Massachusetts Bay Transportation Authority

Emerging Transportation Network Company (TNC) environment and considerations for public transit

March 13, 2017
Why Transportation Network Companies (TNCs)?

1. **TNCs impact the transit ecosystem**: While the full impact has yet to be seen, TNCs undoubtedly are changing the way people move across the region and engage with public transit.

2. **There are opportunities for public transit and TNCs to complement one another**: TNCs and public transit have distinct profiles that may be complementary. Under the appropriate guidelines and policies, TNCs could help public transit better achieve its goals.

3. **Efforts by public agencies to engage TNCs are in their infancy**: The MBTA should determine what role it would like to take in this emerging and evolving landscape: Watch & Wait or Active Participant.
What has been said about shared mobility?

“Shared modes complement public transit, enhancing urban mobility.”

- Shared Use Mobility Center, in a report conducted for APTA

“Innovative mobility services can provide broad mobility benefits while serving other societal goals, but [...] reaping those benefits will require informed policy making.”

- Transportation Research Board

“The relationship between public transportation and emerging mobility options only shows signs of strengthening as emerging modes become more widespread, better understood, and hopefully more accessible to customers.”

- TransitCenter

“A number of environmental, social, and transportation-related benefits have been reported from the use of shared mobility modes.”

- Federal Highway Administration

Source: Literature Review
Topics for discussion

1. Overview of TNCs
2. State regulations update
3. Current perspective on TNCs
4. Review of partnership pilots
5. Considerations and next steps for MBTA
The rise in Mobility as a Service (MaaS) is led by a number of new players in the transportation ecosystem.

### Focus of our discussion

<table>
<thead>
<tr>
<th>Bikesharing</th>
<th>TNCs</th>
<th>Carsharing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hubway</strong>, <strong>DIVY</strong></td>
<td><strong>Uber</strong>, <strong>lyft</strong></td>
<td><strong>Zipcar</strong>, <strong>Enterprise</strong></td>
</tr>
<tr>
<td>Short-term bike rental for individual periods of time enabled by docking stations throughout a region</td>
<td>Online platforms connecting passengers with drivers and automating reservations, payments, and customer feedback</td>
<td>Access to car for less than one day; cars may be provided by an owning company or individual owners</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Microtransit</th>
<th>Private shuttles</th>
<th>Ridesharing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>chariot</strong>, <strong>BRIDJ</strong>, <strong>VIA</strong></td>
<td><strong>GO</strong>, <strong>Bauer's</strong></td>
<td><strong>Scoop</strong>, <strong>RideFinders</strong></td>
</tr>
<tr>
<td>On-demand multi-passenger services along dynamically generated or fixed routes; transit-like service on a smaller and more flexible scale</td>
<td>Shuttles making limited stops for specified riders; typically pre-planned routes</td>
<td>Addition of passengers to a private trip in which driver and passenger share a destination (e.g., carpooling, vanpooling)</td>
</tr>
</tbody>
</table>

Source: “Shared Mobility and the Transformation of Public Transit” (Transit Cooperative Research Program, 2016)
Emerging TNC environment

Even amongst TNCs there exist many options for riders with different fares and service levels

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
<th>Additional Features</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Private ride</td>
</tr>
<tr>
<td>UberPOOL</td>
<td>Shared ride with 1-2 other passengers travelling complementary routes; lower cost and longer ride duration</td>
<td></td>
</tr>
<tr>
<td>Lyft Line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UberX</td>
<td>Private ride in a car that seats at least four people</td>
<td></td>
</tr>
<tr>
<td>Lyft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UberXL</td>
<td>Private ride in a car that can seat at least six passengers</td>
<td>✓</td>
</tr>
<tr>
<td>UberSUV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lyft Plus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UberTAXI</td>
<td>Private metered ride in a certified taxicab</td>
<td>✓</td>
</tr>
<tr>
<td>UberPREMIUM</td>
<td>Private ride in a luxury car</td>
<td>✓</td>
</tr>
<tr>
<td>Uber Black</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Basic Features

- Mobile app for on-demand service
- Integrated GPS updates and credit card payments
- No service tips for drivers; riders are instead prompted to rate their drivers

Increasing cost to rider
Emerging TNC environment

Topics for discussion

1. Overview of TNCs

2. State regulations update

3. Current perspective on TNCs

4. Review of partnership pilots

5. Considerations and next steps for MBTA
Emerging TNC environment

Working group has been working to implement August 2016 Massachusetts legislation regulating TNCs

<table>
<thead>
<tr>
<th>AREA*</th>
<th>LEGISLATION COMPONENTS</th>
</tr>
</thead>
</table>
| **Background Checks** | • Two-part initial background check  
• Recurring background check every 2 years  
• Quarterly audit of driver certification and background check processes |
| **Vehicle Inspection** | • Second vehicle inspection in addition to annual personal motor vehicle check  
• Outfitting of vehicles with removable decals |
| **Insurance** | • Commercial insurance coverage of up to $1M while trip in progress |
| **Fees** | • $0.20 surcharge per ride (ends in 2026)  
• 5¢ to taxis, 10¢ to cities and town, and 5¢ to state transportation fund  
• Payment of commercial toll rate while on a trip and provision of ride data for auditing |
| **Accessibility** | • Accommodation of riders with special needs, including service animals  
• No additional charges or increased fares for riders with disabilities |
| **Additional** | • No prohibition to pick-up at Logan Airport or Boston Convention and Exhibition Center |

**Legislation in the process of being implemented**

Notes: *Select areas of focus, not comprehensive  
Source: Commonwealth of Massachusetts Session Laws, Acts (2016), Chapter 187

Draft for Discussion & Policy Purposes Only
Emerging TNC environment

Topics for discussion

1. Overview of TNCs
2. State regulations update
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4. Review of partnership pilots
5. Considerations and next steps for MBTA
Public transit and TNC experiences offer distinct strengths and weaknesses for riders, suggesting differing user preferences

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Public Transit</th>
<th>TNCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>High capacity</td>
<td>allows service to more riders at any given time within fixed geographies</td>
<td>Tends to have <strong>higher level of convenience</strong> due to on-demand service, point-to-point delivery, and integrated payment</td>
</tr>
<tr>
<td>Right of way</td>
<td>on some routes make it the fastest travel mode for most people during the day</td>
<td>Tends to have <strong>higher level of comfort</strong> due to private vehicle or vehicle shared with few other riders</td>
</tr>
<tr>
<td>Existing infrastructure and government subsidies</td>
<td>keep it the <strong>cheapest option</strong> for riders</td>
<td>UberPOOL / Lyft Line options have become <strong>cost comparable</strong> with public transit in some scenarios</td>
</tr>
<tr>
<td>Federally mandated to be equitable</td>
<td></td>
<td>Wider <strong>geographic range of service</strong> than public transit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Public Transit</th>
<th>TNCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>In some areas, requires <strong>first / last mile travel</strong> for riders (by foot, car, bike, etc.)</td>
<td>Tends to be <strong>more costly</strong>; accessibility further limited by <strong>dependence on smartphones and credit cards</strong></td>
<td></td>
</tr>
<tr>
<td>Long timeframe for planning and administrative requirements lead to <strong>longer response time</strong> to user needs</td>
<td>May not be <strong>physically accessible</strong> for all riders</td>
<td></td>
</tr>
<tr>
<td>Tends to offer lower <strong>personal comfort</strong>, especially in peak travel hours</td>
<td>Potential for <strong>discrimination</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Literature Review
### Provider perspective

#### Public Transit
- **High capacity** of existing assets far exceeds potential capacity of TNCs combined
- Fixed assets tend to **spur economic growth**
- Transit is a **public service** with a strong economic multiplier effect
- High **fixed costs** to provide and maintain service
- Long timeframe for planning and administrative requirements lead to **less short-term flexibility**

#### TNCs
- Supply is **flexible and dynamic** – up to a point
- **Minimal existing infrastructure** required, as most fixed costs are shouldered by drivers
- High capitalization suggests **potential for profitability**
- Service model based around **disruptive innovation**
- **Not scalable** to the same extent as public transit due to road congestion
- Ultimately **dependent on government infrastructure** (e.g., roads and parking) and **emerging legislation** with unclear impact
- **Higher cost to serve** one customer (driver-to-passenger ratio is 1:1 or 1:2); unclear whether **current cost structure** is sustainable
- Recent negative press around **safety incidents**

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**Source:** Literature Review
Research to date has been limited, but study conducted by the Shared-Use Mobility Center begins to identify distinction between transit modes

**KEY FINDINGS FROM STUDY**

- Public transit (rail and bus) remains the **most frequently used** shared mode
- There are some **emerging trends in rider preference** for using TNCs:
  - Recreation and social trips
  - Late at night
  - Alcohol involvement
- **Relatively few people use TNCs to commute**, and those who do only do so occasionally
- Respondents report **many benefits** to increased use of shared transit modes:
  - Lower car ownership
  - Less driving
  - Increased physical activity
  - Decreased transportation spending

**LIMITATIONS OF STUDY**

- Conducted Sept-Oct 2015 and thus is already outdated in rapidly changing landscape
- Survey distributed by shared-mobility operators and transit agencies
  - In Boston, Chicago, and NYC survey distributed only through bikeshare operators
- Survey subject to the following skew:
  - Strong users of shared mobility
  - Convenience sampling
  - Online sampling
  - Urban respondents
- Overall received 4,551 at least partial responses (6% net response rate)
  - Low sample size in Boston (n=69)

Source: “Shared Mobility and the Transformation of Public Transit” (Transit Cooperative Research Program, 2016)
Findings from study: For respondents who report using shared modes, public transit remains the most popular mode of shared transit.

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Single shared mode used most often

Source: “Shared Mobility and the Transformation of Public Transit” (Transit Cooperative Research Program, 2016)
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**Findings from study:** Public transit remains top choice for weekday commute; TNCs popular for trips during the evening and late at night

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**Stated use of each transportation type**

![Graph showing usage of shared transportation modes by day of week and time of day.]

- **Public transit**
- **Bikesharing**
- **Carsharing**
- **TNCs**

**Note:** Survey conducted amongst those who use shared modes; Survey question: “At what hours of the day and week do you generally use each form of transportation? (Check as many as apply)”; “Public transit” includes public bus and public train

**Source:** “Shared Mobility and the Transformation of Public Transit” (Transit Cooperative Research Program, 2016)
Findings from study: Mobility as a service (MaaS) is changing the way shared mode travelers use and own cars

Car usage declined

- 35% of all respondents drove a car less to work
- 32% of all respondents drove a car less for errands or recreation

Car ownership declined

- 20% of all respondents postponed buying a car
- 18% of all respondents decided not to buy a car
- 21% of all respondents sold and didn’t replace a car

Lower level of car ownership

- 1.72 vehicles owned by all survey respondents
- 1.50 vehicles owned by public transit users only
- 1.05 vehicles owned by users of shared modes in addition to public transit

Notes: Rates self-reported, as a comparison to behaviors before using shared modes
Source: “Shared Mobility and the Transformation of Public Transit” (Transit Cooperative Research Program, 2016)
There are a number of opportunities for collaboration between public transit and TNCs as well as threats to consider.

<table>
<thead>
<tr>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passive – likely already underway</strong></td>
<td><em><strong>Erosion of public transit ridership and revenue</strong></em></td>
</tr>
</tbody>
</table>
| - Improved access to riders through “fringe” offerings  
  - *Geography*: First / Last mile connections for those who can’t walk, drive, or bike to transit  
  - *Time of day*: Early AM / Late night service | - **Crowding / congestion** at transit centers and on the streets |
| - Peak hour “pressure valve” where TNCs offer alternative for oversaturated public transit | |
| **Active – require additional action** | |
| - **Subsidization of fringe offerings** such as First / Last Mile and Late Night Service | - Weakening of transit as a ***public service***  
  - *Equity*: Reduction in equitable access  
  - Unclear whether current cost structure is sustainable  
  - Smartphone, Internet access, and credit card required |
| - **Data sharing** to better understand how people move | - Access: Cherry picking or “cream-skimming” by TNCs choosing to operate only profitable routes |
| - Integrated **trip planning and fare payment** | - **Cost to society**: Elimination of transit jobs with costs potentially incurred elsewhere |
| - Improved link between transit options through “Mobility Centers” at transit stations (e.g., bikeshare hub, carshare resources) | |
| - Potential ability to provide services at a **lower cost to riders** | |
Emerging TNC environment

Topics for discussion

1. Overview of TNCs
2. State regulations update
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Internal: MBTA Paratransit pilot with Uber and Lyft launched in October 2016 has seen significantly higher overall usage with slightly decreased costs

<table>
<thead>
<tr>
<th><strong>400</strong></th>
<th><strong>72%</strong></th>
<th><strong>7,353</strong></th>
<th><strong>187</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Customers who are in the Pilot</td>
<td>Customers who have taken an On-Demand trip</td>
<td>On-Demand trips taken in the Pilot</td>
<td>Customers who are on the Waitlist</td>
</tr>
</tbody>
</table>

**+30%**
Increase in all trips taken (RIDE + On-Demand) by pilot customers

**2%**
Decrease in overall cost to serve pilot customers

**-71%**
Difference between RIDE and On-Demand trip costs ($31 to $9)

**-25%**
Reduction in average cost / trip for all trips taken ($31 to $23)

Note: Data as of 1/23/17
Source: Internal MBTA data
## External: Current pilots in other locations focus primarily on First / Last Mile coverage and tend to replace existing, costlier services

<table>
<thead>
<tr>
<th>Pinellas Park, FL</th>
<th>Altamonte, FL</th>
<th>Centennial, CO</th>
<th>Summit, NJ</th>
<th>North Shore Comm. College (7K students)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density: 3000pp/sq mi</td>
<td>Density: 4600pp/sq mi</td>
<td>Density: 3600pp/sq mi</td>
<td>Density: 3600pp/sq mi</td>
<td>(7K students)</td>
</tr>
<tr>
<td>• 6-month pilot launched in February 2016</td>
<td>• Launched March 2016</td>
<td>• 6-month pilot launched in August 2016</td>
<td>• 6-month pilot launched in October 2016</td>
<td>• Year-long pilot launched September 2016</td>
</tr>
<tr>
<td>• Implemented after funding for bus lines and light rail was reduced</td>
<td>• Replaced plans for on-demand bus system to bring riders to commuter station</td>
<td>• Implemented to replace dial-a-ride program, which offered subsidy of $21/person</td>
<td>• Implemented to reduce parking congestion and avoid construction of additional parking</td>
<td>• School subsidizes $10 for every trip between Danvers campus and nearby transit hubs (5 miles) during class hours (7 AM – 10 PM)</td>
</tr>
<tr>
<td>• 50% discount on taxi or Uber fare up to $3 for trips</td>
<td>• 25% discount on all Uber trips to or from commuter station</td>
<td>• Free Lyft Line rides to and from light rail station from within existing service area, 5:30 AM – 7 PM</td>
<td>• $2 Uber fare for trips to and from train station between the hours of 5 AM – 9 PM</td>
<td>• Expected to cost $40K compared to ~$100K for a campus shuttle</td>
</tr>
<tr>
<td>• Expected to cost $40K/year, replacing a $160K bus service with low ridership</td>
<td>• 20% discount on all Uber trips beginning or ending within city limits</td>
<td>• Expected to cost $400K for full pilot, with city covering half the bill</td>
<td>• Free for 100 parking pass holders</td>
<td>• MBTA bus line linking college to public transit was discontinued in 2002 due to low ridership</td>
</tr>
<tr>
<td>• Four other Central Florida cities joined in July 2016</td>
<td>• Dial-a-ride program remains accessible throughout pilot</td>
<td>• Expected to cost $167K/year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Emerging TNC environment

**External: Other pilots have centered around mobile app integration and some late night service**

<table>
<thead>
<tr>
<th>INTEGRATED MOBILE APP</th>
<th>LATE NIGHT SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Atlanta, GA</strong></td>
<td><strong>Pinellas Park, FL</strong></td>
</tr>
<tr>
<td>Density: 3400pp/sq mi</td>
<td>Density: 3000pp/sq mi</td>
</tr>
<tr>
<td>- Public transit app can be used to access the TNC app</td>
<td>- 23 free late night (9 PM – 6 AM) Uber rides per month for economically disadvantaged riders</td>
</tr>
<tr>
<td>- $20 discount in first trip with Uber</td>
<td>- $300K funding from Commission for the Transportation Disadvantaged (TD)</td>
</tr>
</tbody>
</table>

**Dallas, TX**
Density: 3600pp/sq mi
- Launched Uber partnership in April 2015, Lyft partnership in October 2015
- Public transit “GoPass” can be used to access the TNC app
- Received $1.2M grant from U.S. DOT in October 2016
- Launched globally in January 2017
- Uber can be hailed directly through GoogleMaps app
- Has previously provided comparison of time and cost estimates across all transit options

**GoogleMaps integration**

*Source: Literature Review*
Topics for discussion

1. Overview of TNCs
2. State regulations update
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5. Considerations and next steps for MBTA
The MBTA should align on a set of guiding principles when reviewing potential engagements with TNCs

<table>
<thead>
<tr>
<th>COST</th>
<th>ACCESS</th>
<th>SUSTAINABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What is the direct cost to the MBTA? How is our business impacted?</td>
<td>• How does this affect access to geographic destinations?</td>
<td>• What are the backup options?</td>
</tr>
<tr>
<td>• Are there any indirect costs (e.g., Labor) and who bears that burden?</td>
<td>• Which riders does this impact?</td>
<td>• What factors determine continued provision of the service?</td>
</tr>
<tr>
<td>• What is the cost of alternatives, existing or not?</td>
<td>• How does this impact transit-dependent riders?</td>
<td>• What is the environmental impact? VMT impact?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EQUITY</th>
<th>QUALITY / SAFETY</th>
<th>ACCOUNTABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What is the accessibility to all riders?</td>
<td>• How does this impact quality of transportation service to riders? Safety?</td>
<td>• What standards need to be fulfilled? Who is ultimately accountable to these standards?</td>
</tr>
<tr>
<td>• What is the cost to the riders?</td>
<td>• What levels of quality and safety are required by public sector mandates?</td>
<td>• What information is needed to evaluate performance?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• What resources are required to enforce and monitor?</td>
</tr>
</tbody>
</table>
For discussion: Summary and next steps

1. The relationship between public transit and TNCs continues to evolve and the full mutual impact has yet to be determined

2. Ongoing pilots show potential for mutual benefit

3. The MBTA should determine what role it would like to take in this emerging and evolving landscape:

<table>
<thead>
<tr>
<th>WATCH &amp; WAIT</th>
<th>ACTIVE PARTICIPANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What specific additional information do we need and how do we get it?</td>
<td>• What guidelines and priorities do we adopt?</td>
</tr>
<tr>
<td>• What’s the “trigger point” for the MBTA to become an active participant?</td>
<td>• What arrangements do we want to pursue? Pilot program or other alternatives?</td>
</tr>
<tr>
<td></td>
<td>• We have already been approached about Late Night service</td>
</tr>
</tbody>
</table>

4. In the long-term, the MBTA should consider how existing planning processes can account for TNCs
Questions?