1   Partnerships with Technology Enabled Mobility Companies: Lessons Learned

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1 **ABSTRACT**
2 The rise and proliferation of the on-demand economy is creating a new mobility marketplace. This
3 research explores how these new options can be synergistic with public transit models and details the
4 experiences of two transit operators who have entered into service delivery partnerships with a
5 transportation network company and with a micro-transit operator. Based on a series of interviews and
6 experiences of these two public agencies, this research provides a set of key takeaways and
7 recommendations for transit operators exploring the potential of partnering with new mobility services
8 such as Transportation Network Companies (TNCs, i.e. Uber or Lyft) and micro-transit (i.e. Bridj or Via).
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1 **INTRODUCTION**
2 The rise and proliferation of the on-demand economy is creating a new mobility marketplace. This
3 marketplace is in part characterized by mobility options accessed on online platforms aimed at fulfilling
4 consumers' immediate demands. Where metropolitan regions once had limited options, there is now a
5 growing array of transportation services. In addition to the traditional transportation modes (such as bus
6 and rail provided by public agencies), metropolitan residents can now choose from bikeshare,
7 Transportation Network Companies (TNCs, i.e. Uber or Lyft), carshare (i.e. Zipcar), or micro-transit (i.e.
8 Bridj or Via). It is expected that this diverse marketplace will grow and new technological options will
9 continue to become available.
10 All levels of government are grappling with the sudden entrance of these new services to the mobility
11 marketplace and how to regulate them. Governmental uncertainties include whether these new services
12 should be subject to the same regulations as traditional taxicab companies. State and local governments
13 are taking a variety of approaches towards regulating insurance coverage, background checks, American
14 Disabilities Act compliance, and employee protections. Despite these uncertainties, consumers have
15 shown support and even preference for these new mobility options.
16 This growing marketplace is relatively disconnected from traditional mobility providers, creating the
17 potential to exacerbate social inequities. An increasing body of research has begun to indicate that the
18 public sector has a role in ensuring that the benefits of this growing menu of options are both well
19 integrated into regional transportation networks and accessible to all customers.
20 While bikesharing and carsharing platforms and partnerships have proliferated across the United States in
21 the last decade, TNCs, and micro-transit are newcomers to the mobility marketplace. Informed both by
22 the literature and the growing popularity of these options, public transit agencies have begun exploring
23 marketing and service delivery partnerships with these services. This research explores these newly
24 emerging partnerships to provide a set of lessons learned and recommendations for transit agencies
25 seeking to enter into a mutually beneficial relationship with a TNC or a micro-transit company.
26
27 **METHODOLOGY**
28 This report first defines TNCs and micro-transit. It then includes a literature review of the growing body
29 of research within the United States in this area and ancillary areas Following, it provides an overview of
30 a number of marketing and service delivery partnerships that have piloted at agencies across the United
31 States. This report provides an in-depth case study on a partnership between a TNC and a transit agency
32 and another partnership between a micro-transit operator and a transit agency. The case studies include
33 crucial details for the terms of the partnership, outcomes if we were able to obtain them, and insight as to
34 how the transit agencies handled any regulatory hurdles. This research concludes with a set of lessons
35 learned and recommendations for transit agencies interested in partnering with these types of companies.
36 This research was conducted through a series of interviews with key implementers at participating transit
37 agencies. It was also informed by discussions with TNC policy advisors, micro-transit operators, and a
38 variety of experts in the field.
39
40 **TECHNOLOGY ENABLED MOBILITY PROVIDERS**
41 While there are numerous technology-enabled mobility providers entering the market, this report focuses
42 on transportation network companies (TNCs) and micro-transit, as these are the two newcomers to the
43 shared mobility marketplace. Each can be described as follows:
44
45 **Transportation Network Companies**
46 According to the California Public Utilities Commission, a regulatory agency that regulates essential
47 services, including privately owned passenger transportation companies, TNCs are companies that
48 "provide prearranged transportation services for compensation using an online enabled application or

1 platform (such as smartphone applications) to connect drivers using their personal vehicles with
2 passengers *(1)*." Well known TNCs include Uber and Lyft, but there is a growing contingent of
3 competitors both in the United States and abroad. These services offer on-demand services with a variety
4 of options. Using their smart phones, customers can select the size vehicle they would like to pick them
5 up. The driver, rather than the TNC software company, generally owns vehicles.
6 Customers can also select whether they would like to share their ride with other customers. The ability for
7 customers to choose to share their ride creates an important distinction between TNCs and the more
8 traditional taxi model. The Shared Use Mobility Center (SUMC) defines this as "ride-splitting," as this
9 feature allows customers to split the cost of the ride *(2)*. When a user chooses to share a ride with other
10 customers, the software uses proprietary algorithms to find other riders who are going in a similar
11 direction and prices the ride based on the likelihood that they will be able to identify such a rider.
12 Lyft reported 2.8 million unique riders in May 2016 across their various markets, with a 25 percent
13 increase in year-over-year riders per active passenger *(3)*. It is projected that Lyft will match 152 million
14 rides by years end. Lyft currently operates in select cities in the U.S., Indonesia, Singapore, the
15 Philippines, Malaysia, Thailand and Vietnam.
16 In mid-July, Uber announced that it had given a total of two billion rides over its seven year lifespan; the
17 company had reached its one billion rides landmark just six months prior *(4)*. Uber is currently active in
18 76 countries *(5)*. For a sense of scale, in 2015, transit providers in the United States provided a collective
19 10.6 billion rides *(6)*. These numbers demonstrate that these companies are growing at an exponential
20 rate. While TNCs are providing just a fraction of transit ridership, their numbers are significant.
21
22 **Micro-transit**
23 Micro-transit can be characterized as privately operated, dynamically routed or crowd sourced routed
24 transit service, such as Bridj, Via, Chariot, or Loup. Micro-transit is not a new concept. Public agencies
25 run paratransit services for people with disabilities using this model. However, micro-transit diverges
26 from the traditional model in its sophisticated integration of technology and ability to operate privately.
27 Micro-transit providers can use crowd-sourced data to aggregate demand by adjusting routes and stops in
28 real time. Each provider operates a unique model. For example, Bridj selects heavily congested
29 geographic regions and allows customers to request a shared ride on demand (when the customer is going
30 in the direction of demand) and a passenger van picks up the customer within a short walk where they are
31 and drops them at their final destination. Chariot crowd-sources in their operating markets to determine
32 what commuting routes are currently being under served by traditional public sector transit. It then
33 provides a fixed route commuter service based on the crowd sourced information. A variety of other
34 models exist.
35
36 **LITERATURE REVIEW**
37 There is a growing body of research exploring the potential benefits and synergies of public transit
38 agencies partnering with technology enabled mobility companies. Research shows that technology
39 enabled mobility options can augment and improve existing transit service, reduce car dependency, and
40 improve overall mobility.
41
42 *Potential Benefits of Partnerships*
43 In pring 2016, the American Public Transportation Association (APTA) and the Shared Use Mobility
44 Center (SUMC) published a paper that found that shared modes complement public transit *(7)*. SUMC
45 found that "ridesourcing services are most frequently used for social trips between 10 PM and 4 AM,
46 times when public transit runs infrequently or is not available." This finding suggests that transit and
47 technology enabled mobility companies are not necessarily in competition with one another, and there
48 may be mobility aspects that are better served by one service than another. For example, mass transit
49 excels at effectively moving a large quantity of people efficiently, such as during commuting times.

1 Whereas, technology enabled mobility options may provide a cost-effective and more efficient late night
2 service.
3 SUMC's report followed a paper published in early 2016 by the Transportation Research Board (TRB)
4 *(8)*. TRB found that new, innovative mobility services are expanding travel choices and are being widely
5 embraced by millions of travelers. TRB recommended that, "policy makers and regulators should seek to
6 integrate the features of TNCs and other innovative shared mobility services into existing transportation
7 systems and services in ways that leverage the new services' strengths and features."
8 In 2014, Berkeley's Transportation Sustainability Research Center (TSRC) published a report that found
9 "a substantial portion of sampled ridesourcing trips are spatially and temporally not well served by public
10 transit, suggesting a complementary relationship with transit, at least for some trips." It also found that,
11 "ridesourcing users also appear to be less likely to own an automobile *(9)*."
12 *The Role of the Public Sector in Ensuring Public Benefit*
13 In addition to service synergies, researchers have found that there is a role for policy makers to ensure
14 public benefit. TRB found that without public sector intervention, TNCs could exacerbate the "digital
15 divide," which is the divide between those who have access to technologies like smart phones and have
16 the digital literacy to capitalize on these services, and those who do not. Similarly, SUMC recommended
17 that, "public entities should identify opportunities to engage with [technology enabled mobility
18 companies] to ensure that benefits are widely and equitably shared *(10)*." Through thoughtful
19 partnerships, these services could enhance mobility for low-income and older adults.
20 In May 2016, the Pew Research Center released a study that evaluated the rise of new on-demand
21 services, including TNCs. Pew's study found that TNC users generally capitalize on the larger, wider
22 range of transportation options, reducing their reliance on personal vehicle ownership *(11)*.
23 Pew's study also found that 26 percent of survey respondents that made over $75,000 had used TNC
24 services before, whereas only 10 percent of those who make less than $30,000 had used the service. This
25 finding suggests that without governmental intervention, there may be a continued bifurcation based on
26 income level for those who can and those who cannot access TNCs as a mobility service.
27 In February 2016, the Eno Center for Transportation (Eno) released a paper titled "Emerging Technology
28 Trends in Transportation *(12)*." In this paper, Eno found that the federal government has a role in
29 facilitating the creation of partnerships between the public and private sectors to provide innovative
30 mobility solutions and in ensuring equitable access to economically disadvantaged communities.
31 *Barriers to Partnerships*
32 While there are a number of potential synergies between shared mobility and traditional transit, data also
33 suggest that there may be barriers to partnerships between transit agencies and shared mobility providers.
34 Transit agencies must comply with equity protections for low-income and minority residents and
35 paratransit riders as outlined in the Federal Transit Administration, Title VI, and American with
36 Disabilities Act (ADA). TNCs have not yet perfected service delivery for these vulnerable populations,
37 leaving partnerships in a legal gray area.
38 UNBANKED AND UNDERBANKED POPULATIONS. For example, to access existing TNC and
39 micro-transit services, customers must have a credit or debit card. As of 2013, the Federal Deposit
40 Insurance Corporation (FDIC) calculated that that 7.7 percent of Americans were unbanked and 20
41 percent were underbanked *(13)*. "Unbanked" means t hat a person does not have access to bank accounts
42 at all, whereas "underbanked" means that they have bank accounts, but rely on alternative financial
43 providers, such as cashier's checks or pawn shops, in order to meet some of their banking needs.
44 SMART PHONE ACCESS. Customers must also have access to smart phones and data plans to access
45 TNC and micro-transit services. On a national level, access to smart phones is growing. According to a
46 Pew Research Study, as of April 2015, 64 percent of American adults owned smart phones *(14)*.
47 However, that level of smart phone penetration may not be representative of a variety of transit

customers. For example, Los Angeles County Metropolitan Transportation Authority (LA Metro) surveyed their customers in spring 2015 and found that only 47 percent of rail customers and 38 percent of bus customers have access to smart phones, and overall mobile phone access in Los Angeles is increasing *(15)*.

DATA PLANS. Research also indicates that for some customers, a smart phone may be the only device available to them that can access the internet. According to a nationwide Pew Institute report, 13 percent of households with low incomes (defined as below $30,000) are smartphone dependent, meaning that a smartphone is their only viable means of internet access *(16)*. Research suggests that the cost of data plans and wireless data may be prohibitively expensive for low-income populations who largely make up LA Metro's ridership base. Pew's survey found that "seven percent of Americans own a smartphone but have neither traditional broadband service at home, nor easily available alternatives for going online other than their cellphone *(16)*." The findings also revealed that customers frequently are either not able to pay their smartphone bill or max-out on available data. Based on the data from Pew, it is likely that there is a portion of transit customers that have experienced unreliable access to smartphone data for a variety of reasons.

It is clear that the benefits of convenience and flexibility afforded by mobile technology are not uniformly shared by the public. This has serious implications for how public transit agencies can both abide by regulations upheld by Title VI and partner with TNCs and micro-transit providers.

Technology Enabled Mobility and Autonomous Vehicles

Thought leaders and policy makers have also been exploring the benefits and challenges associated with technology enabled mobility companies with full vehicle automation just on the horizon. As fully autonomous vehicles reach the market, researchers have developed a variety of potential scenarios for how vehicle automation may penetrate the market. It is possible that policies and strategic partnerships could incorporate technology enabled mobility and vehicle automation onto the public mobility market, optimizing the use of resources and assets, increasing public mobility, and potentially cutting down on greenhouse gas emissions (GHG). However, without strategic partnerships, it is possible that autonomous vehicles may replace personal vehicles, which may lead to an increase in national and local vehicle-miles travelled, increased congestion, and an increase in GHG. Policy makers have a role in incentivizing the whichever option they prefer, and to be most effective that will likely have to occur prior to full vehicle automation through partnerships with technology enabled mobility companies. This body of literature continues to grow with many current research projects underway. Research entities including TransitCenter, Transportation for America, Eno, the National Research Defense Council, the Shared Use Mobility Center, and the Berkeley Transportation Sustainability Research Center currently have related research projects on-going that are expected to be released sometime within the year.

EXPERIENCES AT TRANSIT OPERATORS

While there have been a growing number of transit agencies entering into marketing relationships with TNCs or other technology enabled mobility companies, few agencies have entered into service delivery relationships. There are some transit agencies experimenting with dynamically routed micro-transit, including (and not limited to) the Kansas City Area Transportation Authority (KCATA), the Santa Clara Valley Transportation Authority, Salem-Keizer Transit, and the Houston Metropolitan Transit Authority. The next sections are the following:

    1. An overview of some of the agencies that have entered into marketing arrangements with TNCs,

    2. A case study of a direct service delivery partnership with a TNC (Uber) and a transit agency, and

3. Insights from an agency that has partnered with a micro-transit provider (Bridj) to provide transit service.

Marketing Partnerships

The majority of partnerships that have been forged between transit agencies and TNCs have been temporary marketing agreements. For example, in May 2016 LA Metro's Office of Extraordinary Innovation brokered a marketing partnership with Uber featuring the opening of the Expo Line extension. In this partnership, LA Metro and Uber offered co-branded marketing and Uber subsidized first mile and last mile pool rides at up to $5 to the newly opened stations for a weekend. The marketing partnership lasted for two weeks.

Agencies across the country have entered into similar partnerships. Metropolitan Atlanta Rapid Transit Authority and Dallas Area Rapid Transit both entered into temporary marketing partnerships with Uber in which no money changed hands. In these partnerships, the agencies and the participating TNC had a co-branded marketing campaign.

The Southeastern Pennsylvania Transportation Authority (SEPTA) ran a three month marketing partnership with Uber, discounting up to $10 on first mile and last mile rides from selected transit stops. As a result of Uber paying for the discounts during this pilot, no money changed hands between SEPTA and Uber. According to SEPTA's Director of Innovation, Uber reported an increased number of riders at all eleven participating stations during this partnership.

Most recently, San Diego's Metropolitan Transit System entered into a marketing agreement with Uber in conjunction with Comic-Con International in which Uber provided a one-time $5 discount to one of 20 bus or trolley stations in the city.

TNCs as Service Delivery

While the majority of partnerships have been marketing agreements, as a result of emerging research and the success of the existing marketing partnerships, many transit agencies are looking into ways to develop mutually beneficial service delivery partnerships with TNCs. While a number of agencies have actively solicited partnerships with TNCs, only one agency (at time of writing) was identified as directly subsidizing TNC service operation.

Pinellas Suncoast Transit Agency

Pinellas Suncoast Transit Authority (PSTA), serving the St. Petersburg region of Pinellas County in Florida, is the first transit operator in the country to execute a service delivery partnership with a TNC. PSTA serves 14.9 million customers a year with an annual operating budget of $66.66 million *(17)*. The operator serves 40 bus routes with 210 vehicles.

PSTA Partnership with Uber, United Taxi, and Care Ride

In February 2016, PSTA announced that it was partnering with Uber, United Taxi, and Care Ride, a van option for individuals with disabilities (including individuals in wheelchairs). The partnership aimed to provide an innovative solution to the region's first mile and last mile access to the rapid transit network. The pilot demonstration was deployed in a zone that was previously under-served by transit options *(18)*. Within the defined service area, PSTA subsidized rides that originated or ended at the designated transit stops. The customer's ride was subsidized at 50 percent of the cost, up to a total of three dollars*(19)*. To use the service, customers were asked to first self-select Uber, United Taxi, or Care Ride. If the customer selected Uber, they were asked to use the Uber smartphone application and select the PSTA option to request a ride. If the customer selected United Taxi they had the option of calling or using the United Taxi app. While Uber only accepts credit card or debit card as payment, United Taxi and Care Ride accept both credit card and cash. At the end of each payment cycle PSTA is invoiced for their portion of the fare.

PSTA and Uber's partnership did not include a complete data exchange. However, according to a PSTA representative, Uber did provide PSTA with the total number of rides taken during the course of the six month pilot. During the summer period, only 15 rides were provided through United Taxi and 1 ride through Care Ride. The PSTA representative did not disclose how many rides were provided through Uber, but did say it was "significant."

PSTA felt confident that Uber provided them enough information for PSTA to confidently decide to expand the program throughout the authority's entire service area. . As of November, a PSTA representative indicated that PSTA saw a "significant spike and growth that was not seen over the summer" after they decided to extend the pilot to the entire service area.

PSTA and Late-Night Service
Following the launch of their initial pilot, PSTA was awarded $300,000 from the Florida Department of Transportation to provide a separate free late night ride service via Uber or United Taxi for low-income customers. The Transit Disadvantages Late Shift program (TD Late Shift) is available to customers who earn 150 percent or less of the federal poverty level. For a single person, incomes of less than $17,655 qualify; $36,375 for a family of four. This service provides qualifying customers 23 free rides per month for qualifying trips from Uber or United Taxi from 9 PM to 6 PM from any starting point and end point *(20)*. After submitting an application to PSTA to prove they are transportation disadvantaged, the rider becomes active in PSTA's system and eligible for an $11 bus pass that is normally priced at $70. Once the riders purchase this $11 bus pass, they are then able to select PSTA in the Uber app as a payment method during the hours of 9pm and 6am, any day of the week. While these riders do need a smart phone, they do not need a credit card since PSTA is billed directly for the ride.

Regulatory Hurdles
Florida's regulatory framework and political culture provides significant flexibility in piloting innovative mobility partnerships For example, PSTA has flexibility on its local level procurement rules and operates for a constituency that brings forward few legal battles. As such, PSTA was able to roll out this partnership through a sole-source pilot program, complying with federal level pilot regulations. PSTA kept an open door policy with FTA, who was supportive in the process.

Through providing options for the unbanked and populations without smartphone access, PSTA assuaged equity concerns. PSTA was cognizant of ensuring accessible, ADA compliant services during the crafting of the partnership. This is illuminated by the presence of a separate contract that works in parallel for an accessible van service for those that cannot be accommodated in a passenger sedan. However, PSTA has conceded that aside from the on-demand component of the Care Ride, the current pricing model does not incentivize a transportation-disadvantaged passenger to switch from PSTA's current Dial-A-Ride (DART) because of its competitive pricing and door-to-door service.

For all services included in the pilot, PSTA provides an estimated 20-minute wait, but the services may arrive sooner. There has not yet been discussion of a fare equity analysis for this partnership. At the federal level, the primary consideration was whether the geographic location was equitable.

Lessons Learned

1 In terms of developing the partnership, a representative at PSTA noted that one of the key components of
2 their success has been predicated on maintaining a good relationship with Uber. As of writing, PSTA
3 ridership had continued to grow since the launch of the pilot in February 2016, and PSTA has credited
4 that growth in part to Uber's own outreach efforts.
5 The PSTA representative commented that the crux of developing an effective relationship with a TNC is
6 recognizing that they are technology and marketing companies, not transportation companies. Whereas
7 transit agencies tend to excel in providing transportation, they are generally not as proficient in
8 technological expansion and marketing prowess. As such, through partnerships, there is the potential to
9 leverage each organization's skillsets.
10 While the representative did acknowledge that Uber has not shared complete data with PSTA, he did note
11 that Uber is beginning to understand that if TNCs want to tap into potential revenue sources amongst
12 transit agencies, they will eventually need to develop mutually beneficial sharing agreements. The
13 representative anticipated that by the end of the year, PSTA will be able to release more aggregate data on
14 the partnership.
15
16 **Micro-transit as Service Delivery**
17 The Kansas City Area Transportation Authority (KCATA) is a bi-state agency in charge of planning,
18 constructing, owning, and operating passenger transportation systems and facilities within the seven-
19 county Kansas City metropolitan area. KCATA operates bus, rapid transit, demand responsive routes, and
20 para-transit.
21 In March 2016, KCATA launched a demand-responsive micro-transit service with Bridj called "Ride KC:
22 Bridj." Bridj currently operates in Boston, Washington, D.C, and Kansas City. Bridj is privately operated
23 and funded in both Boston and Washington, D.C. Kansas City is Bridj's first public-private partnership
24 with a transit operator. Bridj uses data points and a proprietary algorithm to determine how to route riders
25 to their destination within a specified geographic region and direction.
26 This new service provides a new mobility option to downtown Kansas City, Hospital Hill, Crown Center,
27 and a portion of Midtown, University of Kansas Medical Center, and the Historic 18th and Vine Jazz
28 district. Service is available Monday through Friday from 6 AM- 10AM and from 3 PM- 7 PM. The fare
29 for the pilot program is $1.50 (the same cost of the fixed route bus service). In conjunction with this pilot,
30 Bridj is also running a promotion that allows a customer to apply a promotional code to receive the first
31 10 rides free. Ride KC: Bridj also features free Wi-Fi, a guaranteed seat (there are 14 seats per vehicle),
32 no transfers within the zone, and fewer stops than a high capacity vehicle *(21)*.
33 The yearlong pilot is being paid for with local funds. The cost to KCATA is $25 per revenue hour per
34 vehicle. For comparison, KCATA operates para-transit service at about $40 per revenue hour. While there
35 are no contractual performance measures to evaluate the program, Bridj has an incentive to provide the
36 best possible service and to encourage repeat customers. While KCATA and Bridj agreed to share data on
37 the progress of the pilot, it is unclear if both parties agreed to complete data sharing.
38
39 *Regulatory Hurdles*
40 When KCATA initially met with the Amalgamated Transit Union (ATU) to negotiate terms of a
41 partnership with Bridj, there was hesitation. ATU expressed concern that a privately owned service had
42 the potential to negatively affect the ridership of the traditional KCATA service. Additionally, during
43 negotiation there was a learning curve for both ATU and KCATA in terms of developing a contract
44 within an entirely different service model. Ultimately, KCATA and ATU were able to develop a mutually
45 agreed upon contract and the new service is fully operated by KCATA employees and union members.
46 In order to access Bridj, customers must have both a credit card to pay for the service, and a smart phone
47 with a data plan to dispatch the service. Based on the experimental nature of this pilot, both the Federal

Transit Administration (FTA) and KCATA agreed that demonstrating a proof of concept should come before solving for these challenges. However, in selecting the geographic region included, equity played a role.

It should also be noted that not all of the vehicles used for this pilot are accessible for individuals with disabilities, including wheelchairs. Within the fleet, there are two vehicles that can carry individuals in wheelchairs that a customer can select to be dispatched, providing similar levels of service.

As this is a fairly new service, ridership is still growing, but low. Upon launch, ridership was about 3-4 riders a day. Recently there has been a marketing push and ridership has reached between 10-15 riders per day. Ridership is expected to continue to grow as customers learn about the service and how to use the service.

Lessons Learned

The development of KCATA's partnership with Bridj highlighted the necessity to begin the conversation with labor as early as possible, potentially even before a conversation is initiated with a private sector partner. Throughout the industry, there is concern that the dawn of technology enabled mobility companies inherently operate outside of the guise of the labor union. The partnership between KCATA and Bridj demonstrates that labor unions can and do play a crucial role in ensuring successful service delivery with these innovative mobility options.

KCATA's experience also unveiled that when introducing a new type of service delivery, there is an uncertainty for both management as well as labor unions in terms of how to best construct a mutually beneficial contract. Due to this uncertainty, the contract negotiations for this service took longer than the time that was originally budgeted. Ultimately, KCATA and ATU were able to successfully reach a mutually agreed upon contract, but there was a learning curve for each entity in determining what that contract should look like. This suggests that there may be benefit to allowing a longer than average timeline for contract negotiation.

KEY TAKEAWAYS

Technology enabled mobility options are transforming an industry that has been relatively stagnant since the mid-20th century. Given the recent emergence of these options, the transit industry is reacting remarkably fast in terms of investing in research, identifying potential synergies between traditional transportation business models and new options, and even piloting these new services. Based on the two cases explored in this report, as well as interviews with key players in a number of the marketing partnerships mentioned, the following key takeaways are defined:

1. **There are not yet defined best practices and rules of engagement.** TNCs and micro-transit options are new to the market and the concept of partnerships has just recently emerged. As a result, the transit industry has not yet defined best practices and standards for entering into such relationships. APTA, SUMC, and TSRC envision a complimentary relationship between transit and TNCs for service delivery times and TRB suggests an integrative relationship for first last mile connectivity. Without common industry guidelines, engagements between TNCs and transit agencies can be inconsistent, even within the same region Lack of consistency can breed confusion and frustration for both the agency and the private sector partner, and can even lead to the dissolution of potential partnerships.

2. **The regulations are inconsistently interpreted at the transit operator level, in part due to an outdated regulatory framework**. A lack of a framework or guidance for applying laws, regulations, and guidance designed for fixed route bus and rail modes to emerging on-demand modes such as TNCs and micro-transit has led to de-facto interpretation and decision making on a localized and case-by-case basis. Interviews with various transit agencies engaging with TNCs, including PSTA and KCATA, revealed that each had a different interpretation of how to apply Title VI, Environmental Justice (EJ), ADA, and drug and alcohol testing rules and regulations in their partnerships with TNCs. Without clear

guidance from the federal level it is extremely challenging to enter into legal partnerships with TNCs or other technology enabled transportation companies.

      3. **It is crucial to engage labor early.** The experience in Kansas City highlighted the need to engage labor early when considering partnering with new mobility services. Kansas' experience set a precedent for how to develop mutually beneficial labor contracts for Bridj service delivery. However, partnerships will likely be slightly different in each region introducing micro-transit, and therefore transit operators should include additional negotiation time within their deployment timeline. In the case of PSTA, when partnering with Uber they were unable to engage organized labor to provide those services. This is a function of the TNC business model, where Uber serves as a technology platform rather than an employer. For example, by adding TNCs to the mobility menu for first mile and last mile service delivery or in underserved transit areas, it is likely that demand for union operated service will increase.

      4. **Currently, there is no clear method for ensuring the availability of vehicles capable of transporting individuals in wheelchairs on a TNC or micro-transit platform.** Both transit operators and TNCs have noted that ensuring wheelchair accessible vehicles (WAVs) are available on the platform is challenging, especially at the same level of service as the majority non-WAV vehicles that are currently leveraged on Uber and Lyft's platform. Uber and Lyft are currently working on providing WAVs on their platform, but this service is not yet robust and is not necessarily in compliance with ADA requirements. The taxi industry also historically has a challenge with ensuring that WAVs are available because it is challenging to deploy a density of WAVs to meet the needs of disabled users with similar response times to that of non-WAVs. This is also a challenge that the micro-transit industry faces. As noted, within the Kansas City/Bridj partnership, the Bridj fleet includes two vehicles capable of transporting individuals in wheelchairs. Further study will be needed to evaluate whether this model is capable of providing the same level of service as the other vehicles that are being dispatched.

RECOMMENDATIONS

The mobility menu is growing, and many metropolitan residents are choosing on-demand and shared use mobility for their travel. Through partnering with these companies, public transit operators have the opportunity to:

- Improve overall mobility by ensuring that these new models are well-integrated into the existing transportation network, which taxpayers have invested billions of dollars to develop, and
- Ensure that these mobility options are available to all transit operator constituents in an equitable and accessible fashion.

Based on the literature and the experience in regions currently partnering with technology enabled transit companies, researchers recommend the following:

      1. Actively explore partnership opportunities, and be willing to experiment and test new models. Partnerships with technology enabled mobility companies and transit operators are still in their infancy. As such, transit operators have the opportunity to help develop a framework for engaging with these companies. This will mean developing and piloting a variety of approaches to partnering with these types of companies. Through new pilots, transit operators can define what works best for their region. It is also critically important that transit operators make their experiences available at the national level to help transit agencies across the country learn what works best. It will also be crucial to provide an adequate timeline for partnership deployment. In speaking with a variety of public and private sector interests that have experimented with these types of partnerships, the amount of time needed to reveal the partnership value can vary.

      2. Work with the Federal Transit Administration (FTA) to develop pilot programs. FTA has demonstrated a willingness to working with transit agencies to identify ways to develop equitable demonstrations to test the benefits of partnerships. Recently, FTA released a notice of funding opportunity (NOFO) for a grant program that specifically asked agencies across the country to propose pilot programs such as partnerships with TNCs or micro-transit companies. Further, FTA offered to provide regulatory flexibility to allow agencies to work with them to define best practices in rolling out

these types of programs. Transit operators should work within this framework or otherwise engage with FTA to work together to define best practices.

3. Maximize integrated mobility by prioritizing shared riding, and trips that connect with existing transit service. Researchers have identified that there are synergies between transit and new technology enabled mobility options. One way that customers use these new options is for first mile and last mile access to rapid transit. Another option for customers is to share or split their rides to rapid transit with other customers. When developing partnerships, transit operators should incentivize these types of rides.

4. Prioritize ADA and Title VI accessibility in pilot development. TNCs and micro-transit operators are not currently operating services that adhere to ADA and Title VI protocol, but they could. Through thoughtfully constructed partnerships, transit operators have the opportunity to ensure the availability of accessible vehicles and equitable access. By making this a priority in pilot development, transit operators can help to inform national policy and best practices in ensuring these partnerships result in service that is for the public benefit.

5. Develop approaches to payment integration. In order to ensure that those who are unbanked or underbanked have access to these technology enabled, privately operated services, we need to develop a payment integration system. At many agencies across the country, this will necessitate an upgrade of technology to account based systems. While this may represent a significant investment, as transit agencies shift their business model from being bus and train operators to mobility providers, it is likely that there will be an increasing number of mobility options that operators wish to incorporate into their system; account based payment technology will enable this.

6. Invest in comprehensive wireless access and Mobility Hubs. To ensure equitable access to these types of services, transit operators should expand access to wireless connections, which will allow those without data plans to access these technology enabled services. Further, transit operators should strategize in investing in Mobility Hubs, which would have screens that could dispatch these types of services for those without smart phones.

REFERENCES

1. California Public Utilities Commission. *Basic Information for Transportation Network Companies and Applicants.* (July 6, 2015) http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Licensing/Transportation_Network_Companies/BasicInformationforTNCs_7615.pdf. Accessed July 29, 2016
2. Shared-Use Mobility Center. *Shared-Use Mobility Reference Guide.* (2015) http://sharedusemobilitycenter.org/wp-content/uploads/2015/09/SharedUseMobility_ReferenceGuide_09.25.2015.pdf. Accessed July 29, 2016
3. Pelegrin, Williams. *Lyft Reportedly Made Investors Very Happy With Its Record Number of Rides*. Digital Trends. (June 29, 2016) http://www.digitaltrends.com/mobile/lyft-investor-update-may-2016/. Accessed July 28, 2016
4. Alba, Davey. *Uber Hits 2 Billion Rides as Growth in China Soars-For Now.* Wired. (July 18, 2016) http://www.wired.com/2016/07/uber-hits-2-billion-rides-growth-china-soars-now/. Accessed July 28, 2016
5. (Author Unknown) Uber Cities. http://uberestimator.com/cities. Accessed July 27, 2016.
6. American Public Transportation Association. *Ridership Reports (First Quarter through Fourth Quarter 2015)* http://www.apta.com/resources/statistics/Pages/RidershipArchives.aspx. Accessed July 29, 2016
7. Shared-Use Mobility Center. *Shared Mobility and the Transformation of Public Transit: Research Analysis.* (March 2016) https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf. Accessed July 29, 2016.

8. "Between Public and Private Mobility: Examining the Rise of Technology-Enabled Transportation Services," *Transportation Research Board Special Report 219*, Transportation Research Board of the National Academies, Washington, D.C., (2016) http://onlinepubs.trb.org/onlinepubs/sr/sr319.pdf. Accessed July 29, 2016

9. Rayle, Lisa., Susan Shaeen, Nelson Chan. "App-Based, On-Demand Ride Services: Comparing Taxi and Ridesourcing Trips and User Characteristics in San Francisco," University of California Transportation Center (August 2014) http://www.uctc.net/research/papers/UCTC-FR-2014-08.pdf. Accessed July 29, 2016

10. Shared-Use Mobility Center. *Shared Mobility and the Transformation of Public Transit: Research Analysis*. (March 2016) https://www.apta.com/resources/reportsandpublications/Documents/APTA-Shared-Mobility.pdf. Accessed July 29, 2016

11. Smith, Aaron. "Shared, Colloborative and On Demand: The New Digital Economy" Pew Research Center. (May 19, 2016) http://www.pewinternet.org/2016/05/19/the-new-digital-economy/ Accessed July 29, 2016.

12. Westervelt, Marla and Emily Han. "Emerging Technology Trends in Transportation," Eno Center for Transportation. (February 2016) https://www.enotrans.org/wp-content/uploads/EmergingTech.v13.pdf. Accessed on July 29, 2016

13. Federal Deposit Insurance Corporation. "2013 FDIC National Survey of Unbanked and Underbanked Households" https://www.fdic.gov/householdsurvey/ Accessed July 29, 2016

14. Metro Data Center. "Annual On-Board Customer Satisfaction Surveys: Bus Results Spring 2015" https://media.metro.net/projects_studies/research/images/annual_survey_results/Bus_Results_Spring_2015.pdf. Accessed July 29, 2016.

15. Metro Data Center. "Annual On-Board Customer Satisfaction Surveys: Rail Results Spring 2015" https://media.metro.net/projects_studies/research/images/annual_survey_results/Rail_Results_Spring_2015.pdf. Accessed July 29, 2016

16. Smith, Aaron. "U.S. Smartphone Use in 2015," Pew Research Center. (April 1, 2015) http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/. Accessed July 29, 2016.

17. "Facts and Figures," History of PSTA, http://www.psta.net/history.php. Accessed July 29, 2016

18. "Uber Announces Partnership to Increase Transportation Access in Tampa Bay," Uber Newsroom (February 22, 2016) https://newsroom.uber.com/us-florida/uber-announces-partnership-to-increase-transportation-access-in-tampa-bay/. Accessed July 29, 2016

19. "Introducing Direct Connect Taking You to the Bus Stop" Pinellas Suncoast Transit Authority. http://psta.net/directconnect/index.php. Accessed July 29, 2016

20. Harper, Andrew. "Local Transit Authority Wins Grants for Free Uber Rides," Tampa Bay Business Journal (June 10, 2016) http://www.bizjournals.com/tampabay/news/2016/06/10/local-transit-authority-wins-grant-for-free-uber.html. Accessed July 29, 2016

21. Kansas City Area Transportation Authority. "Ride KC: Bridj Begins Service March 7" (March 3, 2016) http://www.kcata.org/news/ride_kc_bridj_begins_service_march_7. Accessed July 29, 2016