

# **Public-Private Partnerships in Transportation (P3T):**

***Implementing Innovative Mobility Solutions in the  
Detroit Metropolitan Region***

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## EXECUTIVE SUMMARY

The spatial mismatch is a severe problem in the Detroit Metropolitan region. Many residents of the City of Detroit seek employment as the major employers move to the suburbs of the Metro region. An inadequate regional public transit system makes accessing these suburban job centers particularly difficult. The result is that residents must spend prohibitive amounts of time and/or money traveling to work via public transit, or must have access to a vehicle in order to access jobs. Spatial mismatch leads to stagnated economic growth in a city that is already facing severe economic hardship.

In light of this problem, the Dow Fellows group sought to propose a small-scale alternative to bridge the transportation gap. Given the dual nature of the problem-- the City of Detroit and Wayne County suffer from a stagnant economy while employers in the region face difficulties in recruiting and maintaining workforce-- the group envisioned a public-private partnership between these entities to provide a new mobility solution. Initially, the group intended to coordinate and implement a pilot shuttle-to-work program, which would be jointly administered and financed by the County (via the Regional Transit Authority of Southeast Michigan) and a private employer. Due to time and funding constraints, which are discussed at length in the Methodology section, the group rescopeed the project. The outcome, as laid out in the following report, is a process document intended to serve as a jumping-off point for the implementation of the program.

Included in this document are the following components: an overview of case studies of cities and transit agencies around the U.S. implementing innovative micro-mobility solutions, a case study describing new intra-city transportation solutions in India to highlight the global nature of this issue, a study describing the costs of worker turnover, an evaluation of the quantitative data necessary to identify demand and plan the logistics of the mobility solution, a proposed questionnaire to evaluate employee-side demand, initial insight related to the evaluation of employer-side demand for this type of program in Metro Detroit, proposed metrics on which to evaluate the success of this type of program, and the Ford Mobility grant application.

The case studies section is intended to provide insight related to innovative micro-mobility solutions being implemented around the U.S. Specifically, this section highlights funding mechanisms, fare structures, and service logistics. More in-depth interviews with the Central Ohio Transit Agency and Denver's Regional Transportation District highlight planning processes, major challenges, and key components for implementation. Though none of the case studies align directly with the type of public-private partnership envisioned by this group, the insight that they provide remains relevant, as similar processes and barriers will undoubtedly be present in this type of shuttle program as well.

The quantitative data section provides an initial list of data sets that the group determined to be necessary for the planning phases of the program. Four categories of data are identified: data from employers, data from employees, data from transit providers, and data related to routing and geographical logistics. This is not intended to be a comprehensive list, but rather the most

important information to identify early in the process, about because we expect some data will be difficult to access. For example, employers may be reluctant (or unable) to provide data about their employees, thus posing a barrier to demonstrating the demand for the program. Furthermore, the team evaluated how applicable the quantitative data section was to the existing case study on the RideKC program in Kansas City. The employee questionnaire is intended to serve as an answer to that issue, targeting commuters to understand the specific difficulties they face in commuting to and from the workplace. Ideally, this survey would be administered to employees of a specific employer, but the group does not expect that to be possible without the cooperation of an employer. The survey could, therefore, be distributed more generally to residents of the City of Detroit in order to provide insight into difficulties workers are (or are not) facing on their commutes.

The group began to research employer-side demand through conversations with a number of Chambers of Commerce and workforce agencies in the Detroit Metro region. These conversations sought to access information related to demonstrated issues employers have had with recruiting and maintaining a workforce due to inadequate transportation issues. Demonstrating demand from employers is essential in justifying the type of micro-mobility solution proposed in this report. This information is also difficult to access; as noted above, initial conversations revealed that employers are unwilling or unable to share much of the relevant information about their employees.

The final evaluation section provides metrics for evaluating the “success” of the program. Identifying these metrics for success early in the process helps align goals and planning with desired outcomes. As will be discussed at length in the case studies section, evaluating the success of this program should not be too heavily based on ridership and revenue, as it will always be below. Broader goals should be established to justify the program.

The intent of this document as a whole is to act as guidance for a future Dow Fellows group, or the City or County, in the initial planning phases of a public-private partnership shuttle program. Due to time and capacity restraints, it is not a comprehensive process document, but does provide an overview of the elements the group determined would be essential in planning and implementing a pilot program.

It should also be noted that the group acknowledges that a small mobility solution such as the one proposed in this report is not a long-term or large-scale solution to the broader mobility issues in Metropolitan Detroit and similar areas around the country. In the long term, investments in an adequate public transit system should be the goal in order to provide job access for the community at large. However, this short-term solution acknowledges the difficulty Southeast Michigan has had in provisioning a regional transit system, especially in issues related to funding and political support, and proposed this mobility program as a solution to bridge the gap in the short-term.

# INTRODUCTION AND BACKGROUND

## Purpose

The Public-Private Partnership Transportation (P3T) project sought to lay the groundwork for a project to connect economically disadvantaged residents of Detroit with an employer from outside the city. Our overarching mission was to create social mobility through physical mobility. This project sought to serve as an economic vehicle for underrepresented minorities, who comprise over 80% of the population of Detroit and will act as a further catalyst to the ongoing economic revitalization of the city<sup>1</sup>

## Background

Detroit citizens lacking access to a car often have difficulties reaching employers located outside of the city of Detroit, which frequently leads to worker attrition. Currently, it is incredibly difficult to access economic opportunities in Metro Detroit. Detroit has the worst job sprawl and labor force participation of any metropolitan area in the United States<sup>2</sup>. The public transit system in the Detroit Metro region does not adequately link residents of Detroit with employment opportunities in the region. Only 48% of people in Detroit have access to a transit hub which is within 15 minutes of their home<sup>3</sup>, and the average number of vehicles per household in Detroit is 1.15, which is 36 percent lower than the national average of 1.8<sup>4</sup>. Furthermore, many communities with high employment density opt-out of public transit completely, which limits access to job opportunities for residents in these areas. This has been disastrous for Detroit citizens, and financially costly for their employers due to expenses associated with rehiring and retraining.

With the awareness of this problem that hinders the sustainable development of citizens and Detroit area as a whole, we aimed to build a local transportation system that can connect the employees who reside in the Detroit metro area and the employers that are motivated to increase the employee's satisfaction, productivity, and tenures that have been deteriorated by the lack of sustainable public transportation system. Due to the financial and time limit posed to the project, the scope of the project was adjusted from launching a transportation system to founding a theoretical ground for the future application. On this goal, we have built connections with city/county governments and potential private partners such as the chamber of commerce in Detroit. We also collected and analyzed similar cases of private shared mobility at a small scale used as an alternative form of public transportation in the US and other countries. Lastly, we evaluated the feasibility of a project of a private shuttle picking up employees from a

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<sup>1</sup> City of Detroit Income Map (2017) <http://www.city-data.com/income/income-Detroit-Michigan.html>

<sup>2</sup> Greater Detroit Area Residents Commuting Patterns (2010), Southeast Michigan Council of Government, <https://maps.semco.org/CommutingPatterns/>

<sup>3</sup> Greater Detroit Area Access to Transit Map (2010), Southeast Michigan Council of Government <https://maps.semco.org/accesstransit/>

<sup>4</sup> Vehicle Ownership in U.S. Cities Data and Map (2016), Governing Data <https://www.governing.com/gov-data/car-ownership-numbers-of-vehicles-by-city-map.html>

centralized transit hub within the city of Detroit and transporting employees directly to private employers.

## **Vision**

Eventually, we envision that the first pilot in the future would prove the possibility of the small scale private-initiated transportation solutions and catalyze the systematic and official launch of a public transportation system for a much larger scale. As the first step of this course, we have established partnerships with the Wayne County Executive Office and the Regional Transportation Authority of Southeast Michigan, who have pledged their support. Also, we expect that the initiation of this project will change the way residents of the Detroit metropolitan area through smart mobility. The creation of this new transportation network will help drastically reduce the individual modes of transportation thereby reducing the overall carbon emissions through ride-sharing initiatives. The model will leverage data analytics and be scaled to cover multiple organizations and routes, multiplying the positive impacts on reducing carbon footprints of the Detroit metro area.

## METHODS

This project, as initially conceived, sought to implement a pilot shuttle-to-work program between a major transit hub in Detroit and a specific employment location that is currently difficult or prohibitively cost-intensive (in terms of time and money) to access due to inadequate public transit systems in the Metropolitan Detroit region. The group conceives of a public-private partnership between the City of Detroit or Wayne County and an employer, specifically an employer experiencing challenges with worker turnover or inability to hire due to unreliable transit. The pilot shuttle would be jointly financed and administered by the private employer and the governmental unit. The group planned to use its \$5,000 budget from the Dow Sustainability Fellowship as an incentive for an employer to participate in the pilot program.

With this goal in mind, the group held several initial meetings with its Dow advisor, Margaret Wooldridge, and its faculty advisor, Elisabeth Gerber. Through these meetings, the group strategized its goals, priorities, and scope of the project. In particular, these meetings brought to light the urgency of securing a private partner early in the process and searching for additional funds to contribute to the pilot shuttle program.

Limited funding, an inability to secure a private partner, and limited-time led the group to decide to re-scope the project. Between May and August 2019, the team members met via conference call to discuss how to adjust the project to a more realistic scale while still achieving its original goal and creating a deliverable that would provide value to Wayne County and, thereby, its residents. The result of this re-scoping process—which involved team members as well as Margaret Wooldridge and our partners at the Wayne County Executive Office—was a decision to create a process document. This process document is intended to outline in detail the steps and necessary information to create the pilot program initially envisioned by the group. Specifically, the document is geared toward outlining and identifying potential challenges in demonstrating demand, identifying a private partner, collecting sufficient data, executing the program, and evaluating success. Ideally, this process document will serve as a starting point for a future Dow Fellows team and the Wayne County Executive's Office to implement a pilot shuttle program as initially imagined by this group of Dow Fellows.

The report is broken down into sections according to the group's identification of the most important and difficult elements of planning and implementing such a program. The sections included in the report are as follows: case studies, evaluating employer-side demand, evaluating employee-side demand, quantitative factors for evaluation, and key recommendations and next steps. Each section has a unique methodology; these methodological processes are described below.

### **1. US Case Studies (Appendix A)**

This section is intended to survey other micro-mobility projects occurring in cities throughout the United States in order to provide a better understanding of logistical processes and challenges, funding mechanisms, scheduling, data collection, and success evaluation of these innovative transit programs. The section broadly summarizes five-city programs from around the country,

including details on service areas, program funding, pricing, and logistics. These programs, though similar in overall goals, vary significantly in their details and thus this section provides a close look at the options available for implementing this type of service.

The Dow Fellows group reached out to eight agencies for a phone interview to gather more details on the programs. Of the eight contacted, two agreed to provide additional information via one-hour phone interviews. Therefore, in addition to a broad comparison of the five programs, this section provides a more in-depth look at two programs: Central Ohio Transit Agency's "COTA Plus" program and Denver Regional Transit District's "FlexRide" program.

## **2. Global Case Studies (Appendix B)**

This section talks about similar challenges faced in countries like India and how employers have come up with innovative solutions to tackle these challenges in emerging economies. This section also talks about business models launched by private players in this space. Lastly, this section talks about how emerging trends such as electric vehicles have reduced the total cost of operations for some of these new business models.

## **3. Costs of Worker Turnover (Appendix C)**

The costs of worker turnover section describes the group's research regarding why attrition can be a costly issue for employers. The group found that depending on the industry and function that an employee is, worker attrition can cost one-half to four times the yearly salary of an employee. Worker attrition can also lead to a lack of morale for the employees that remain and can lead to further employees leaving the company. While a lack of motivation for the work to be performed was cited as the primary reason workers leave, for socio-economically disadvantaged workers, lack of investment in public transit infrastructure correlated with increased worker turnover.

## **4. Quantitative Factors for Evaluation (Appendix D)**

It is difficult to come up with a comprehensive list of data points that are required to effectively evaluate the feasibility of a shuttle program. The group brainstormed what data sets are critical and divided them into information required from employees, employers, transportation providers, and route/logistical data. This section is intended to provide an initial checklist for data collection so that barriers to accessing data may be identified early.

## **5. Mapping existing case studies (RideKC program in Kansas City) with our quantitative factors framework (Appendix E)**

We wanted to evaluate the comprehensiveness of our quantitative factors framework and hence we specifically looked at Kansas City RideKC case study and realized that the framework definitely captures some of the critical factors which go into building a micro-transit program. We studied elements of the RideKC program and evaluated whether it would be necessary to examine the kinds of data we said were necessary to build those elements.

## **6. Evaluating Employee-Side Demand (Appendix F)**

It is important to survey the population of people that are using the transportation system. Current transportation modes are critical to assess as the control group and assess how transportation can best be improved for the desired population. This includes mode, cost, and time of current transportation. Secondly, collecting data regarding the proposed transportation options is essential in understanding the demand for demographics. Although this Dow Fellows group did not have the time or capacity to conduct community surveys to assess the employee-side demand, it has created a draft survey including the types of questions that would be important to ask. This survey is intended to be conducted in local community gathering areas in Detroit, or (depending on the available data) administered to targeted employees of a specific employer.

### **7. Evaluating Employer-Side Demand (Appendix G)**

Our team reached out to many different stakeholders in the Southeast Michigan economy to analyze the demand for transit from employers. Through our research, we first confirmed that the region is suffering from a talent gap. Employers have jobs that they cannot fill. Our next step was analyzing the role of transportation (or lack thereof) played in creating the skills gap. Along with education, transportation was one of the most consistently reported causes of interviewees. Transportation is widely considered a glaring need in the Southeast Michigan region, keeping people away from not only jobs but educational opportunities as well.

### **8. Evaluating Success (Appendix H)**

As the current Dow Fellows group did not have an opportunity to operate the transportation program, the successful evaluation of the project will be left for the following group. The current group prepared success evaluation criteria, which are expected to be measured in two ways depending on metrics type. While qualitative metrics and financial require surveys or HR data from stakeholders, operational metrics can be measured through observations on the operations. It is important to collect data using the same metrics before the operations to compare the effects of the transportation program to the previous status.

### **9. Ford College Community Challenge Grant Proposal (Appendix I)**

The group put together an application for the Ford College Community Challenge. This challenge sought innovative projects geared toward “helping the community become a more sustainable place to work and live,” and offered \$25,000 to the winning projects. Unfortunately, this project group did not win the funds, but the application process assisted the team in taking a hard look at the processes and funds necessary to initiate a pilot program.



# RESULTS AND RECOMMENDATIONS

The process of the project has produced several key takeaways and accompanying recommendations for the project process and future implementation. These takeaways and recommendations are organized into two groups: takeaways related to research and data gathering, intended to inform a future Dow Fellows group or the RTA and Wayne County in proceeding with this project; and takeaways related to program implementation and design. Both sets of recommendations are intended to highlight challenges and opportunities for key elements of success.

## Related to Process and Planning

### 1) Identify key data needs

Identifying a list of key data needs should be the first step in planning this type of service. This report provides a starting point for doing so, which should be used and adapted as service planning begins. Identifying data early will allow for clear determination of barriers that the program may face so that these barriers can be planned for and overcome.

### 2) Evaluate employer- and employee-side demand

Documenting demand on both the employer and employee side will demonstrate the need for this type of mobility option, making it more politically feasible. Demonstrating employee demand may also assist in getting an employer to sign on to the project, especially if this demand can be demonstrated alongside a cost-benefit analysis. Again, data is extremely important in documenting demand.

### 3) Coordinate with other transit agencies

Communication and coordination with transit agencies with experience implementing similar micro-mobility solutions are essential in identifying and addressing potential challenges and leveraging their existing expertise. Innovative micro-mobility programs are popping up in most large cities and regions across the U.S.-- these agencies are an important resource to tap in the planning of the program.

## Related to Program Implementation

### 1) Incorporate local input & provide continuing opportunities for feedback

Zones of operation should be based both on quantitative data and qualitative input from communities of potential riders as well as major businesses and employment centers. This will ensure that zones are placed in areas with demonstrated demand, increasing the efficiency of the service. Community outreach may also provide an opportunity to access information that employers are unwilling to disclose, such as tardiness and worker turnover related to inadequate or unreliable transit. A number of programs have adjusted fares, hours and days of operation, and service zones based on public feedback. Provide opportunities for continuing customer feedback beyond initial planning phases in order to adjust to community needs and optimize operations.

## **2) Program funding**

Price tags on these programs are not small and would be particularly difficult to cover for small or cash-strapped transit agencies. Piloting mobility services in small, targeted areas and expanding as money becomes available or service is demonstrated to be valuable will ensure efficient financing. Partnering with technology providers such as Via and Transloc should be considered in budgeting processes. Jurisdictions should seek funding in the form of state and federal grants in order to lessen the cost burden.

## **3) Encourage ridership**

Some services may face difficulties recruiting initial riders due to unfamiliarity and reluctance to deviate from familiar transit options. Particularly in short-term pilot programs, it is important to encourage ridership to demonstrate the benefits of these programs. Providers should consider options such as launching the program free of fare, offering promo codes, offering free transfers from other transit services, and holding demonstration marketing events in order to encourage ridership. Options to book trips should be available via a smartphone app as well as over the phone in order to increase the accessibility of the service to all potential user groups.

## **4) Establish clear communication channels**

The novelty of these services requires that marketing, instructions, procedures, and operation times and days are clearly and persistently communicated to the community. Establishing consistent communication and making resources widely and easily accessible will reduce the chance of confusion or uncertainty that will discourage ridership. In the long-term, services may need to increase fares if demand expands, which is unique to this form of transit (versus traditional public transit modes, in which prices decrease as ridership increases). Clear and open communication of price increases and the reasoning behind them is essential to maintain ridership and avoid confusion and outrage.

## **5) Evaluate success**

These types of micro-mobility services should not be expected to turn high ridership numbers and should not be evaluated purely on ridership data and revenue generated. Certainly, a ridership threshold must be crossed in order to justify the program, but other factors such as an increase in public transit use, increased access to employment, and higher levels of satisfaction with the suite of transit options are valid criteria on which to evaluate service.

## ANTICIPATED IMPACTS

For years now, Southeast Michigan has awaited a regional mass transit plan. A millage to fund such a plan through the Regional Transit Authority narrowly failed in 2016. Our team spoke with the new General Manager of the RTA, Matthew Webb, frequently throughout this project. Webb strongly advocates for improvements to the system. “In a region where many job centers are not accessible by transit, there is a disconnect between talent and jobs. As a result, many people look outside of the region and the state for employment opportunities or settle for lower-paying jobs that they can access. Transit can help retain talent and acts as a catalyst for growth and development across our entire Southeast Michigan region.”

In recent years, Detroit has emphasized public-private partnerships to solve the wicked problems that have haunted the region. Perhaps no company has become more synonymous with this idea than Bedrock Detroit, the largest real estate developer in the city. Our team has advocated for the same philosophy of public-private partnerships to be applied to transportation. Bedrock shares this idea. We spoke to Kevin Bopp, VP of Parking and Mobility for Bedrock Detroit. Bedrock recently announced a partnership between the Bedrock family of companies, the City of Detroit, and Scoop Technologies, a carpooling app that “provides inexpensive and reliable transportation to and from the workplace”. While this report was motivated by the lack of transit options locking many people out from opportunity, Bedrock’s mobility partnership is motivated primarily by another concern — the cost of parking. “We’re leaning in on these innovative technological solutions because you cannot meet the demand for people moving to an urban environment if you have to deliver parking for everyone. There is no city in the world that does this because it is not possible. These are contradictions.”

While Bedrock is emphasizing new mobility options, it remains to be seen whether or not this will be applicable to fight the skills gap plaguing Southeast Michigan companies. Scoop Technologies is only available in the Greater Downtown area, so it is not currently an option for individuals seeking training in the skilled trades. When asked about the possibility of carpooling to aid recruitment to the trade unions, Paul Baker replied, “People do carpool... Journeyman will pick up apprentices, but that’s not something you can rely on. (Providing transportation) is a change in philosophy. You have to show up to get the job. You have to be reliable to get to work on time every day.”

Whether this new technology can be applied to those who are transit-dependent will be the test of whether the P3T and mobility innovation are the solutions. It will be up to industry leaders to be conscious of equity. Matthew Webb remains optimistic about the future. “As more mobility technologies become available through the private marketplace, they can fill gaps in our region’s public transit network, especially if public transit and private providers align their services properly. Ensuring that the public and private sectors coordinate services is essential to filling current mobility gaps and improving the transportation options for seniors, and persons with disabilities. These gaps exist for making first and last-mile connections, accessing jobs and services that require crossing geographic boundaries, and simply meeting daily mobility needs such as getting to the local grocery store.”

# APPENDICES

## [ APPENDIX A ] US CASE STUDIES AND INTERVIEWS

### Case Study 1: COTA Plus (Columbus, OH)

The COTA Plus program, which launched in July 2019, is an on-demand, app-based rideshare service that books multiple passengers traveling in the same direction into a shared vehicle. This one-year pilot program is the result of a partnership between the Central Ohio Transit Agency (COTA) and Grove City. Customers can book trips through the COTA Plus App (with technology provided by Via) or by phone, and a vehicle will arrive in 15 minutes or less. The trips must be within the designated COTA Plus operating zones, which connects fixed-route riders to the Southpark Industrial Park, the Mid-Ohio Foodbank, and the new Mount Carmel Grove City Hospital. The service operates Monday through Friday from 5:30 a.m. to 8:00 p.m. The fare for COTA Plus point-to-point services is \$3 (flat fee), which must be paid through the app (no cash is accepted onboard). If customers are connecting to a fixed-route service (COTA Lines 3 and 61), no additional payment is required. Discounts are available to students, children under 12 years of age, and riders with C-Pass (provided to eligible employees who work within the Capital Crossroads Special Improvement District).

The Dow Fellows spoke with Elliott Doza, a Project Manager for Service Planning at COTA, in order to gain more insight into the COTA Plus program. Below is a condensed summary of the information provided by Mr. Doza. The rough transcript from the interview can be provided upon request.

#### **Program Impetus.**

The COTA Plus program largely emerged from the opening of a 1,100-bed hospital in Grove City approximately two miles away from the nearest bus stop. Transit access was a major challenge for the hospital, especially when considering transportation options for its low-income program clients. The main goal of the COTA Plus program is to provide job access, not only for the hospital but for surrounding job centers as well, as there are approximately 12,000 jobs within the operating zone. The primary messaging around COTA Plus is extending the reach of the established fixed-route services and providing point-to-point services for populations such as the elderly and high school students. This demand was hard to quantify before the launch, as these populations of potential service users could not be entirely characterized.

#### **Service Planning**

COTA, together with IBI Group, produced a *First and Last Mile Strategies Study*, which set the stage for conversations with regional partners (unions, municipalities), and a roundtable of local stakeholders (businesses, a major food bank, etc.) to identify needs. Other considerations were evaluated, such as demographic data, student travel patterns, and drive times from various locations around Grove City (using ArcGis Pro) in order to identify the community characteristics

and needs. These considerations were also used to inform optimal zone size, which was guided by a maximum ETA of 15 minutes anywhere within the zone.

The service operates in a fashion similar to Uber Pool, but the vehicles have COTA-employed part-time drivers (a result of union negotiations). The program has been entirely constructed, designed, launched, and operated in-house. Via provides the technology for the service, but otherwise no services are contracted outside of COTA. Rides are conducted in COTA Plus-branded Ford Transit vehicles.

COTA Plus's fare was determined through conversations with other agencies and providers, whose services tended to range between \$2 and \$6. The agency also determined that the monthly cost should be between the cost of the rush hour monthly cost and the local service monthly cost. The cost of the service took into account that the service range is bound by the zone, meaning it cannot be used to travel as far as with fixed-route services. This restraint is reflected in the low cost. Farebox recovery was not considered as a factor in determining the service fare since it is anticipated to have low ridership numbers.

### **Program Budget & Funding**

The pilot is funded half by the Grove City Council (\$180,000), and grants from the Mid-Ohio Regional Planning Commission helped COTA with its half. This initial agreement between Grove City and COTA is intended to be a test use-case for this type of service in a suburban area with a high number of wage jobs connected to the fixed-route network and is a first step in working towards more partnerships with COTA.

The \$360,000 price tag reflects only select operating expenditures that have been estimated for the zone. It does not capture other costs such as capital and marketing expenditures. The total cost of the program is closer to \$500,000 for one year. A \$940,000 surface transportation block grant is available for use over the next three years, and this funding can be distributed amongst multiple pilot zones. However, this funding can only be used for capital expenditures (such as purchasing vehicles); it may also be put toward other capital expenses to free up local money for use for the COTA Plus program.

### **Program Evaluation**

The program will be evaluated with the key fact in mind that this type of service will never demonstrate high ridership that is comparable to other public transit services. However, COTA has established Key Performance Indicators (KPIs) and design criteria on which to evaluate the program. Performance Indicators and goals include:

- Daily rides and rides per revenue hour
- Increase ridership on fixed-route services
- Cost-per-trip
- Average wait time of 7.5 minutes

- An in-app rating goal of 5 stars
- Number of rides successfully completed (some rides must be denied if no vehicles are available or if wait time exceeds 15 minutes)
- Conversion rate (those who download the app and actually use the service at least once)

Ideally, the service will also be evaluated based on its impact on economic development. One potential method to evaluate this is to launch a survey asking riders, businesses in the zone, and the Grove City hospital employees and clients questions such as whether they have experienced a reduction in tardiness, reduction in job overturn due to transportation-related issues, or a reduction in missed appointments. This method is seen as a way to incorporate more qualitative information with the aforementioned quantitative performance indicators, as well as a way to drill down on effects on specific sites (like the hospital). Surveying riders may also provide access to information and data that employers are unwilling to provide, such as employees experiencing difficulties getting to work.

### **Major Challenges & Successes**

The program, which had been in operation for only 3 months at the time of the interview, is experiencing low ridership (around 30 rides per day), but continues to grow. One challenge has been determining the best strategy for marketing the service. There has been a general awareness campaign and some targeted visits to businesses and schools to demo the app, but there has been a lingering issue with conversion (from app download to use of service). The in-person demonstrations have been determined to be one of the best ways to deal with conversion issues, which generally stem from lack of familiarity with this type of service.

On the operations side, there have been some challenges in hiring enough operators to drive the vehicles. There has been a high level of turnover among drivers; this is likely because the work is only part-time and thus can likely not provide sustainable revenue. There has also been a knowledge gap in understanding the capabilities of the Via app and the provider more generally. COTA has placed many requests with the tech provider to adapt the functionality of the app. Because these providers are new to this type of service and the broad range of needs, it has been a “muddling through” process as the agency and Via confront issues.

A final challenge has been the fact that COTA, like many agencies, has data but lack the capacity or expertise to effectively analyze the data.

## **Case Study 2: FlexRide (Denver, CO)**

FlexRide is unique in that it offers a number of different service configurations. A customer may book a one-time trip for the day, and FlexRide will pick up and drop off the customer anywhere within the defined service area; in this instance, routing and timing of the service are based on the trips booked on any given day. Customers may also meet a FlexRide vehicle at an RTD station or Park-n-Ride at a scheduled time; customers advise operators of their destinations upon boarding, and no advanced reservation is required. Some FlexRides have predetermined fixed routes, which customers may take from FlexRide bus stops. The availability of the different elements varies in different service areas, depending upon the demonstrated need in each zone. The service can be booked through the app or via phone; no reservations are required. Trips can be scheduled anywhere from 10 minutes to 30 days in advance, and the service schedules on a first-come, first-served basis. FlexRide also offers a subscription service, allowing customers to set recurring trips for up to 180 days (with an option to renew 30 days before expiration). Trips can be scheduled online or via a mobile app (available through the RTD website). FlexRide charges a \$3 flat fee with free transfer to or from fixed-route transit service. Discounts are available for seniors, individuals with disabilities, youth, Medicare recipients, and active duty members ride for free. If trip requires travel outside of the local zone, the fare will be upgraded. Daily and hourly service varies between service areas, but most provide FlexRide service Monday through Friday between 5:30 a.m. and 7:00 p.m. Only a few service areas provide weekend service.

Dow Fellows spoke with Jeff Becker, Senior Manager of Service Development at Denver's Regional Transportation District (RTD) in order to learn more about the FlexRide program. The summary below reflects Mr. Becker's insight. A rough transcript of the interview can be provided upon request.

### **Program Impetus**

The FlexRide program is an opportunity to provide a more cost-effective service than traditional fixed-route buses in low-density areas. The service is derived from a "family of services" idea, which means FlexRide is just one option among others, intended to integrate the transit network and fill in the gaps of other public transit services. FlexRide is also intended to provide jurisdictional equity; that is, it works in markets where fixed-route service doesn't, and therefore provides expanded options for low-density areas. The primary markets for the FlexRide service are first/last mile commutes and inner-community circulation. This service began as a traditional dial-a-ride program, which has been expanded to provide a greater level of flexible, on-demand service. An article in the Journal of Research in Transportation Business and Management, "Business strategies and technology for access by transit in lower-density environments" (Teal and Becker, 2011), examines the program impetus and design at length.

### **Service Planning**

In determining operation zones, each area was looked at in the context of an existing bus route. Zones were evaluated based on their individual characteristics, typically seeking to locate at the apex of work commutes. RTD researched travel patterns, trip generators, and travel speeds to determine the size of the service areas and estimate service frequency and vehicle requirements.

Each area was looked at as part of the bus route, part of regular service planning. Connections to the station are FLM, suburban. It started in 2000 with one service area (Brighton), added and subtracted through last decades. Part of service planning- most appo service to meet demand.

The \$3.00 flat fare is designed to be consistent with local bus fare. FlexRides are designed such that they are estimated to arrive 5-10 minutes within the scheduled time, and will only wait 1 minute for a passenger to board. Cancellations are requested 2 hours in advance of the scheduled trip so that routes may be reconfigured accordingly.

Public input is incorporated as part of the regular service development process. FlexRide proposes service areas and incorporates feedback from residents, the City, and employers. Part of the regular service development process. FlexRide proposals in service areas- talk to people, city, employers.

### **Program Budget & Funding**

As this service is a long-standing evolution from the established dial-a-ride program, it is allocated funding in RTD's normal budgeting process. Other programs that have emerged in the area have often been funded by grants for pilot programs and/or City or County pilot funds.

### **Program Evaluation**

FlexRide services are evaluated alongside RTD's whole suite of services. RTD conducts yearly performance evaluations of its services, which includes evaluation of:

- Subsidy per boarding
- Boardings per (in-service) hour
- Share of in-service hours per class
- Share of boardings by class

FlexRide services are also evaluated by service zone, as evidenced below (Figure 1).



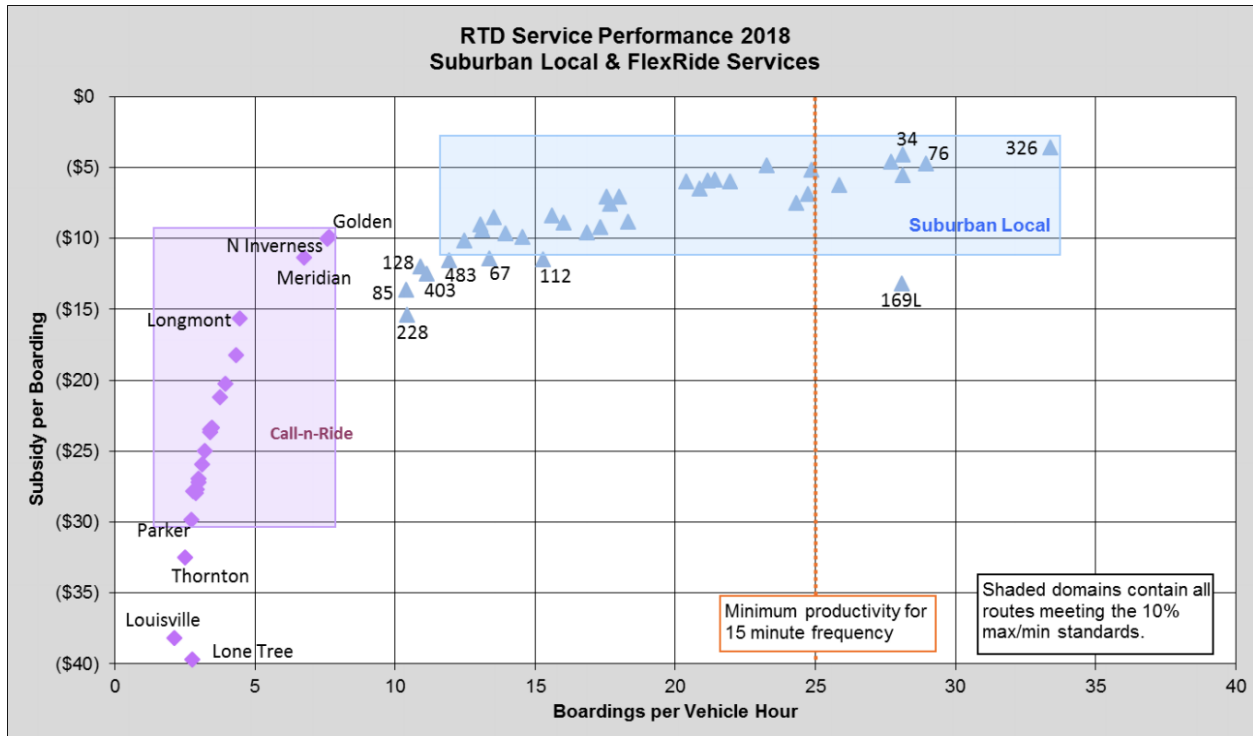


Figure 1. RTD Service Performance: Suburban Local and FlexRide Services<sup>5</sup>

A customer satisfaction survey is distributed and analyzed to evaluate the program from the customer point of view and to provide data on the characteristics of FlexRide users.

### Major Challenges & Successes

Given FlexRide’s scheduling methodology, it is possible that a trip scheduled one day may not be available the next due to the capacity and configuration of trips booked on a given day. This means that a customer may be denied a trip, something that does not typically happen through ridesharing services like Uber or Lyft or through traditional modes of public transit. Though this appears to be a limitation of the service, FlexRide has generally high levels of satisfaction (4.5 out of 5 stars), which is on par with its RTD’s other mobility services.

A number of other services have entered and exited the market in the Denver region: the City of Centennial had a Lyft partnership between August 2016-February 2017, the City of Lone Tree provided a shuttle to employer locations from August 2015-April 2019 and a Link-on-Demand program beginning in August 2017, and the University of Denver’s Chariot service in 2018. These services competed with the FlexRide service to varying extents, depending on service type and area of operation. RTD has made attempts to coordinate with these services and has been successful in a few cases, but often the City acts independently to implement partnerships. Competition can serve as a challenge as well as a benefit in this circumstance;

<sup>5</sup> RTD Service Performance Document (2018), RTD

competition encourages higher levels of service and provides more options for people to choose from.

Although RTD does not collect much revenue from the FlexRide service due to its low demand and free transfer pricing structure, it has encouraged people to ride the rail system in higher numbers because it increases the rail's accessibility.

These types of services tend to be provided on a trial-and-error basis when funding or grants are available. More often than not, they are unable to meet the service standards and are discontinued. This explains the various failed attempts to provide innovative mobility solutions on the Denver region, and why it has been difficult for RTD to maintain coordination with the services.

## **Limitations of case study interviews**

### **Limited interviews**

Interviews with transit agencies and those involved in the planning and implementation of these programs provide essential insight beyond the information that can be gathered online. The group was only able to conduct in-depth interviews with COTA and Denver RTD, limiting the amount of information gathered for the other case studies. Further interviews would yield beneficial information about challenges and planning and implementation logistics. It is expected that agencies may be more receptive to contact from other transit agencies, as interviewees both expressed willingness to coordinate.

### **Lack of public-private partnerships**

None of the case studies and contacts included in this report are public-private partnerships between a transit agency and employer, as is proposed in this project. This limits the direct applicability of the information provided in the case studies. However, they do offer helpful insight related to potential challenges and planning processes, regardless of the specific arrangement.

### **Context specificity**

It is important to note that each of these programs is context specific, meaning they cannot be applied directly to the specifics of the Detroit Metro region. The case studies are intended to provide insight on process, challenges, and logistics generally.

**CASE STUDY COMPARISON CHART**

Service & Location	Service Area	Funding Mechanism	Pricing	Governance & Logistics
<p><b>Utah Transit Authority: UTA on Demand by Via<sup>6 7 8</sup></b></p>	<p>Southern Salt Lake County</p> <p>65 square miles in cities of Bluffdale, Draper, Herriman, Riverton, and South Jordan</p> <p>Includes seven TRAX and FrontRunner stations</p> <p>Region chosen for pilot program due to low ridership on current flex bus system</p>	<p>One-year pilot program funded by fourth quarter Salt Lake County sales tax dollars</p> <p>A one-year \$2.5 million agreement — renewable for two additional years — was awarded to the ridesharing app company Via.</p>	<p>Currently offering promo code to receive first two rides free.</p> <p>All rides will be \$1.00 through Dec. 31, 2019</p> <p>Beginning January 1, 2020, a \$2.50 flat fare will be charged regardless of distance traveled. Discounts will be available for seniors (\$1.25 for one-way trip).</p> <p>Transfers may also be allowed between microtransit and regular buses and trains.</p> <p>Payment is taken through the Via app using a credit or debit card. Riders may also pay using valid UTA tickets or passes and showing</p>	<ul style="list-style-type: none"> <li>● Trips must begin and end within defined service area</li> <li>● Smartphone app is provided by Via and can be used to book trips. Trips may also be booked through a phone service</li> <li>● Smartphone app can be used to request an accessible van</li> <li>● Service will coordinate rides between people heading in the same direction (similar to Uber pool)</li> <li>● Service may not be door-to-door, but rather corner-to-corner, meaning pick-ups and drop-offs will occur in close proximity to requested points</li> <li>● Users transferring from other UTA transit services will see designated pick-up and drop-off locations</li> <li>● Transfers will be allowed to other UTA services. The project will focus initially on trying to connect people to transit stations but will drop them anywhere in the service area. It may eventually replace some lightly used bus routes and expand evening and weekend service</li> <li>● Service is available Monday-Friday, 6:00 a.m.-9:00 p.m.</li> <li>● Via will provide contract drivers and</li> </ul>

<sup>6</sup> UTA (2019), UTA On Demand by Via, <https://www.rideuta.com/Services/UTA-on-Demand-by-Via>

<sup>7</sup> The Salt Lake Tribune (2019), “Imagine a hybrid of Uber and a city bus system. UTA soon will launch ‘microtransit’ experiment.”, <https://www.sltrib.com/news/politics/2019/05/16/imagine-hybrid-uber-city/>

<sup>8</sup> KUTV (2019), “Via launches first service in Salt Lake City with UTA”, <https://kutv.com/news/local/via-launches-first-service-in-salt-lake-city-with-uta>

			them upon boarding.	<p>Mercedes Metris vans, which accommodate a driver and six adults</p> <ul style="list-style-type: none"> <li>• Contracts call for achieving an average wait time of 15 minutes for a ride and allow a maximum wait of 25 minutes</li> <li>• Contracts call for achieving an average walk of 0.10 miles and allow a maximum of 0.25 miles.</li> </ul>
<p><b>City of West Sacramento: West Sacramento to On-Demand</b> No table of authorities entries found.<sup>9 10</sup></p>	<p>City of West Sacramento (anywhere within city boundaries)</p>	<p>One-year pilot program</p> <p>The pilot program costs \$749,000, with the majority of funds coming from state and local transportation funding (Transportation Development Act funds), including a \$149,000 grant from the Sacramento Area Council of Governments.</p>	<p>Regular, one-way fares are \$3.50. A 50% discount is available for seniors and eligible individuals with disabilities. Additional passengers can be added to the trip for an additional \$1.00.</p> <p>Weekly pass is available for \$15, which allows up to four rides per day.</p> <p>City is considering modifying the fare price during the pilot due to customer feedback.</p> <p>Payment is accepted through the Via app by credit or debit</p>	<ul style="list-style-type: none"> <li>• Operated through a partnership with Via and West Sacramento</li> <li>• Trips can be booked through the Via smartphone app or over the phone</li> <li>• Mercedes Benz vehicles are provided by Via</li> <li>• Service operated Monday-Friday from 6:00 a.m.-11:00 p.m. and Saturdays from 9:00 a.m.-11:00 p.m., and on holidays (the service days and times were expanded based on customer feedback)</li> <li>• Average wait time of 10-15 minutes. Riders can expect not to wait more than 30 minutes.</li> <li>• Service may not be door-to-door, but rather corner-to-corner, meaning pick-ups and drop-offs will occur in close proximity to requested points. Riders will not be asked to walk more than 500 feet</li> </ul> <p>City of West Sacramento Performance Report:  <a href="https://blob.cityofwestsacramento.org/c">https://blob.cityofwestsacramento.org/c</a></p>

<sup>9</sup> City of West Sacramento (2019),

<https://www.cityofwestsacramento.org/government/departments/public-works/via-on-demand-rideshare>

<sup>10</sup> The Sacramento Bee (2018), "Mercedes-Benz vans or public buses? How West Sacramento residents are getting to the grocery store",

<https://www.sacbee.com/news/local/transportation/article220439830.html>

			<p>card. Accounts may also be set up for those booking trips over the phone. Cash is not accepted. The Via app offers an opportunity to tip the driver at the end of the trip.</p>	<p><a href="http://ivica/filebank/blobdload.asp?BlobID=16595">ivica/filebank/blobdload.asp?BlobID=16595</a></p>
<p><b>Los Angeles County Metropolitan Authority (Metro)</b><sup>11</sup> <small>12 13</small></p>	<p>Service zones include areas around the North Hollywood, El Monte, and Artesia stations.</p>	<p>Via's portion of the pilot is estimated to cost \$2.5 million. The program is partially funded by a \$1.35 million grant from the Federal Transit Administration (FTA) Mobility on Demand Sandbox Demonstration program.</p>	<p>During this period of the pilot program, all rides are being offered for free.</p> <p>Once the promotion is over, a standard trip will cost \$3.75, but only \$1.75 for riders with a TAP card. LIFE participants– Metro's low-income fare subsidy program– will ride for free.</p> <p>Via accepts by credit, debit or pre-paid cards for unbanked riders.</p>	<ul style="list-style-type: none"> <li>● Service is conducted through a partnership with Via.</li> <li>● Trips can be booked through the Via app or by phone</li> <li>● Via's program focuses on first mile/last mile solutions to transport people to or from three transit stops. Rides must begin or end at Metro line in the zone.</li> <li>● The service will coordinate shared trips going in the same direction to/from the same station</li> <li>● Accessible rides can be requested by those with disabilities</li> <li>● Rides are available Monday-Friday from 6:00 a.m.-8:00 p.m.</li> <li>● This service operates as an on-demand mobility option only; riders cannot schedule specific pick-up times</li> <li>● Vehicle capacities range from 3-6 riders per vehicle</li> <li>● The microtransit pilot is among the 28 projects in Metro's "Twenty-</li> </ul>

<sup>11</sup> Metro, Ride with Via, <https://www.metro.net/projects/mod/>

<sup>12</sup> Smartcitiesdrive (2019), "Via, Los Angeles launch microtransit pilot" <https://www.smartcitiesdrive.com/news/via-los-angeles-launch-microtransit-pilot/547055/>

<sup>13</sup> Via (2019), "Via and LA Metro Launch Pilot Program to Evolve Public Transit in Los Angeles" <https://ridewithvia.com/2019/01/via-and-la-metro-launch-pilot-program-to-evolve-public-transit-in-los-angeles/>

				<b>Eight by '28"</b> transportation plan, which is expected to be completed before the city hosts the 2028 Summer Olympics
<b>Orange County Transportation Authority (OCTA): OC Flex<sup>14</sup></b> <sup>15</sup>	Two areas of Orange County: parts of Huntington Beach and Westminster, and parts of Aliso Viejo, Laguna Niguel, and Mission Viejo. Each zone covers about six square miles	\$1,150,000 allocated for the one-year pilot program.  The service during the pilot program is primarily funded with a grant from the Mobile Source Air Pollution Reduction Review Committee, which supports projects that take cars off the road and reduce air pollution.	Unlimited local rides all day are \$4.50 when paid on the OC Flex Mobile App or \$5 cash onboard.  OCTA is currently offering a first-ride free promotion deal, as well as discounted rides for groups and for referrals.  All day on the day of purchase, OC Flex and OC Bus day passes are interchangeable. Transfers to a train station are free. With a valid Metrolink or Amtrak pass, you can ride to or from a train station within the zone for free on OC Flex.	<ul style="list-style-type: none"> <li>• Service is operated by OCTA through a partnership with Keolis Transit Services, LLC</li> <li>• Structured to provide transit services in areas where there's little demand or need for full fixed-route service. Operates as a shared ride service.</li> <li>• Vehicles transport passengers to predetermined "hubs" or to any destination with a coverage zone.</li> <li>• OC Flex operates 7 days a week: Monday-Thursday: 6 a.m.-9 p.m.; Friday: 6 a.m.-11 p.m.; Saturday: 9 a.m.-11 p.m.; Sunday: 9 a.m.-9 p.m.</li> <li>• The average wait time is between 15 and 30 minutes.</li> <li>• Vehicles are compact, fuel-efficient shuttles that can accommodate 8 people.</li> </ul>
<b>Johnson County, Kansas: Kansas</b>	The service area includes Downtown Overland Park,	\$500,000 paid for by the County; \$375,000 covered by Overland Park	This pilot project costs the same as a bus ride, \$1.50 per ride regardless of	<ul style="list-style-type: none"> <li>• Service operates Monday-Saturday from 6 a.m.-8 p.m.</li> <li>• Riders can request a ride on the mobile app, by phone, or on the</li> </ul>

<sup>14</sup> Octa, <http://www.octa.net/OCFlex/Overview/>

<sup>15</sup> Government Technology (2018), "Orange County, Calif., Looks to Microtransit to Bridge Ridership Gaps" <https://www.govtech.com/fs/transportation/Orange-County-Calif-Looks-to-Microtransit-to-Bridge-Ridership-Gaps.html>

<p><b>City Regional Transit, RideKC Micro Transit</b><sup>16</sup> <sup>17 18</sup></p>	<p>Mission Transit Center and KU Edwards Campus. Destinations include AdventHealth Shawnee Mission, Oak Park Mall and Johnson County Community College.</p>	<p>for one-year pilot.</p>	<p>distance</p> <p>Riders can pay via smartphone app or with exact cash in vehicle.</p> <p>Success of pilot suggests this will become a permanent service, but fares may need to be increased to cover continuing service.</p>	<p>website</p> <ul style="list-style-type: none"> <li>● Software and technology is provided by TransLoc, which is owned by a Ford Motor Company subsidiary</li> <li>● Service connects up to 12 passengers at one time who start out in nearby locations and need a ride to destinations in close proximity.</li> <li>● Limited to three vans per day</li> <li>● This service is a new iteration of the RideKC van-hailing service, called Bridj, that began operating in Kansas City’s downtown area in March 2016 but shut down a year later due to low ridership numbers. The previous service lacked on-demand adaptive technology.</li> <li>● The goal of this new service is to reach 100 to 150 passengers per day.</li> </ul>
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<sup>16</sup> RideKC (2019), <https://ridekc.org/rider-guide/micro-transit>

<sup>17</sup> The Kansas City Star (2019), “What is microtransit? To get around JoCo for little money, it could be a solution”. <https://www.kansascity.com/news/politics-government/article225201750.html>

<sup>18</sup> The Kansas City Star (2019), “Is Johnson County getting greener? Uber-like transit system, bike lanes flourishing”, <https://www.kansascity.com/news/local/article235714552.html>

## [ APPENDIX B ] GLOBAL CASE STUDIES

### **Case study: New Intra City transportation solutions in India**

India has traditionally relied on subway systems and public bus systems for catering to the Intra City mobility needs of people in big metropolitan cities. However, most of these solutions still remain constrained to the core city limits. This results in a huge unsolved transportation need for workers who want to commute from city centers to suburbs for working at a manufacturing plant or at an IT company which generally has offices located in suburbs.

#### ***Corporations provide private transportation for their employees:***

A lot of manufacturing and technology companies in India provide daily transportation services that are dedicated just for their employees. Microsoft has been providing Wi-fi enabled bus services to its employees in Hyderabad<sup>19</sup> since 2012. ITC Limited, one of India's largest CPG company operates daily buses from the city of Pune to their factory in Ranjangaon which is 45 miles outside the city limit.

However, a challenge with this mobility option is low employee flexibility. Most of these buses operate at fixed times depending on the factory shifts and sometimes cannot provide door-to-door service.

#### ***Private startups come to rescue and provide innovative transportation options in India***

A lot of cities in India are seeing the rise of private on-demand intracity transportation startups like ZipGo and Shuttl<sup>20</sup>. These companies operate AC buses on routes that are generally not connected through public transport systems. This unique bus system provides a stress-free daily work commute option to thousands of people in India.

A lot of these startups have raised huge sums of money through VCs. Shuttl, for instance, raised \$20 million from Lightspeed Ventures, Sequoia and Times Internet in December 2015 while ZipGo raised \$5 million from Omidyar Network and Ventureeast. Cityflo, seed-funded by IDG Ventures, operates in Mumbai. However, Ola which is India's biggest competitor to Uber recently exited this Market<sup>21</sup> citing that it wants to focus on other lucrative market opportunities.

#### ***New electric/hybrid public transportation options for core city mobility:***

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<sup>19</sup> BusinessLine (2017), "Microsoft launches Wi-Fi bus service for employees", <https://www.thehindubusinessline.com/info-tech/Microsoft-launches-Wi-Fi-bus-service-for-employees/article20455423.ece>

<sup>20</sup> YourStory(2017), "How corporate transportation is booming in India", <https://yourstory.com/2017/03/corporate-transportation-booming-india>

<sup>21</sup> VCCircle (2018), "Ola to shut down bus unit Shuttle", <https://www.vccircle.com/exclusive-ola-to-shut-down-bus-unit-shuttle>



A lot of state and city governments have recently started purchasing air-conditioned electric buses<sup>22</sup>. These buses provide the same fares as non-air-conditioned buses. BYD, a leading Chinese EV company plans to start its second bus manufacturing plant for India. TATA motors has already delivered 200+ plus electric buses to various state governments<sup>23</sup>. It is expected that these electric buses will have less maintenance cost than traditional gasoline operated buses. Also, operating costs for these buses is relatively low and hence state governments can get quicker ROI (Return-on-investment)<sup>24</sup>.

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<sup>22</sup> Hindustan Times (2019), "Rs 62 lakh earned in 45 days: e-buses in Pune a hit"  
<https://www.hindustantimes.com/pune-news/rs-62-lakh-earned-in-45-days-e-buses-in-pune-a-hit/story-BAhQ842AufZhqW1bVsFzaM.html>

<sup>23</sup> AutoTime.com (2019), "Olectra-BYD to set up second electric bus plant in North India"  
<https://auto.economictimes.indiatimes.com/news/commercial-vehicle/mhcv/olectra-byd-to-set-up-second-electric-bus-plant-in-north-india/69887180>

<sup>24</sup> Silvio Marcacci, Forbes (2019), "Electric Buses Can Save Local U.S. Governments Billions. China's Showing Us How It's Done."  
<https://www.forbes.com/sites/energyinnovation/2018/05/21/electric-buses-can-save-americas-local-governments-billions-chinas-showing-us-how-its-done/#b7856c>

## [ APPENDIX C ] COSTS OF WORKER TURNOVER

The group continued on the financial benefits of potential private sponsors (employers) both to evaluate their needs and promote the participation of sponsors. For employers in Detroit, the un Worker turnover can be costly to businesses. The cost of recruiting, hiring and training a new employee can be double the yearly salary of that employee. Other estimates of the cost of turnover can range from half to four times the yearly salary of an employee, depending on the function and industry. Retaining an employee longer can have significant benefits for an organization. For instance, one study posits that retaining a salesperson for three years instead of two years can result in \$1.3 million dollars of value to a company over a three year period<sup>25</sup>. Furthermore, when an employee leaves the organization, it often has a ripple effect. Additional employees leave as well, so an employer may have to replace three to five employees instead of just one<sup>26</sup>, resulting in increased costs. Given that estimates can vary widely, one formula for summarizing the cost of employee turnover is:

$$\frac{(\text{Hiring} + \text{Onboarding} + \text{Development} + \text{Unfilled Time}) \times (\text{Number Employees} \times \text{Annual Turnover Percentage})}{1} = \text{Annual Cost of Turnover}$$

Additional calculators for assessing the cost of employee turnover also exist on Adecco and Bonusly<sup>27 28</sup>.

The top reason why employees leave their employees is a lack of engagement, and not feeling fulfilled by their work<sup>17</sup>. It is not sufficient to simply provide competitive wages, as employees can make those wages at other companies<sup>19</sup>. To ensure that employees feel engaged, employers should survey them continually to assess their satisfaction<sup>17</sup>. Companies also have to provide their employees with growth opportunities, so that employees have the opportunity to progress in their careers<sup>19</sup>. In addition, the mission of the company is critical, and companies need to educate employees on how the work they produce contributes to the mission of the

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<sup>25</sup> Jack Altman, Huffington Post, 2017, "How Much Does Employee Turnover Really Cost?" [https://www.huffpost.com/entry/how-much-does-employee-turnover-really-cost\\_b\\_587fbaf9e4b0474ad4874fb7?quccounter=1&guce\\_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce\\_referrer\\_sig=AQAAAKvtJlqZs4cRLaarlbtbErzeLQ6U\\_pHivEcRAYzVqZv3B40rdlWJkJmppDacw8kJfH\\_xQCjtIFm2mV-L1zUIaY113ltRMopBfR9hJWQMRYG12XUzKbTelee5BOdsgVhMiA3GsZ08r1qRBjlvPuKRael1fn\\_YN5HCVz46Dt328go3](https://www.huffpost.com/entry/how-much-does-employee-turnover-really-cost_b_587fbaf9e4b0474ad4874fb7?quccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAKvtJlqZs4cRLaarlbtbErzeLQ6U_pHivEcRAYzVqZv3B40rdlWJkJmppDacw8kJfH_xQCjtIFm2mV-L1zUIaY113ltRMopBfR9hJWQMRYG12XUzKbTelee5BOdsgVhMiA3GsZ08r1qRBjlvPuKRael1fn_YN5HCVz46Dt328go3)

<sup>26</sup> Alina Tugend, The New York Times, 2015, "One Downside of an Up Economy: Employee Turnover" <https://www.nytimes.com/2015/11/05/business/dealbook/one-downside-of-an-up-economy-employee-turnover.html>

<sup>27</sup> Adecco, The cost of turnover calculator <https://www.adeccousa.com/employers/resources/cost-of-turnover-calculator/>

<sup>28</sup> Bonusly, Cost of Employee Turnover Calculator <https://bonus.ly/cost-of-employee-turnover-calculator>

company, as employees describe having an impact is an important consideration to them<sup>19</sup>. A culture of caring is also very important, as employees often enjoy work environments where they feel that their co-workers genuinely care for their best interests. Employers must also ensure that employees do not feel burned out by the tasks required of them through excessive required overtime hours<sup>29</sup>.

The reason why it costs so much to hire a replacement is because of the costs of recruiting, interviewing, and training new candidates, as well as the lost work that is not conducted during the time the vacancy is left unfilled<sup>21</sup>. Work that is performed by other employees in the team during the interim can also add to costs, through a loss of productivity in certain areas as well as potential overtime expenses for current employees. In addition, new hires are not as productive as employees who have the experience, and time needs to be spent on-boarding new hires. For instance, it can take 2-3 months to replace an employee, and an additional 1-2 months for the employee to attain a regular level of productivity<sup>21</sup>.

Public transit systems also have an influence on worker turnover, particularly for the socio-economically disadvantaged residents in urban areas. A recent study found that increased expenditures on bus transit systems in rust belt states led to a decrease in worker turnover. The study found that for manufacturing and retail employees, the costs of employee turnover can be \$5.3 to 6.1M in manufacturing to \$1.7 to 1.9M in retail on a yearly basis<sup>21</sup>.

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<sup>29</sup> John Hall, Forbes, 2019, "The Cost Of Turnover Can Kill Your Business And Make Things Less Fun" <https://www.forbes.com/sites/johnhall/2019/05/09/the-cost-of-turnover-can-kill-your-business-and-make-things-less-fun/#24c49a1d7943>

## **[ APPENDIX D ] EVALUATION OF QUANTITATIVE FACTORS**

There are four data categories that we examined that can be collected via interviews with the following: employers, employees, transportation providers, and routes/logistics.

### **Employers**

For data that we can get from employers, understanding attrition rates and the cause of attrition rates is important because the reason an employer would want to provide a shuttle would be to have a lower attrition rate, so it is necessary to evaluate whether the attrition rate is high, to begin with. In addition, it is important to understand the number of employees who work in a specific shift, because it would help us plan what the optimal times would be to run the shuttle. We also need to understand whether a company has employees who are making low wages, which we can do by conducting research on websites such as Glassdoor, as well as interviewing the employers if they are willing to divulge this information. Finally, to understand what the sources of funding would be for this proposed shuttle, it is important to ask the employer whether they would be willing to subsidize the shuttle.

### **Employees**

With respect to data that one should collect from interviews with employees, data such as time to travel, employee address, mode of transportation, cost of transportation, willingness to pay for transportation, and willingness to adopt a shared mode of transportation would be helpful for it. Employees' addresses would be helpful, so as to understand the best transit hub to locate the shuttle in. Employees' current time to travel would be helpful because we could benchmark what their current time to travel is compared to if shuttle transportation would be available. The current mode of transportation would be good to evaluate because it could help us determine whether the employees even need alternate modes of transportation. The cost of transportation is important to ascertain because it could help us determine the value this shuttle could have for employees as a function of cost savings. It would also be useful to evaluate whether employees are willing to adopt a shared mode of transportation, and if so, whether they would be willing to pay for it or for some form of it. If employees do not want a shared mode of transportation, then it would not make sense to have shuttle transportation in the first place.

### **Transportation Providers**

For transportation providers, quantitative data to look at would be the cost of running a shuttle, the available size of shuttles, the feasibility of stopping at designated transit hubs, cost of an Uber/Lyft between transit hub and employer location, and cost of a commercial taxi between transit hub and employer location. To find the cost of running a shuttle and the available size of shuttles, one could just call shuttle companies for quotes. This would be useful information because it would give estimates for the cost of running this shuttle and the capacity for different shuttles depending on demand. To understand the feasibility of stopping at designated transit hubs, one could check with city government officials, and obtain the requisite permissions.

Understanding the cost of an Uber/Lyft or a cab between the transit hub and the employer location is helpful because these could be potential alternatives to running the shuttle. To get Uber/Lyft costs, once a transit hub has been identified, one could use the calculators on these ride-share platform websites to calculate how much it would cost to get from the transit hub to the employer location. For cab costs, one could call commercial taxi operators to get costs once a transit hub and a partner employer has been identified.

**Routes/Logistics**

The most convenient transit hub by geographic location can be found by administering a survey to get this information from employees, based on the ultimate employer that is selected and where the employees live. To understand the availability of public transportation at a selected transit hub, one could check with city government employers.

<b>Data Category</b>	<b>Type of Data Required</b>	<b>How to Acquire Data</b>	<b>Relevant Questions</b>
Employer-related data	Attrition rate	Interview with employer	What is your employee attrition rate (in the past 6 months, 1 year, etc.)? Are you willing to share that information?
	Cause of attrition	Interview with employer	Have you conducted exit interviews with employees leaving the company to assess causes of attrition rate? Would you be willing to share that information?
	Number of employees that work a particular shift	Interview with employer	How many shifts are there on a given day? How many employees work during each shift? Have you noticed greater attrition related to any particular shift?
	Salary of employees by position	Interview with employer; Glassdoor or similar	What is the average salary of your employees?

	Willingness to subsidize transportation	Interview with employer	Are you willing to subsidize your employees' transportation? Under what circumstances would you be willing to subsidize employee transportation? If you would be willing, how much would you be willing to subsidize, in dollar amount?
Employee-related data	Commute to work time	Employee survey	On average, how long does it take you to travel to work from your home? How long does it take you to travel to your home after work? Do you travel during peak hours?
	Employee address	Employee survey	What is your address?
	Mode of transportation to commute to work	Employee survey	How do you get to work?
	Cost of commute to work	Employee survey; research and calculation	On average, what is your weekly cost to get to work?
	Willingness to pay for transportation to work	Employee survey	Would you be willing to pay for employer-provided shuttle to work? How much would you be willing to pay for this type of service?
	Conjoint analysis with factors related to time flexibility, comfort, cost, and safety	Employee survey	How much weight do you place on flexibility? Comfort? Cost? Safety?
	Willingness to adopt shared mode of transportation to work	Employee survey	Would you be willing to share a ride to work? How useful would a shuttle to work be for you?
Transportation provider-	Cost to operate shuttle	Shuttle companies,	Cost projections related to capital and operating costs

related data		transit agency	(dependent upon factors such as frequency of service, days of operation, number of employees using the shuttle, fare of shuttle (if any), payment for drivers)
	Vehicle options and size	Shuttle companies, transit agency	What types of shuttles are available? What are the capacities of the different shuttles?
	Feasibility of stopping at designated transit hubs	Local government regulations	Research regulatory barriers related to pick-up/drop-off locations
	Cost of Uber or Lyft (or similar service) between transit hub and employer location and average cost from employees' homes to employer location	Research via rideshare apps	Independent research
	Cost of commercial tax between transit hub and employer location and average cost from employees' homes to employer location	Research via traditional taxi provider	Independent research
Route and Logistics-related data	Most logical and convenient transit hub by geographic location	Independent research using GIS, dependent upon employer and employee locations	
	Availability of public transit at designated transit hub	Interview with transit agency	

## [ APPENDIX E ] EVALUATING RIDEKC MICROTRANSIT PROGRAM IN KANSAS CITY

To determine how effective our quantitative factors evaluation is, we evaluated the RideKC Microtransit program in Kansas City. Of the case studies that our group completed, Kansas City was the most similar to Detroit. Our methodology for determining this was to use the NY Times' "What is your city's twin?" calculator<sup>30</sup>, which calculates how similar two cities are based on their job mix. Given that the problem that we are trying to solve is to give better transportation options to workers, job mix is a useful indicator to determine the most similar city to Detroit. Kansas City, MI was determined to be the 7th most similar city to Detroit based on this methodology, and the most similar city from the list of cities whose transit programs our group studied:

Furthermore, the RideKC Microtransit program is similar to the transportation shuttle that we initially envisioned implementing within the city of Detroit, and would serve as an effective case study. Because the purpose of the RideKC Microtransit program was to supplement existing modes of public transportation, as opposed to connecting workers with employers, not all of the types of data that we thought were required were applicable to the program, such as attrition rate, cause of attrition, number of employees that work a particular shift, salary of employees by position, commute to work time, employee address, and the cost of transportation between an employee's home and work. We attempted to reach out to the RideKC Microtransit program to interview the program, but never heard a response. As a result, our evaluation of the RideKC Microtransit program was to look at what elements of the program currently exist, and to hypothesize what kinds of data were needed in order to reach those elements.

<b>Data Category</b>	<b>Type of Data Required</b>	<b>Evaluation of RideKC Microtransit Program</b>
Employer-related data	Attrition rate	N/A
	Cause of attrition	N/A
	Number of employees that work a particular shift	N/A
	Salary of employees by position	N/A
	Willingness to subsidize transportation	This data would be helpful to the RideKC MicroTransit program, as they have limited funding, and are interested in building private sector partnerships <sup>31</sup> .

<sup>30</sup> The New York Times, 2018, "What is your city's twin?"

<https://www.nytimes.com/interactive/2018/04/03/upshot/what-is-your-citys-twin.html>

<sup>31</sup> RideKC, 2018, RideKC Advisory Committee Innovation in Transit

[https://ridekc.org/assets/uploads/documents/June11\\_Presentation.pdf](https://ridekc.org/assets/uploads/documents/June11_Presentation.pdf)



Employee-related data	Commute to work time	N/A
	Employee address	N/A
	Mode of transportation to commute to work	This data would be helpful to the RideKC Microtransit program, as the program seeks to supplement existing public transit systems in Kansas City. Understanding the mode of transportation that employees currently use would help the RideKC program understand whether this program would be helpful to policymakers.
	Cost of commute to work	Understanding the cost of commute to work would enable RideKC to understand what price-point would be cost-competitive with consumers, which would help RideKC develop its own prices. The RideKC program costs \$1.50, which is the same as bus prices. There is a freedom on-demand program as well, that costs \$5 for the first five miles, and \$2 for each mile after that, which picks passengers up directly from their home and takes them to their destination. Understanding the cost of current commutes to work would help RideKC design programs that meet the needs of passengers, and expand the program <sup>32</sup> .
	Willingness to pay for transportation to work	This would be important for RideKC to understand because it would allow RideKC to determine the demand for their vehicles.
	Conjoint analysis with factors related to time flexibility, comfort, cost, and safety	N/A
	Willingness to adopt a shared mode of transportation to work	Given that the shuttles that RideKC uses fit 12 passengers at once, understanding whether passengers would be willing to share transportation with others is critical.

<sup>32</sup> Lynn Horsey, The Kansas City Star, “What is microtransit? To get around JoCo for little money, it could be a solution” <https://www.kansascity.com/news/politics-government/article225201750.html>

Transportation provider-related data	Cost to operate shuttle	For this program, RideKC needed to understand the cost to operate each shuttle. RideKC spent \$250,000 over 6 months to operate 3 12-passenger vans <sup>32</sup>
	Vehicle options and size	RideKC needed to understand this, and decided to get a 12-passenger van. However, they also have vanpooling options with 7 & 8 passengers.
	Feasibility of stopping at designated transit hubs	This was necessary for RideKC to evaluate, as the service area included: Downtown Overland Park, Mission Transit Center, and KU Edwards Campus. Destinations included AdventHealth Shawnee Mission, Oak Park Mall, and Johnson County Community College.
	Cost of Uber or Lyft (or similar service) between transit hub and employer location and average cost from employees' homes to employer location	N/A
	Cost of commercial taxi between transit hub and employer location and average cost from employees' homes to employer location	N/A
Route and Logistics-related data	Most logical and convenient transit hub by geographic location	This was necessary for RideKC to evaluate, as the service area included: Downtown Overland Park, Mission Transit Center, and KU Edwards Campus. Destinations included AdventHealth Shawnee Mission, Oak Park Mall, and Johnson County Community College.
	Availability of public transit at designated transit hub	This was necessary for RideKC to evaluate, as one of the service areas is Mission Transit Center, where public transit is available.

## [ APPENDIX F ] PROPOSED EMPLOYEE SURVEY QUESTIONS

### Personal Transportation

What is the main way you usually get to and from work?

- Fixed route public transportation
- Public transit subsidized taxi service
- Community-based transit services (social or human service agency or volunteer services from a local organization. Ei: religious group)
- Ride with others
- Rideshare (ex: uber, lyft)
- Taxi or hired driver
- Personal vehicle
- Commuter rail
- Bicycle
- Walk
- Other \_\_\_\_

In the past 12 months, how often has transportation availability to get to work been an issue for you?

- Never
- Rarely
- Sometimes
- Usually
- Always

### Public Transportation

Do you feel like you have the same access as others in your community?

- Yes
- No
- Explain: \_\_\_\_

In the past 12 months, have you used public transportation?

- Yes
- No

Is there anything preventing you from using public transportation?

- Yes
- No
- Explain: \_\_\_\_

## **On-Demand Transit**

Are public on-demand transit options available?

- Yes
- No
- I don't know

In the past 12 months, how often has the availability of on-demand public transportation been a problem for you?

- Never
- Rarely
- Sometimes
- Usually
- always

## **Demographic Information**

What is your gender?

- Male
- Female
- Other
- Do not wish to say

What is your age? \_\_\_\_

What is your race?

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- Other\_\_\_\_
- Do not wish to say

What is the highest level of education you have completed?

- Less than high school
- High School or GED
- Some college or Associates' degree
- Bachelor's degree
- Graduate or professional degree
- Other\_\_\_\_

What is your employment status?

- Unemployed/Not looking for work

- Unemployed/Looking for work
- Part time employed
- Full time employed
- Self Employed
- Student
- Homemaker
- Retired

What city do you live in? \_\_\_\_\_

What is your zip code? \_\_\_\_\_

What city do you work in? \_\_\_\_\_

What is the zip code of you work? \_\_\_\_\_

What is the average amount of time of commute from home to work? \_\_\_\_\_

## [ APPENDIX G ] EMPLOYER-SIDE EVALUATION

The City of Detroit has the lowest labor force participation rate among large cities in the United States. This statistic measures the amount of people who are either employed or looking for work. Many people have been so dismayed by their access to the job market that they have given up looking for work. At the same time, many companies in Michigan are complaining about the talent gap. Employers can't fill jobs because of the lack of a sufficiently skilled workforce. Our team investigated whether the lack of mobility options in Southeast Michigan influenced the shortage of workers in the region. In order to do so, we conducted a series of interviews with stakeholders in the region's economy.

Our team hypothesized that the lack of public transit in high employment areas contributed to the skills gap. To test this hypothesis, we reached out to the presidents of the chambers of commerce in the suburbs of Western Wayne County. While we received a diverse range of responses, the majority of Chambers held that public transit was indeed a major contributing factor to the labor shortage. Wes Graff, President of Plymouth Community Chamber of Commerce, answered, "Yes (worker transportation) is a problem. We see commuting issues in hotels, restaurants, and production level manufacturing jobs." Southern Wayne County Regional Chamber of Commerce President Ron Hinrich also issued a press release in 2018 in favor a regional transit millage. "A strong regional mass transit plan is a must as we work to identify effective strategies to attract the talent that is needed for our business community in the Metro Detroit region. One of the most significant concerns among our chamber membership is the ability to recruit and retain talent to help our businesses grow. An effective transit plan is a necessary investment that will not only bring new jobs but will assist in attracting the talent that is critical for a thriving business community."

Dan West, President of the Livonia Chamber of Commerce was a bit more skeptical about the effect regional transit has on the ability of his businesses to attract workers. "There's a handful of businesses that could pick up a couple more workers, but there's no huge outcry for traditional bus service from the business community." However, we received contradictory reports from an HR Director from the Amazon Fulfillment Center in Livonia. The company has a large issue with worker turnover. Many associates have poor transportation options and cannot maintain good attendance. The company currently relies on the Lyft app to assist with worker commutes, which is very expensive. According to the Chamber, the fulfillment center is the ninth-largest employer in Livonia with over 1000 jobs. Many of these associates come from outside of Livonia, including the city of Detroit and all throughout the metro area. These jobs have few employment requirements and are accessible to those with little previous education and/or criminal history. Our team asked Dan West whether the Chamber was aware of the transportation issues at Amazon. He responded, "We asked if transportation was going to be an issue. They were trying to hire 1000 people really quickly. They said there is an HR sensitivity to that issue and couldn't ask that question. We said if there were any issues contact us, but we never heard back from them." Mr. West continued on the role transportation plays in the skills gap. "Overall, the shortage of talent is a big issue for Livonia companies, but the shortage stems from education and experience more than transportation... The biggest issue (in sustaining a

strong workforce) is education and qualifications, for example in the skilled trades and the IT sector.”

In order to investigate the relationship between transportation, education, and the skilled trades, our team reached out to Paul Baker, the Program Director and Training Coordinator for Detroit Plumbers Local 98, based in Madison Heights, MI. Mr. Baker responded, “In Southeast Michigan, you have to have a car to do anything. We don’t have transit that’s reliable, especially if you’re trying to cross municipal lines... We won’t even take you on (as an apprentice) if you don’t have a Driver’s License and reliable transportation. Mr. Baker spoke about the mobility demands of the skill trades. “In the building trades— electricians, carpenters, bricklayers, plumbers, pipefitters— you have to be where the job is. One day it might be Downtown, the next day Brownstown, then Port Huron and Pontiac all in one week.” Mr. Baker directs the apprenticeship program for Local 98, and said the same mobility demands are true for those looking to be trained. “85% of the apprenticeship is on-the-job training.”

## [ APPENDIX H ] MOBILITY PERFORMANCE EVALUATION

The success of the shuttle program can be measured by two fundamental metrics - effectiveness and efficiency. The group prepared success metrics to quantify 1) the impacts of the project, which will measure the effectiveness of the program. The goal of this program is to provide reliable, time-saving, and comfortable means of commuter transportation to people who can't afford better means than public transportation with multiple transfers. We'd measure how well this goal is achieved through the shuttle program. The other metric is 2) the operational efficiency of the program, which will measure the input of resources to the outcome. The input of resources will be time and cost for each stakeholder.

In order to reflect measurements from diverse aspects, we categorized stakeholders into users (employees), sponsors (employers) and service operators. Each success metric has a threshold to determine whether the quality or efficiency of the service is above the satisfactory level. Some metrics require the pre-service survey to compare the effect or improvements after the service.

### Users

**Average time and cost saved by the service:** The biggest advantages of the service that users can benefit from the service are their saved time and money compared to using public transportations. The survey about the average travel time and cost a day using public transportation needs to be conducted beforehand. The threshold is subject to adjustments depending on the average travel time of the pre-service result. These metrics will demonstrate the effectiveness of the service on employee's daily commute lives and can be presented to sponsors as a reason to continue sponsoring the shuttle service to increase employee satisfaction and job retention rate.

**Walking distance from home:** This metric is to show the efficiency of operations and will be used in the process of on-going improvement. If the walking time from users' home to designated bus stops is over 10 mins, the project team and service provider should consider route optimization in their next round of service.

### Sponsors

**Satisfaction, retention rate and punctuality improvement of employees who used public transportation:** Sponsors can measure the impacts of the shuttle service on their business by looking at the improvement rate of satisfaction, job retention rate and punctuality (productivity as well) of employees using the service. Thresholds for each metric can be different depending on the pre-service survey result. Data used for these metrics can be internal or confidential, which requires cooperation from employers to obtain. The project team can ask for sanitized data without identifying individual information.



**Total cost savings:** The most persuasive impact that sponsors would be the incremental financial benefit after the total cost of sponsorship to fund the shuttle service. This is a useful metric to indicate the tangible efficacy of the service to sponsors and motivate them to support the service. The project team can suggest several costs saved by decreasing negative indexes, such as the loss due to the employee's tardiness, or costs associated with an employee's resignation, and compare the total savings to the total cost of operations for the service.

### **Service provider**

**Average user retention rate and satisfaction on the service quality:** Both metrics display the overall satisfaction of employees on the shuttle service. The project team will regularly check the number of passengers and the percentage of employees who use the shuttle bus to the total number of people who signed up for the service. If the user retention rate is below 80% or satisfaction is below 8 out of 10 scores, the project team should involve in identifying the friction points of the service.

**Punctuality of departure and arrival, and out-of-service days:** Punctuality and the number of service days are the rudimentary metrics to quantify the availability of the service. If the punctuality criteria are not met, or the number of out-of-service days is higher than certain days including the days with bad weather (heavy snow, etc), the team should address the problem with the service provider or consider changing the provider.

## Evaluation Metrics Sheet Example

Stakeholders	Metrics	Metrics Category	Pre-shuttle	After-shuttle	Threshold*	Actual	Difference (Threshold - Actual)
<b>Employee (User)</b>	Average time saved by shuttle	Operational			30 min		
	Reduced transportation costs	Financial			50%		
<b>Employer (Sponsor)</b>	Walk-distance from home to stop	Operational	N/A		10 min		
	Employee's punctuality improvement	Operational			10%		
	Satisfaction improvement of employees who used public transportation	Qualitative			80%		
	Retention rate improvement of employees who used public transportation for 6 months	Operational			10%		
<b>Service provider</b>	Cost savings (Total labor cost of tardiness) + (Total cost of hiring for a new employee) * ((After shuttle retention rate)-(Pre-shuttle retention rate)) - Shuttle running cost	Financial			> 0		
	Total route distance	Operational	N/A		10 mile		
	Average user retention rate (Average # of users/# of total sign-ups)	Operational	N/A		80%		
	Employee's satisfaction on the service quality	Qualitative	N/A		8/10		
	Excess wait time	Operational	N/A		7 min		
	# of out-of-service days (Working days based) / year	Operational	N/A		< 10 days		

\* Thresholds need to be adjusted with actual field data

## [ APPENDIX I ] FORD MOBILITY GRANT APPLICATION

### **Introduction and Project Summary (1400 characters)**

The Public Private Partnership Transportation (P3T) project seeks to connect economically disadvantaged residents of Detroit with an employer from outside the city. Our overarching mission is to create social mobility through physical mobility. Detroit citizens lacking access to a car often have difficulties reaching employers located outside of the city of Detroit, which frequently leads to worker attrition. This has been disastrous for Detroit citizens, and financially costly for their employers due to expenses associated with rehiring and retraining. The P3T project envisions a shuttle picking up employees from a centralized transit hub within the city of Detroit, and transporting employees directly to the private employers.

Partnerships have been established with the Wayne County Executive Office and the Regional Transportation Authority of Southeast Michigan, who have pledged their support. In addition, there are six Dow Sustainability Fellows who are working on the project for at least ten hours a week each, pursuing graduate degrees in fields such as business, public policy, and urban planning. This project will serve as an economic vehicle for underrepresented minorities, who comprise over 80% of the population of Detroit, and will act as a further catalyst to the ongoing economic revitalization of the city.

### **Describe how this project meets each of the following Ford College Community Challenge criteria (please refer to the RFP for more details):**

**a. How is the project meeting an urgent and unmet community need in a tangible way (i.e., describe the identifiable/measurable outcome. For example, the project's direct effect will allow 300 people to access to low-cost, healthy food choices) (1400 characters)**

Driving Social Mobility - Currently, it is incredibly difficult to access economic opportunities outside of Metro Detroit. Detroit has the worst job sprawl and labor force participation of any metropolitan area in the United States. The public transit system in the city of Detroit does not serve citizens with jobs in counties outside of Metro Detroit since these transportation systems are not linked. Furthermore, many communities with high employment density opt out of public transit completely, which limits access to job opportunities for residents in these areas.

Building sustainable communities - The P3T project will address the issue of limited transportation to jobs outside of Detroit by launching a pilot shuttle program that demonstrates a unique public-private funding model to lead to more efficient transportation for citizens of Detroit. Access to jobs will build a sustainable community within Detroit because citizens will be more likely to stay if abundant employment opportunities are available.

Changing the Way People Move through Smart Mobility - Creation of this new transportation network will help drastically reduce the individual modes of transportation (cars) thereby

reducing the overall carbon emissions through ride sharing initiatives. The model will leverage data analytics and be scaled to cover multiple organizations and routes.

**The project must involve students in a leadership role. What leadership roles will students take on throughout the duration of the project? (1400 characters)**

This project was conceptualized by University of Michigan students as part of the Dow Sustainability Fellowship program. Students have been instrumental to forming relationships with City agencies, securing private partners, and talking with a micro-transit solution provider. Students will be involved with initiating the pilot program, and gathering critical demand data and commuter experiences from the shuttle program once it has started. Furthermore, students will make recommendations to the City of Detroit as well as private employers regarding how best to extend the pilot program to be sustainable after completion of the project.

The student team has been divided into three workstreams

1. Partnering with Private organizations: Students are working to onboard private employers outside the city limits of Detroit such as Amazon, Walmart and Meijer.
2. Liaison with government agencies: Students have already convinced stakeholders such as the Wayne County Executive Office, the Regional Transit Authority of Southeastern Michigan, and the Suburban Mobility Authority for Regional Transportation.
3. Business case formulation: Students under this team have already started building business case templates to calculate various financial and operational metrics to highlight benefits to private employers.

**Identify the community-based partner organization and describe the relationship to this project. (500 characters)**

We have established partnerships and secured support from various government agencies, such as the Regional Transit Agency of Southeastern Michigan, Wayne County Executive, and the Suburban Mobility Authority for Regional Transportation. These organizations will help us better link transportation shuttles from private employers to major transit hubs within the city of Detroit, which will enable transportation shuttles from the private employers to operate more effectively.

**How does the project involve students from a variety of major's programs? What colleges within your university are contributing to the project? (1400 characters)**

The members of this project are from various colleges within the University of Michigan: the Ross School of Business, the School of Information, the Ford School of Public Policy, the Taubman College of Architecture and Urban Planning, and the School of Dentistry. Furthermore, the Fellows within this team have extensive experience prior to attending graduate

school, in organizations such as ITC Limited, the City of Detroit, the US Environmental Protection Agency, and Samsung. The students are all Dow Sustainability Fellows at the University of Michigan, who are chosen from a highly selective campus-wide process to work on projects that are beneficial to the community and have received tuition support totaling \$120,000. Funding from the Ford mobility grant would be critical for launching a pilot program for the P3T project. The students in this group have a diverse array of undergraduate degrees, such as statistics, chemical engineering, psychology, and political science. The diversity of academic and professional experiences that the students in this project can bring to bear can be deeply beneficial to solving interdisciplinary mobility problems.

Include a brief section that addresses how the university will communicate and/or publicize the project through various outlets.

The University of Michigan will publicize the project through the Graham Sustainability Institute, which has access to various local news outlets, as well as its own webpage. Furthermore, the Graham Sustainability Institute can access news distribution sources that are available to the university.

In addition, our public partners have access to different media outlets that we will seek to leverage.

Additional credit:

Will the project be sustainable after Ford Fund monies are completed?

Upon successfully running a pilot program, and demonstrating the business case, we expect companies to provide a considerable part of the operating expenses one realizing the profits from having lower attrition rates and retention of skilled labor. This initiative will save organizations the costs associated with recurring training costs and replacement of employees. We expect large employers such as Amazon will find the expenses of this program small compared to the benefits.

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