Who’s Riding TNCs and What Does It Mean for Public Agencies?

Tuesday, May 15, 2018
2:00-3:30 PM ET
Purpose

Discuss research from the Transit Cooperative Research Program (TCRP)’s Research Report 195: Broadening Understanding of the Interplay Between Public Transit, Shared Mobility, and Personal Automobiles.

Learning Objectives

At the end of this webinar, you will be able to:

• Describe the types of engagement with TNCs in different transportation and land-use contexts
• Determine usage patterns and rider profiles for TNC users in order to incorporate them into operational and long-term planning
• List actions that public entities may take to cooperate constructively with TNCs while minimizing negative impacts
• Identify the characteristics of trips commonly taken on TNCs in order to engage with TNC usage in their community
Who’s Riding TNCs and What Does it Mean for Public Agencies?

Insights from TCRP Research Report 195

Shared-Use Mobility Center

TRB Webinar, May 15, 2018
Overview

- Shared Use Mobility Center
- Project Overview & Research Approach
- Findings
- Recommendations
- Q&A
Sharing-Use Mobility Center

Creating a multi-modal transportation system that works for all

- Recent Studies
  - TCRP 195: TNCs + Transit
  - TCRP 196: Private Transit
  - European Shared Mobility Best Practices (w/ FHWA)

- MOD Learning Center
  - Clearinghouse of policies, tools, and best practices

- Technical Assistance & Pilots
  - FTA MOD Sandbox Innovation & Knowledge Accelerator
  - MOD On-Ramp: bringing promising MOD concepts to reality
  - All electric carsharing in low-income areas
  - Green Raiteros: rural ridesharing
  - Twin Cities and LA Shared Mobility Action Plans

...public transit is the backbone of an efficient, equitable transportation system.
Project Overview and Research Approach
Project Overview


- Major questions:
  - Are TNCs fundamentally transforming how people move in cities, or just a reorganization of markets for taxis and other for-hire transportation?
  - Do recent declines in transit usage represent a real change in how people are using public transit or are they symptomatic of other (cyclical) factors?
Research Approach

- **Data sources**
  - Hourly origin-destination trip flows provided by a major TNC for five regions: Chicago, DC, LA, Nashville, Seattle
  - Survey of shared mobility users distributed by transit agencies and shared mobility providers (n = 10,300)
  - Additional survey on TNC usage developed and administered by 4 major transit agencies: BART, MARTA, NJ Transit, WMATA
  - Modelled TNC trip data for San Francisco County from SFCTA
Transit & Shared Mobility Research Findings
1: TNC use: When is it at its greatest?

- Weekend nights dominate usage. Single busiest hour in every region is Saturday, 9 or 10 pm.
- Peak-hour usage is greatest in Chicago & DC, least in Nashville & LA. But only 20-27% of weekly volume across all regions.
2: TNC trips are short, except to airports

- Most trips are short—less than 3 miles—and concentrated downtown, often within single zips (14-30% of total volume).
- Exception: airport trips
  Highest non-core areas of TNC activity in most study regions.
- But some activity *everywhere*
3: TNC usage & transit ridership changes

- No clear relationship between *peak-hour* TNC usage and changes in regional transit ridership.
- Peak-hour TNC trips are 20-27% of total volume across study regions.
- 2010-2016 transit ridership changes in same regions vary from -9% to +24% (little difference in varying start year).
- TNCs do not appear to impact transit use during commute times in a large way (which is in line with time of usage).

![Figure 3: Peak-hour TNC use vs. transit ridership change 2010-16. Sources: TNC trip data, modeled TNC data, National Transit Database UPT counts 2010-16.](image)
4: Transit and SOV commuting tend to be routine while TNC usage is more occasional

Frequent TNC use is much less common than frequent transit use or frequent driving. TNCs are one part of transportation menu—filling gaps, serving specific needs—but rarely the main course.

Table 10: TNC use within the last week (no data for NJT). Source: Four-Agency Survey.

<table>
<thead>
<tr>
<th>Frequency (no. of days)</th>
<th>BART</th>
<th>MARTA</th>
<th>WMATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>83%</td>
<td>86%</td>
<td>71%</td>
</tr>
<tr>
<td>1-2</td>
<td>14%</td>
<td>10%</td>
<td>25%</td>
</tr>
<tr>
<td>3-4</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>5</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>6-7</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
</tr>
</tbody>
</table>
TNC use widespread, but infrequent: SUMC Survey

Figure 12: Ratio of frequent mode use (weekly or more) to use within the last three months. Source: Shared Mobility Survey

Figure 13: Frequent use (weekly or more) of modes and combinations. Source: Shared Mobility Survey.
In Agency Survey, faster travel times and lower wait times were overwhelmingly (57%-87%) top reasons cited for choosing TNCs when transit was an option. Reliability also a big concern (especially at WMATA). At trip level, 3-16% of TNC trips connected to transit; 11-39% could have taken place on transit.
### Table 11: Reason for most recent TNC trip vs. transit trips

*Source: Four Agency Survey*

<table>
<thead>
<tr>
<th>Reason for TNC trip</th>
<th>BART&lt;sup&gt;15&lt;/sup&gt;</th>
<th>MARTA</th>
<th>NJT</th>
<th>WMATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNC connecting to transit</td>
<td>16%</td>
<td>6%</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td>TNC instead of transit</td>
<td>11%</td>
<td>16%</td>
<td>17%</td>
<td>39%</td>
</tr>
<tr>
<td>Transit not an option (reason)</td>
<td>(26% hour, 6% route)</td>
<td>(8% hour, 8% route)</td>
<td>(no data for reason)</td>
<td>(4% hour, 9% route)</td>
</tr>
<tr>
<td>Haven’t used TNC in region</td>
<td>41%</td>
<td>62%</td>
<td>56%</td>
<td>45%</td>
</tr>
</tbody>
</table>
From TCRP 188: Transit v. TNC Travel Time Tradeoffs
6: TNCs in communities of all income levels

- TNC trips widespread across all regions: started in nearly every zip code (69-90%) in central counties of study regions
- Suggests some degree of use by communities across socioeconomic spectrum
Chicago (Cook Cty.)

Origins

Destinations
Nashville (Davidson Cty.)
Seattle (King Cty.)

Origins

Destinations
Washington (DC; Montgomery & P.G., MD; Alexandria, Fairfax, Falls Church, VA)

Origins

Destinations
7: TNC impacts on vehicle ownership, driving, and use of other modes

- In Agency Survey, postponed car purchase + non-purchase + unreplaced sales outweighed purchases. In SUMC survey, 30% reported vehicle shedding (not solely attributable to TNCs).
- In SUMC survey, frequent TNC use, like frequent transit use, associated with lower HH vehicle ownership. But frequent TNC + SOV users’ car ownership little different than frequent SOV-only.
- Agency survey showed net decreases in use of all other modes attributed to TNCs. Effects in broader population (outside users of transit and other shared modes) outside the purview of this research.
Frequent users (weekly+) of TNCs and of transit report <1 HH vehicles

Those who frequently combine non-SOV modes (TNC + transit) report even fewer HH cars—but not so w/ frequent SOV + TNC users
## Agency Survey: TNC impacts on other modes

Table 12: TNCs’ impacts on use of other modes. *Source: Four-Agency Survey.*

<table>
<thead>
<tr>
<th></th>
<th>BART</th>
<th>MARTA</th>
<th>WMATA</th>
<th>NJT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>More %</td>
<td>Less %</td>
<td>Net %</td>
<td>More %</td>
</tr>
<tr>
<td>Drive own car</td>
<td>2</td>
<td>12</td>
<td>-10</td>
<td>2</td>
</tr>
<tr>
<td>Use agency trains/buses</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Use other transit</td>
<td>4</td>
<td>18</td>
<td>-14</td>
<td>3</td>
</tr>
<tr>
<td>Use taxis</td>
<td>1</td>
<td>34</td>
<td>-33</td>
<td>4</td>
</tr>
<tr>
<td>Bicycle</td>
<td>2</td>
<td>6</td>
<td>-4</td>
<td>2</td>
</tr>
</tbody>
</table>
Who’s Riding TNCs?

- Characteristics of highest-volume zips v. study cities overall
  - Higher HH income (except Seattle)
  - Greater pop. density (2-4x municipal avg.), smaller households
  - Fewer vehicles/HH, fewer SOV commuters
  - More young, and more white, residents (again, Seattle excepted)
  - Higher education levels—greater % of BA+ residents. 10% of top ZCTAs include college campuses
  - Agency Survey has similar findings for TNC users v. non-users
### Who’s Riding TNCs?

- Agency Survey: similar findings for TNC users v. non-users

#### Table 13: Demographics of Four-Agency Survey respondents. *Source: Four-Agency Survey.*

<table>
<thead>
<tr>
<th></th>
<th>MARTA Users</th>
<th>MARTA Non-users</th>
<th>NJT Users</th>
<th>NJT Non-users</th>
<th>WMATA Overall</th>
<th>BART (^{17}) Users</th>
<th>BART (^{17}) Non-users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (%)</td>
<td>54</td>
<td>53</td>
<td>51</td>
<td>46</td>
<td>50</td>
<td>49</td>
<td>54</td>
</tr>
<tr>
<td>Mean age (yrs.)</td>
<td>31</td>
<td>38</td>
<td>36</td>
<td>43</td>
<td>41</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Mean income ($)</td>
<td>35,900</td>
<td>30,200</td>
<td>104,000</td>
<td>77,000</td>
<td>125,900</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ethnicity: Hispanic (%)</td>
<td>10</td>
<td>6</td>
<td>16</td>
<td>18</td>
<td>6</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Race: White (%)</td>
<td>24</td>
<td>13</td>
<td>57</td>
<td>52</td>
<td>73</td>
<td>58</td>
<td>54</td>
</tr>
<tr>
<td>Race: Black (%)</td>
<td>71</td>
<td>87</td>
<td>12</td>
<td>21</td>
<td>15</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>Race: Asian/Pac. Isl. (%)</td>
<td>4</td>
<td>0</td>
<td>15</td>
<td>9</td>
<td>8</td>
<td>27</td>
<td>26</td>
</tr>
<tr>
<td>Race: Mixed (%)</td>
<td>--</td>
<td>--</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Race: Other (%)</td>
<td>4</td>
<td>0</td>
<td>10</td>
<td>12</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Has disability (%)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Has smartphone (%)</td>
<td>94</td>
<td>85</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>98</td>
<td>85</td>
</tr>
</tbody>
</table>
SUMC Survey: Regional differences

Figure 9: Top shared mode, by region. *Source: Shared Mobility Survey.*

Figure 10: Reported number of household vehicles, by region. *Source: Shared Mobility Survey.*
Recommendations: Large Agencies

- Continue to prioritize high-frequency, high-capacity transit: BRT, transit lanes, and make improvements
- Engage with TNCs on designating curb/street space to minimize conflict and congestion impacts
- Partnerships make sense at margins: non-core, late-night service, CnR or paratransit alternatives, increases in difficult to serve situations.
Recommendations: Medium Agencies

- Explore F/L mile opportunities in lower-density, suburban environments, to better serve existing riders & attract new ones.
- Partner with large employers & institutions on behavior change/TDM, with TNCs as one component among many.
- Can help support parking policy changes, carpooling, guaranteed ride home, etc.
Recommendations: Small Agencies

- To concentrate service on key routes, use TNCs for service gaps in time & space (nights, weekends, unserved areas)
- Look at use for unproductive routes
Recommendations generally

- Explore fare integration, co-marketing, and other strategies to encourage multimodalism.
- Local and state governments: work to create predictable framework where variety of private providers can operate in public interest.
- Policy should encourage/prioritize TNC trips concurrently shared by multiple riders, reducing congestion and VMT impacts from additional private vehicles on the street.
Recommendations generally

- TNCs can be good partners by
  - providing data
  - promoting services in ways that complement transit agencies’ efforts
  - working together with cities on efforts to increase mobility, reduce traffic congestion, mitigate carbon emissions, and increase access to underserved communities

- Business initiatives that demonstrably serve the public good should be encouraged.

- Encourage policy that systematizes requirements
Questions?
Today’s Participants

• Prashanth Gururaja, *Shared-Use Mobility Center*, prashanth@sharedusemobilitycenter.org

• Sharon Feigon, *Shared-Use Mobility Center*, sharon@sharedusemobilitycenter.org

• Colin Murphy, *Shared-Use Mobility Center*, colin@sharedusemobilitycenter.org
Panelists Presentations


After the webinar, you will receive a follow-up email containing a link to the recording
Take Part in TCRP Day!

TCRP DAY is a national event aimed at creating awareness of the program, showcasing its research in action, and increasing the number of transit professionals involved in the program.

Contact Peggy Wilson at pwilson@apta.com to volunteer to host a local event, or with any questions. More information is also at bit.ly/2rkyTmO
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