-Oriented Development, 2014). Low-income households that cannot afford cars rely on public transportation options, which may be too expensive or may not provide service to enough areas (Cronk, 2015). Nationally, this problem affects 20 percent of households at or below the federal poverty line. For these households, transportation represents a barrier to upward mobility; research shows that affordable transportation is key to moving out of poverty (DeGood & Schwartz, 2016). Access to affordable transportation is the key to pathways out of poverty. Public transportation systems typically rely on fares to cover 40 percent of operating costs and rely on government funding to fulfill the remaining operating and capital costs (Cronk, 2015). Fares increase as ridership decreases and operating costs are rising, making public transportation options even less accessible to low-income residents.

The greater Evansville region of Indiana exemplifies this problem—access to transportation for low-income individuals in this region is too low.

Federal Legislative Landscape

The federal government offers a variety of funding mechanisms that distribute funds at the state and local levels. In the 1990s, the Department of Transportation (DOT) launched the Job Access and Reverse Commute Program (JARC), which provided funds to states to improve transportation options for low-income residents seeking employment in suburban areas during non-peak hours. Between FY 1999 and FY 2009, the program appropriated almost $1.5 billion in programs to improve public transportation options for low-income residents (Federal Transit Administration, 2016). The current guidelines indicate that funds authorized through this program are provided to the state or entity in question for a total of three years. However, the future of transportation funding is unclear following the recent tax cuts. The Federal Transit Administration (FTA) webpage has yet to be updated to reflect the new parameters of this program.

Regional Profile: Greater Evansville Region, Indiana

The greater Evansville region of Indiana is situated along the southern border of the state and includes Evansville City, Princeton City, Gibson County, and Vanderburgh County. It is best classified as a "regional center" (Center for Transit-Oriented Development, 2014). A regional center serves "as the administrative, cultural, and/or employment center for a region, and often attract[s] in-commuting workers from across the region" (Center for Transit-Oriented Development, 2014, p. 15). Figure 1 depicts the greater Evansville region. Across the region, 2,508 households do not have a personal vehicle (Zeilinger, 2018).

Demographically, the region is fairly stagnant. Between 2010 and 2017, Gibson County's population grew by 0.2 percent, while Vanderburgh County grew by 1.1 percent. Labor force participation is on par with the national average; 62.8 percent (Gibson) and 63.4 percent

(Vanderburgh) compared to 62.8 percent, respectively (United States Census Bureau, 2018a; United States Census Bureau, 2018b). However, anecdotally, many area businesses struggle to maintain skilled and unskilled labor. One need only drive the route between downtown Evansville to the TMMI plant to see the sheer number of "help wanted" signs spotting the highway. In interviews, employers often cite a lack of transportation as a reason for higher turnover (Schriefer, 2018; Walden, 2018; Wathen, 2018; Brown, 2018; Connor, 2018).

Figure 1: Greater Evansville Region (area in white)
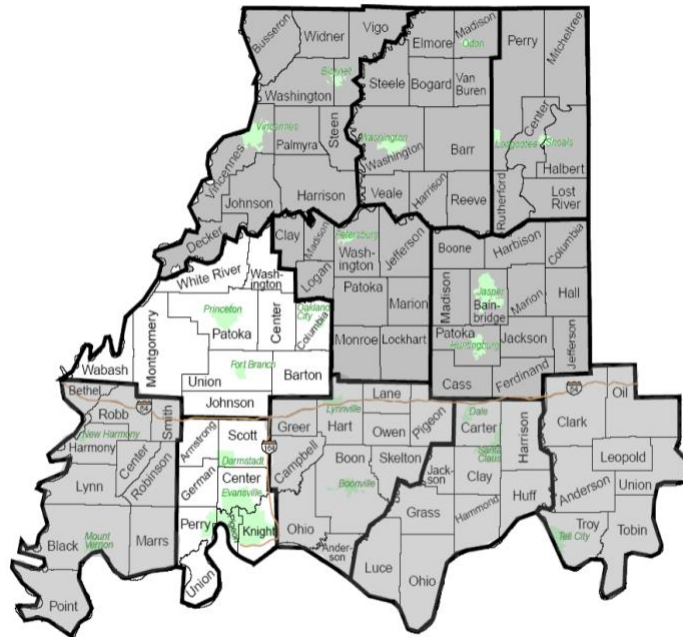
Source: Wikipedia, 2018

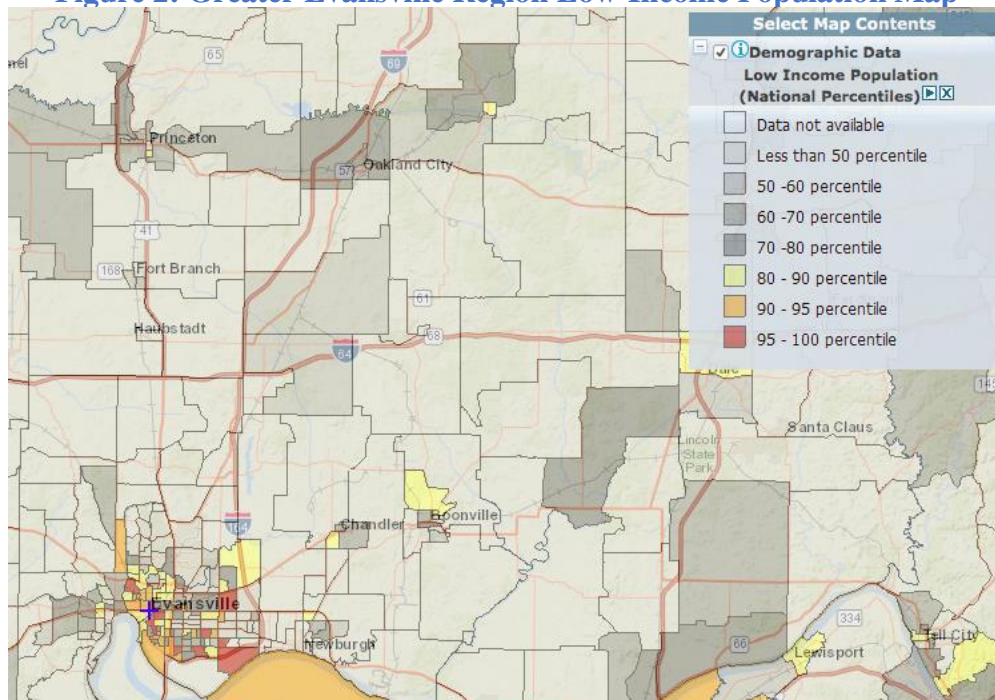*Public Transportation in the Greater Evansville Region*

Anecdotally, the greater Evansville region is car-centric (Corrigan, 2016). Indeed, according to a 2014 report, 83.4 percent of residents in Vanderburgh County commute by driving alone, compared to the national average of 76 percent (Sustainable Evansville Area Coalition, 2014). This dependency on personal vehicles has resulted in scant public transit options. The Metropolitan Evansville Transit System (METS) operates fixed-route and paratransit operations within the Evansville city limits, and there are no public transportation providers in Vanderburgh County. METS operates 24 fixed routes; between 2008 and 2012, METS carried an average of 2,034,965 passengers per year.

As of 2014, 64 percent of METS riders surveyed indicated that their annual household income was below $25,000 (METS, 2014). Furthermore, there are few incentives to use public transit if one has access to a personal vehicle: most METS routes have one-hour headways and increase the average commute time. On average, Evansville region commuters spend 20.2 minutes commuting by car compared to 37 minutes via public transit (Sustainable Evansville Area Coalition, 2014).

Like many public transportation systems, METS relies heavily on government funding. In 2016, fare recovery comprised only 22.8 percent of METS operating funds; the remainder was comprised by local funds (23.6 percent), state funds (28.3 percent), federal assistance (23.1 percent), and other (2.2 percent). Capital funding was comprised entirely of state funds (25.2 percent) and federal assistance (74.8 percent). This means that public transportation in the greater Evansville region is dependent on federal assistance for solutions that require capital investments. Given the uncertain state of federal funding, this is an important consideration for solutions addressing low-income access to transportation.

Public transportation in this region is set up to only service within the political boundary of a single county or city (Zeilinger, 2018). This means that METS is useful for passengers with transportation needs within the city limits but presents a "first mile/last mile" problem (FMLM) to any passengers with travel needs beyond those limits. A FMLM problem is defined as a service gap at the beginning or end of a trip (King, 2015). Due to the limited service area of METS, low-income individuals outside of the service area without a personal vehicle have few options to reach basic services or jobs. Figure 2 provides a visual representation of the extent of the issue. The most severe pockets of low-income population are not covered by the METS service area, meaning that the most vulnerable populations are the most affected by this issue.

Figure 2: Greater Evansville Region Low-Income Population Map

Source: CTAA, 2018

Solutions to the public transportation desert in the greater Evansville region could capitalize on recent technological advancements. Some limitations do exist, including limited broadband access and population density (Walden, 2018). Limited broadband availability impacts low-income populations from accessing information about their transportation options, thereby reducing the chance that available resources reach those in need.

Technology

Technological advancements offer governments the opportunity to innovate traditional public transportation options and better suit the needs of their communities. Research indicates that the average person will walk a quarter-mile to access bus service or a half-mile for rail service (DeGood & Schwartz, 2016). Optimized transit mapping serves the highest-density job and residential areas, leaving a service gap that technology can fill.

Private Rideshare Companies: Uber and Lyft

Technological advances offer compelling solutions that merit consideration and indicate that the transportation landscape is quite dynamic. Indeed, shared ride transportation has the potential to bridge the gap affordably, depending on geographic coverage, eligibility, subsidy level (DeGood & Schwartz, 2016). Privately-owned shared ride companies, including Uber and Lyft, are increasingly used in pilot programs that seek to address the FMLM problem or augment fixed-route transit. According to a report published by the Eno Center for Transportation (2018), the rising popularity of shared ride services indicates a market need not currently being met by the system. However, because these services are privately-owned, they are less concerned with promoting "accessibility, equity, and mobility" than their public counterparts (Eno, 2018, p. 2). Thus, policymakers who partner with shared ride services will need to consider the costs involved.

Despite the costs of subsidizing, some localities have recently turned to Uber for rideshare solutions that address the FMLM problem. For example, Altamonte Springs, Florida launched a partnership pilot program with Uber in 2016 (Uber Newsroom, 2016). This partnership provides users a 20 percent discount when taking a ride that starts and ends within the city limits. Because the pilot is still ongoing, their data is not currently available with regard to the efficacy of the program.

The tension between private entities and government presents challenges for policymakers looking solely to Uber and Lyft for FMLM solutions. First and foremost, policymakers cannot rely on the data provided by these trips to assess where the need is greatest. The population using shared ride applications does not completely overlap with the vulnerable populations of interest. Determining what overlap exists, if any, will be difficult. Furthermore, a 2017 study revealed that 49 to 61 percent of shared ride trips made in major cities would not have occurred otherwise or would have been supported by existing transit options (Sisson, 2017b). This suggests that should policymakers choose to partner with shared ride providers, there will likely be redundancies within the system.

Additionally, the above survey showed that only six percent of users used shared ride applications daily, and only 11 percent of trips were taken for shops and services (Clewlow, 2017). This suggests that shared ride applications are not currently a preferred option for daily commuting. We could hypothesize that this preference could be modified through a reduction in cost-per-ride or some other cost-cutting measure. This study is part of a working paper and has not yet been peer-reviewed, but shared ride applications are a recent technological development and require further study.

Uber and Lyft services are currently active in the greater Evansville region. This suggests that subsidy programs tried elsewhere could be used as a model to address low-income access to transportation. It is important to note that stakeholders often described rideshare costs as prohibitive to low-income and/or disabled populations (Stricker, 2018; Walden, 2018; Wathen, 2018; Williams, 2018).

Autonomous Vehicles

The advent of autonomous vehicles (AVs) is another option that should be considered for future solutions. Autonomous bus trials are ongoing in Finland as of November 2017 (Sisson, 2017a). Project coordinator Harri Santamala posits that with a little more testing and data collection, autonomous vehicles could solve the FMLM problem, calling the technology "flexible" and scalable (Sisson, 2017a). The current state of autonomous vehicles precludes them from immediate implementation; rather, they should be considered as part of a longer-term strategy to address transportation access. Labor costs typically comprise between 40 and 80 percent of transit operating costs, so the use of AVs in public transportation could increase the purchasing power of governments (Sisson, 2017a). These developments are unlikely to affect the outcomes for the timeframe used in this analysis but are an important consideration for 20- and 30-year planning models.

Best Practices: Regional Transportation Authority

Regional transportation authorities are governmental agencies, typically with the independent power to tax, that address mobility and land use needs of an area where comprehensive solutions are needed. Some authorities, like the Metropolitan Transportation Authority in New York and New Jersey, cross state lines. Others, like the Massachusetts Bay Transportation Authority (serving the Boston area), cover multiple cities and/or counties. A 2007 report released by the Greater Cleveland Regional Transit Authority studied the practices of San Francisco, Dallas, Boston, Baltimore, St. Louis, Portland, and the District of Columbia and developed a list of best practices for regional transportation authorities. These include: (1) establishing roles of included stakeholders early for facilitating cooperation and constant coordination; (2) using Transit Oriented Development principles in planning or revitalizing existing areas; and (3) playing to the region's strengths (Greater Cleveland Transit Authority, 2014). The greater Evansville region is not currently pursuing a regional development strategy, but solutions that address the low-income transportation gaps will be more effective and sustainable with the inclusion of stakeholders and when they are tailored to the region's strengths.

Best Practices: Transportation Management Associations (TMAs)

Transportation management associations (TMAs) are private alternatives to regional transportation authorities with a few key differences. Because they are private entities, often non-profits, they do not have the authority to levy taxes. Additionally, as private entities, they rely much more heavily on local community stakeholder involvement and support. Regional transportation authorities, as quasi-governmental bodies, are still answerable to the communities; however, they rely on state and federal governmental financial support. These differences

distinguish the behavioral incentives of the two entities. TMAs are often seen as more cost-effective than individual entities because of the coordination they provide. Additionally, they are more agile that regional transportation authorities because they are governed by participating members; when change is needed, members can act immediately to institute new or different policies (ACT, 2017).

TMAs typically take the form of a non-profit corporation (TAMU, 2018). The scope of services provides by a TMA is flexible, often depending on the needs of the community, although many focus in some part on addressing FMLM, alternatives to single-occupant vehicle commuting, and ride-matching (ACT, 2017). TMAs have been successfully implemented in Houston, Texas, Oregon, and Washington State; each TMA effectively reduced the number of workers commuting alone (TAMU, 2018).

TMA best practices are somewhat general given the variety of forms they can assume. In a best practices document, the Mobility Center at Texas A&M University suggests the following strategies for a successful TMA:
1. Determine the feasibility of a TMA and target the program to prime locations.
2. Tailor the TMA to local community needs, building on existing relationships and existing institutions wherever possible.
3. Institute program evaluation practices to maximize the efficacy of the TMA (TAMU, 2018).

These strategies could greatly enhance the efficacy of a TMA in the greater Evansville region, if a TMA is feasible.

Case Study: Traverse City, Michigan

Traverse City, Michigan is a regional center in northern Michigan; the greater Traverse City area is home to 143,400 residents. Within the city, most residents have reliable and consistent access to transportation, but residents in the surrounding counties experience more challenges. In 2007, a household living outside of the city limits earning $48,900 spent $2,300 more on transportation than one within Traverse City (Center for Transit-Oriented Development, 2014). While the city has been very successful in providing transit access for city residents, non-city residents have few options besides access to a personal vehicle. A 2014 report for the Department of Housing and Urban Development suggested that Traverse City officials could improve access to transportation "by participating in multi-jurisdictional and regional planning processes" (Center for Transit-Oriented Development, 2014, p. 29). Participation in these processes would allow Traverse City to expand their capacity to plan and fund integrated housing and transportation solutions, thereby supporting the needs of low-income populations. The greater Traverse City region is very similar to the greater Evansville region both in terms of size and concentration of need. Therefore, the advice for Traverse City may also apply to Evansville.

POLICY OPTIONS

This analysis provides four policy options to address low-income access to transportation in the greater Evansville region. Each option will be evaluated over a 10-year period, and some options may require a series of phases to be fully realized.

Option 1: Maintain the status quo

The status quo option maintains the current transportation system in the greater Evansville region. Of the four cities and counties being addressed, only Evansville City has a public transportation system, METS. The METS system is concentrated within the city limits, with only two destinations outside of the city's geographic boundaries. One destination, the University of Southern Indiana (USI) is a contracted route by the university (Wilson, 2018). METS provides service Monday to Friday between 5:45a and 12:15a, Saturday between 6:15a and 12:15a, and Sunday between 6:15a to 6:15p (City of Evansville, 2018). These limited service hours mean that individuals working shifts may not be able to depend on METS for transportation to and from work. Indeed, many large employers have shifts that start as early as 4:30a, and end as late as 2:00a (Heck, 2018). METS also operates an on-demand paratransit service, METS Mobility. This service allows approved riders to schedule rides up to two weeks in advance and use on-demand service as available (Wilson, 2018). Route coverage is the operational priority of METS, which results in regular headways of one hour on most routes (Wilson, 2018).

Private and non-profit modes of transportation are other important players in the greater Evansville region's transportation ecosystem. One such area provider is Bridge Builders Transportation. This organization was founded by the New Hope Church in Evansville in 2009 and uses six Dodge sprinter vans to provide a ride service to and from work for individuals of a certain income level and need. Applicant criteria is malleable based on availability. Since its founding, Bridge Builders has provided transportation to approximately 900 people for an average time span of three weeks. The service is seen as a transitional service until an employee can access a personal vehicle or other means of transportation (Connor, 2018). This service only provides transportation to a worksite; patrons must use another transportation means for access to grocery stores, leisure activities, and other non-work needs.

As stated previously, Uber and Lyft services exist in the region, but stakeholders often described those costs as prohibitive to low-income and/or disabled populations (Stricker, 2018; Walden, 2018; Wathen, 2018; Williams, 2018).

Option 2: Create a regional transportation consortium and increase BB capacity

This consortium would include Bridge Builders, the Arc of Gibson, Ride Solutions, Catholic Charities, and other identified entities that currently serve low-income populations and/or populations with disabilities. This consortium could be modeled off of a regional transportation authority with a few key differences: this body would not have the ability to tax, would not have the authority of a governmental body, and would require stakeholder investment for continued success. The consortium could utilize government funding, but this option is not dependent on

such governmental support. TMAs would also provide a framework for the greater Evansville consortium.

These non-governmental regional providers already have an understanding of the populations they serve. Arc of Gibson County is one example of an office that works with residents who have disabilities with job training, job placement, transportation, etc. They currently receive $20,000 annually from the county for transportation services and employ a fleet of 50 vehicles (including accessible vans, paratransit buses, and sedans) for their consumers (Walden, 2018). Management of existing resources by a larger consortium could expand usage to address needs of the broader low-income and disabled populations.

This option would add three (3) sprinter vans to the existing Bridge Builder fleet and support wages for five (5) additional drivers and one (1) support staff member. The source of the capital funding is unclear at present. This option assumes that the vans and drivers will be acquired during the first year of analysis. This option capitalizes on the existing reputation of Bridge Builders; in stakeholder interviews, the organization was frequently mentioned as a well-targeted, reliable, and popular option for low-income individuals (Stricker, 2018; Walden, 2018; Wathen, 2018; Williams, 2018). CTAA's meeting with representative Geronica Connor revealed that they have 3-5 routes waiting in the queue, but do not have the resources to provide additional routes at this time (2018). This indicates increasing demand, suggesting that increased capacity could be successful in meeting a work access need. It is important to note that this solution would be a way to give people access to their jobs but would not address other mobility needs.

Option 3: Change METS routes to optimize service in low-income areas

Redesigning METS routes to better link low-income residents with jobs would adjust the utilization of existing resources. There are three major areas in Evansville with high concentrations of jobs: (1) downtown Evansville; (2) Eastland Mall and the areas immediately to its east, in the area bounded by Lynch Road, Interstate 69, the Lloyd Expressway, and Green River Road; and (3) the areas just east of Highway 41 centered on Lynch Road and on Highway 57. While downtown has concentrated bus service, as does Eastland Mall itself, the other areas have limited bus service. In the case of employers along Lynch Road, for example, their bus service is limited to a one-way bus loop running once an hour, and the employers on Highway 57 have no bus service at all. The current allocation of resources has resulted in employee retention issues, according to area business owners. Additionally, area organizations that support low-income residents in their search for employment struggle with placement for transportation-challenged workers with the existing service (Stricker, 2018; Walden, 2018; Wathen, 2018; Williams, 2018).

This option requires a priority shift from coverage to frequency and low-income transportation access. A shift in priority will change what constitutes strong route design, resulting in a different route optimization than is currently present. The option does not rely on increases in METS' personnel or capital resources. The existing staff has experience in route optimization, and therefore the skills necessary to redesign METS routes. Additionally, METS personnel can

work with Metropolitan Planning Organization (MPO) personnel to determine which areas to target in the route redesign. This information is readily available from the MPO.

It is important to note that this option does not address the mobility needs of low-income individuals outside of the METS service area. This area comprises a majority of the greater Evansville region. However, for low-income individuals within the METS service area, this option addresses a multitude of transportation needs.

Option 4: Institute a partnership between greater Evansville region governments and Uber

This option uses the governments of the greater Evansville region to subsidize Uber, thereby discounting rides within the region for qualifying individuals. Individuals would qualify after an income verification process and gain access to discounted rides through the Uber application. This option assumes that low-income individuals have access to the Uber application, and that the cost of Uber rides is the primary barrier to use. Using the model of Altamonte Springs, this option would offer qualifying residents a 20 percent discount on Uber rides within the greater Evansville region (Uber Newsroom, 2016).

To implement this option, the greater Evansville region would need to assemble stakeholders to pitch the partnership to the Uber team. Assuming this pitch was successful and a 20 percent discount was approved, the city of Evansville would hire a coordinator to process the applications, similar to the positions that approve SNAP (food stamps) for low-income residents. Once approved, the low-income individual would receive a discount code to use on all rides that originate and terminate within the greater Evansville region.

This option would address a multitude of the mobility needs of qualifying individuals in the greater Evansville region. However, low-income individuals needing transportation outside of the region would not be addressed.

EVALUATIVE CRITERIA

Each of the following policy options is evaluated by the specified criteria. These criteria will estimate outcomes and assess the relative merit of each option in accordance with the needs of the greater Evansville region. Each outcome will be evaluated in the geographic region of greater Evansville for a period of 10 years. The criteria chosen are as follows, with their weight in parentheses:

1. **Political Feasibility** (35 percent)
2. **Ability to Implement** (30 percent)
3. **Fairness/Equity** (20 percent)
4. **Cost Effectiveness** (15 percent)

1. **Political Feasibility** assesses the political climate associated with an option. Because public transportation depends on political support for funding and supportive legislation, it is extremely important for options to be neutral or positive politically. Political feasibility is a qualitative measure, measuring the likelihood of option authorization on a scale of low to high. Major stakeholders include the local public and executive offices of the greater Evansville region. Specifically, the Evansville city council, Metropolitan Planning Organization (MPO), Vanderburgh County Council, the Gibson County Council, and the Princeton City Council are relevant to this criterion.

2. **Ability to Implement** indicates the ability for existing institutions and agencies to implement each option. Significant roadblocks to implementation could adversely affect the success of a given solutions. The ability to implement criterion is a qualitative measure that rates the relative each of implementation for a given option on a scale of low to high. Considered factors include the number of agencies involved in implementation, the level of buy-in from agency employees, whether or not the option requires phasing in, the technical difficulty of implementation, and the timeline of implementation.

3. **Fairness/Equity** measures equity of access provided by each option. Individuals earning incoming below 100 percent of the poverty rate will be compared to those above. This is a qualitative analysis, measuring the outcome of service to low-income populations on a scale of low to high. Factors that will be considered include the frequency of service in low-income areas and the change in affordability for users. Middle-income areas will be used as the comparison group.

4. **Cost Effectiveness** evaluates the output of each option compared to the expense. Options that are cost effective provide equal or more benefits to the costs required to implement the option. Cost effectiveness is a quantitative analysis, using the following ratio: *Cost Effectiveness Ratio = Total Cost / PMT* (Cellini & Kee, 2015). Passenger Miles Traveled (PMT) is the outcome measured, as PMT gives an indication of the frequency and coverage of transit service. As an outcome, this is the best measure of access for low-income individuals. Other measures, such as ridership, weight the number of passengers more heavily than coverage, which does not directly measure access. Outcomes are measured for a 10-year period of analysis.

ANALYSIS OF POLICY OPTIONS

Criterion 1: Political feasibility (weighted at 35 percent)

Option 1 received the highest political feasibility rating, as it is most politically expedient to maintain the status quo. Based on stakeholder interviews, the existing governmental support of METS is not controversial; while there are some outliers who wish to see government funding removed from transportation altogether, this is not a common view (Musgrave, 2018). Option 2 received a medium rating on this criterion, because while there is no explicit governmental opposition to a consortium of non-profit and private providers, there is little impetus for government support to be provided if needed. Indeed, the prevailing opinion from governmental stakeholders is that a private effort should be entirely funded and supported by the private sector (Brown, 2018; Musgrave, 2018).

Options 3 and 4 received the lowest political feasibility rating, but for different reasons. Option 3 is deemed not politically feasible because of METS' recent history with route experimentation. The failed Route 41 bus was noted frequently by governmental stakeholders to highlight that METS would not be an effective solution to low-income transportation access gaps (Musgrave, 2018; Schriefer, 2018; Shokouhzadeh, 2018). The general consensus was that pursuing further METS adjustments would be politically risky and ultimately ineffective. Elected officials included in CTAA stakeholder meetings were unwilling to participate in a perceived ineffective solution. Option 4 was not presented at the latest stakeholder meeting; instead, during initial stakeholder interviews, the idea was proposed. Stakeholders dismissed the idea as too expensive and impractical in the area (Walden, 2018; Heck, 2018; Williams, 2018).

Criterion 2: Ability to implement (weighted at 30 percent)

Options 1 and 3 received the highest ability to implement rating for similar reasons. Ultimately, the chances of implementation are higher for options that result in small changes with stakeholders who are supportive of those changes. The status quo option involves no change; while some stakeholders acknowledge that low-income transportation access is an issue, none were willing to lead change (Connor, 2018; Musgrave, 2018; Schriefer, 2018; Shokouhzadeh, 2018). This leadership vacuum is a critical flaw in subsequent policy options that require stakeholder buy-in. Option 3 received a high rating for ability to implement because actual implementation would be simple: METS and the MPO would be the two agencies involved in the route re-design, two agencies with existing relationships, skillsets, and knowledge bases. Interviews with METS staff indicate that they are willing to participate in route changes so long as the changes are intended to benefits customers (Wilson, 2018).

Option 4 received a medium score on ability to implement for two main reasons. First, Uber has experience with private-public partnerships like the subsidy and has a model in place. Second, governments in the greater Evansville region have protocols in place for existing welfare programs like SNAP; this option would likely require hiring an additional person to process income verifications, but training and operating procedures for this hire would be easily created from existing templates.

Option 2 received a low score on ability to implement. This option is the heaviest lift in terms of effort and resources. Upstart costs for the consortium will be significant, and there is no clear source for those funds. Oversight and accountability of the consortium would also be a challenge, as stakeholder participation would be voluntary. Participants would need a great deal of intrinsic motivation and mutual trust to remain accountable to their peers, something not readily available as seen in recent interviews. Also, as a private consortium, this group will require funding support from some external entity to maintain operations. As with start-up costs, the source for regular consortium funding is currently unknown. While adding capacity to Bridge Builders would be seamless with the proper funding, the many institutional and interpersonal barriers to the regional consortium mean that Option 2 has a low ability to implement.

Criterion 3: Fairness/Equity (weighted at 20 percent)

Options 2 and 4 received the highest fairness/equity ratings for similar reasons. This criterion compares the equity between individuals earning 100 percent of the poverty rate and below to all other individuals. This means that each option is evaluated on whether or not one group's transportation resources are re-allocated from the other group. In Option 2, the regional transportation consortium coordinates and allocates resources already targeted to the low-income population; the increased coordination provided by the consortium is expected to increase the capacity of existing resources. This increases the transportation access to those in poverty without changing the resources of those out of poverty, which is fair and equitable. In Option 4, the Uber subsidy targets low-income individuals through an income-verification approval process. Like Option 2, Option 4 increases low-income access to transportation without reducing the access of individuals above the poverty line.

Options 1 and 3 received the lowest fairness/equity ratings. The geographic area of analysis is the greater Evansville region. As stated previously, the existing public transportation option, METS, provides service within the Evansville city limits. This means that individuals below the poverty line who live outside of Evansville do not have a public transportation option, which is not equitable when compared to individuals above the poverty line. Individuals above the poverty line who live outside of Evansville city have stable access to personal vehicles, giving them access to transportation not available to many individuals below the poverty line. Therefore, because Option 1 changes nothing and Option 3 only addresses METS, both options score low on fairness/equity.

Criterion 4: Cost effectiveness (weighted at 15 percent)

This criterion measures the net present value of programs against PMT. Given this measure, Option 3 is the most cost-effective option ($0.12 per PMT). Given that this option has no additional costs beyond the status quo, it stands to reason that it is the cheapest option. Option 2 is a close second at $0.17 per PMT. To increase PMT, this option coordinates existing resources, adding few overhead costs.

Options 1 and 4 are the least cost-effective options at $1.25 per PMT and $0.41 per PMT, respectively. Option 1 is less efficient than Options 2 and 3 because current METS routes are designed to maximize geographic coverage, and there is no coordination between private and

non-profit transportation providers. Option 4 is less efficient than Options 2 and 3 because it adds an additional transportation provider for low-income individuals instead of coordinating existing resources.

SUMMARY OUTCOMES MATRIX

The matrix below summarizes the relative performance of each policy option against each criterion. Option 1 is the most compelling based on this analysis.

Table 1: Summary Outcomes Matrix

	Status Quo (1)	Regional Transportation Consortium + Bridge Builders (2)	METS Route Optimization (3)	Uber Subsidy (4)
Political Feasibility – 35% (low-med-high)	HIGH	MEDIUM	LOW	LOW
Ability to Implement – 30% (low-med-high)	HIGH	LOW	HIGH	MEDIUM
Equity/Fairness – 20% (low-med-high)	LOW	HIGH	LOW	HIGH
Cost Effectiveness – 15% (cost per PMT)	$1.25	$0.17	$0.12	$0.41

RECOMMENDATION AND POLICY IMPLICATIONS

Based on the above analysis, I recommend that CTAA pursue *Option 1: Maintain the status quo*, or let present trends continue. Despite the equity challenges associated with this option, its high scores on both political feasibility and ability to implement indicate that it is the most sustainable option available at this time. Ultimately, area stakeholders have other priorities that prevent them from participating in a transportation-oriented strategy to improve the region.

During the most recent stakeholder meeting, many of those involved were interested in Option 2. However, when asked about implementation of the regional consortium, none of the stakeholders present were willing to step forward to lead the coalition. Many cited lack of time, resources, and/or expertise that would prevent them from assuming additional responsibilities. Additionally, some stakeholders were concerned about relinquishing control or ownership over their resources for the sake of the consortium. As the discussion continued, it became clear that Option 2 was attractive in theory, but implementation would be challenging, if not impossible. In the future, stakeholders in the greater Evansville region must be willing to agree that low-income transportation access is a problem and must prioritize solutions over individual power dynamics for action to be justified.

Option 3 was universally rejected by these stakeholders as unfounded. Many pointed to an earlier route trial that serviced businesses along the Route 41 corridor that was abandoned after three years of failed adjustments (Heck, 2018). Option 4 was proposed during individual interviews and universally rejected in earlier stages. Option 1 is the prevailing option that all stakeholders can support, making it feasible and sustainable.

Secondary Recommendation: Work with TMMI and other area businesses to develop a coalition of change agents in the region.

TMMI is the primary stakeholder involved demonstrably interested in solving the low-income transportation gap in the greater Evansville region. As a for-profit entity capable of hiring outside consultants to investigate the issue, it is clear that TMMI has resources available for solution implementation. If TMMI were willing to mobilize other area business with similar available resources, solutions that both target the low-income population and suit area business needs would be both sustainable and implementable. Indeed, this coalition would be comprised of stakeholders with a common goal: providing employees with reliable transportation options to increase productivity and reduce turnover. Other area stakeholders simply do not have the resources or the leadership needed to address the transportation gaps in the greater Evansville region. Low-income access to transportation is an issue in the greater Evansville region, but solutions are unlikely to succeed without a strong coalition led by invested stakeholders. TMMI is an example of a stakeholder already primed for leadership in this area.

APPENDIX A: COST EFFECTIVENESS ANALYSIS

Methodology

This analysis evaluates the output of each option compared to the expense. Passenger miles traveled (PMT) is the outcome used in the cost-effectiveness calculations, measured in costs in real 2018 dollars ($). Options that are cost effective provide equal or more benefits to the costs required to implement the option. Each option uses the same general assumptions, explained below.

Baseline

The baseline condition is drawn from DOT data on the METS system, as well as Bridge Builder operating estimates (Department of Transportation, 2016). This information provides the cost estimates for Option 1, the status quo.

Time scope and discount rate

The analysis is conducted over a period of ten (10) years with a discount rate of seven (7) percent. The analysis assumes all costs occur at year end.

General assumptions

Assumption	Value	Justification
Discount Rate	7%	Best practice from OMB
Inflation Rate	2%	Projection from OMB
Average Commute	40 miles (round-trip)	Considers region size and national average

Policy Option 1 – Status Quo

Outcome

Assumption	Value	Justification
Average PMT Gain for 1 Passenger (annual)	0	Assumes zero gain in PMT
Annual PMT (miles)	7,100,808	Actual figure per METS 2016 Agency Profile

Cost

Assumption	Net Present Value (2018-2028)	Justification
Personnel Costs (annual)	$52,133,449.89	Actual figure per METS 2016 Agency Profile + BB estimate
Operation Costs (annual)	$14,601,005.58	Actual figure per METS 2016 Agency Profile + BB estimate
Capital Outlay (annual)	$14,263,341.62	Actual figure per METS 2016 Agency Profile + BB estimate
Debt & Depreciation (annual)	$15,861,431.61	METS estimate + BB estimate

Summary

The cost effectiveness figure for this alternative is calculated by dividing *Status Quo PMT by 2028* by *Status Quo Baseline Cost by 2028 (Present Value):*
- Status Quo PMT by 2028: 78,108,888
- Status Quo Baseline Cost by 2028 (Present Value): $97,749,758.20
- **Cost Effectiveness Score: $1.25 per PMT**

Policy Option 2 – Consortium & BB

Outcome

Assumption	Value	Justification
Year 0 to Year 1 (Pre-Program)		
Average PMT Gain for 1 Passenger (annual)	10,000	Assumes 40 miles per day, 50 working weeks per year, 5 days per week
Possible Benefitting Passengers	36	Assumes 3 BB vans with a 12-passenger capacity each
Uptake Percentage	25%	
Estimated Benefitting Passengers	9	Assumes *Possible Benefitting Passengers* X *Uptake Percentage*
Year 2 to Year 10 (Post-Program)		
Average PMT Gain for 1 Passenger (annual)	10,000	Assumes 40 miles per day, 50 working weeks per year, 5 days per week
Possible Benefitting Passengers	22,316	Assumes all individuals below the poverty line in Gibson and Vanderburgh counties can benefit
Uptake Percentage	25%	
Estimated Benefitting Passengers	5,579	Assumes *Possible Benefitting Passengers* X *Uptake Percentage*

The effectiveness measure for each year is calculated as follows:

- *Effectiveness =*
  *Average PMT Gain for 1 Passenger (annual) * Estimated Benefitting Passengers*

  o EXAMPLE, Year 0: Effectiveness (Year 0) = 10,000 * 9 = 90,000

Total PMT by 2028 is calculated as follows:

- Total PMT by 2028 = (90,000*2 years) + (55,790,000*9 years) = 502,290,000

Cost

Assumption	Net Present Value (2018-2028)	Justification
Personnel Costs		
Executive Director Salary and Benefits	$609,723.75	Assumes $60,000 salary in 2018 dollars ($) and benefits of 30% of annual salary
Employer Relations Coordinator Salary and Benefits	$407,502.50	Assumes $40,000 annual salary in 2018 dollars ($) and benefits of 30% of annual salary
Transportation Coordinator Wages	305,416.73	Assumes $20/hour wage, 200 hours/year
Operational & Administrative Costs		
Office Space	$199,265.33	Assumes the following monthly expenses: $3,200 rent, $300 utilities, $29 technology and supplies
Contract Services	$12,035.37	Assumes 5% of salaried workers' benefits
Short-life Capital (one-time)	$1,326.00	Assumes costs associated with 2 computers and related software licenses and printing expenses
Incorporation and Filing Fees (one-time)	$719.10	
Capital Costs		
Used 2017 Mercedes Sprinter Vans (one-time	$130,509.00	Assumes used MSRP
Other Costs		
BB Debt and Depreciation	$2,155,896.24	Assumes 10 percent depreciation each year

Summary

The cost effectiveness figure for this alternative is calculated by dividing *Total PMT by 2028 + Status Quo PMT by 2028* by *Total Program Cost by 2028 (Present Value) + Status Quo Baseline Cost by 2028 (Present Value):*
- Total PMT by 2028:
- Status Quo PMT by 2028: 1,261,507,554
- Total Program Cost by 2028 (Present Value) = $1,535,988.77
- Status Quo Baseline Cost by 2028 (Present Value): $1,935,778,652.98
- **Cost Effectiveness Score: $0.17 per PMT**

Policy Option 3 - METS

Outcome

Assumption	Value	Justification
Average PMT Gain for 1 Passenger (annual)	10,000	Assumes 40 miles per day, 50 working weeks per year, 5 days per week
Possible Benefitting Passengers	26,074	Assumes all individuals below the poverty line in Evansville will benefit
Uptake Percentage	25%	
Estimated Benefitting Passengers	6,518	Assumes *Possible Benefitting Passengers* X *Uptake Percentage*

The effectiveness measure for each year is calculated as follows:

- *Effectiveness =*
  *Average PMT Gain for 1 Passenger (annual) * Estimated Benefitting Passengers*

    o   EXAMPLE, Year 0: Effectiveness (Year 0) = 10,000 * 6,518 = 65,184,630

Total PMT by 2028 is calculated as follows:

- Total PMT by 2028 = 65,184,630 * 11 years = 717,030,930

Cost

Assumption	Value	Justification
NOTE: This option assumes no additional costs on the status quo.		

Summary

The cost effectiveness figure for this alternative is calculated by dividing *Total PMT by 2028 + Status Quo PMT by 2028* by *Total Program Cost by 2028 (Present Value) + Status Quo Baseline Cost by 2028 (Present Value):*
- Total PMT by 2028: 717,030,930
- Status Quo PMT by 2028: 78,108,888
- Total Program Cost by 2028 (Present Value): $0
- Status Quo Baseline Cost by 2028 (Present Value): $97,749,758.20
- **Cost Effectiveness Score: $0.12 per PMT**

Policy Option 4 – Uber Subsidy

Outcome

Assumption	Value	Justification
Average PMT Gain for 1 Passenger (annual)	10,000	Assumes 40 miles per day, 50 working weeks per year, 5 days per week
Possible Benefitting Passengers	22,316	Assumes all individuals below the poverty line in Gibson and Vanderburgh counties will benefit
Uptake Percentage	25%	
Estimated Benefitting Passengers	5,579	Assumes *Possible Benefitting Passengers* X *Uptake Percentage*

Cost

Assumption	Net Present Value (2018-2028)	Justification
Personnel Costs	$385,477.09	Estimate based on national average salary for a benefits coordinator
Operation Costs	$182,635,330.58	Estimate based on Uber rates in Evansville, PMT gains, and uptake rate

Summary

The cost effectiveness figure for this alternative is calculated by dividing *Total Program Cost by 2028 (Present Value) + Status Quo Baseline Cost by 2028 (Present Value)* by *Total PMT by 2028 + Status Quo PMT by 2028*:

- Total PMT by 2028: 613,690,000
- Status Quo PMT by 2028: 78,108,888
- Total Program Cost by 2028 (Present Value): $280,770,565.87
- Status Quo Baseline Cost by 2028 (Present Value): $97,749,758.20
- **Cost Effectiveness Score: $0.41 per PMT**

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