

TRANSPORTATION RESEARCH BOARD

# 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

Sharon Feigon, Executive Director  
[sharon@sharedusemobilitycenter.org](mailto:sharon@sharedusemobilitycenter.org) | [@SharedTransport](https://twitter.com/SharedTransport)  
Colin Murphy, Director of Research & Consulting  
[colin@sharedusemobilitycenter.org](mailto:colin@sharedusemobilitycenter.org) | [@murcoil](https://twitter.com/murcoil)

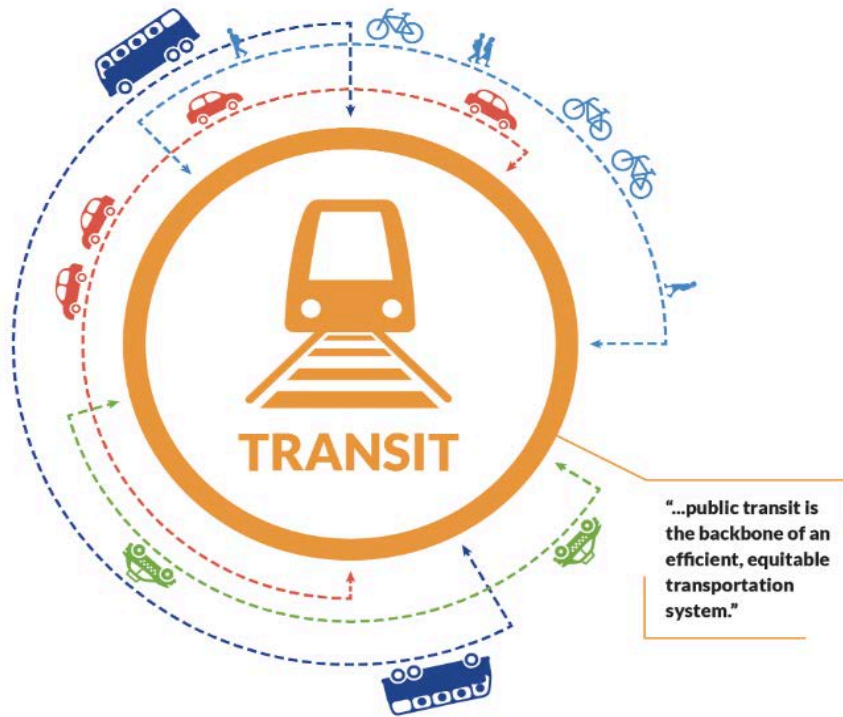
# Overview

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



# Shared-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

# Project Overview and Research Approach

# Project Overview

- Project began as extension of TCRP Research Report 188, *Shared Mobility and the Transformation of Public Transit* (2016)
- 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

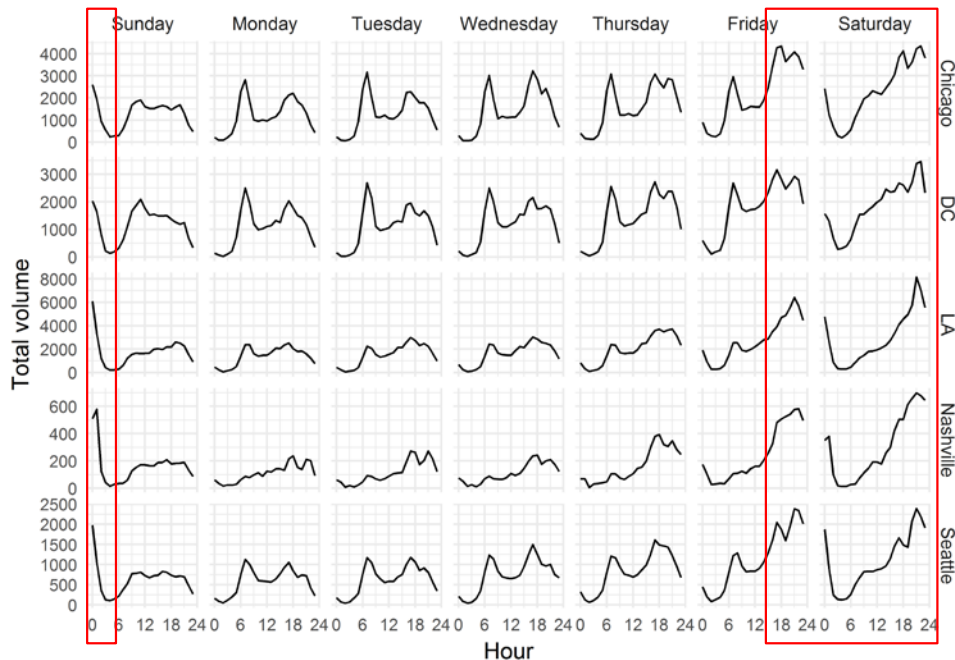
- Data sources
  - ▣ Hourly origin-destination trip flows provided by a major TNC for five regions: Chicago, DC, LA, Nashville, Seattle
  - ▣ Survey of shared mobility users distributed by transit agencies and shared mobility providers (n = 10,300)
  - ▣ Additional survey on TNC usage developed and administered 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

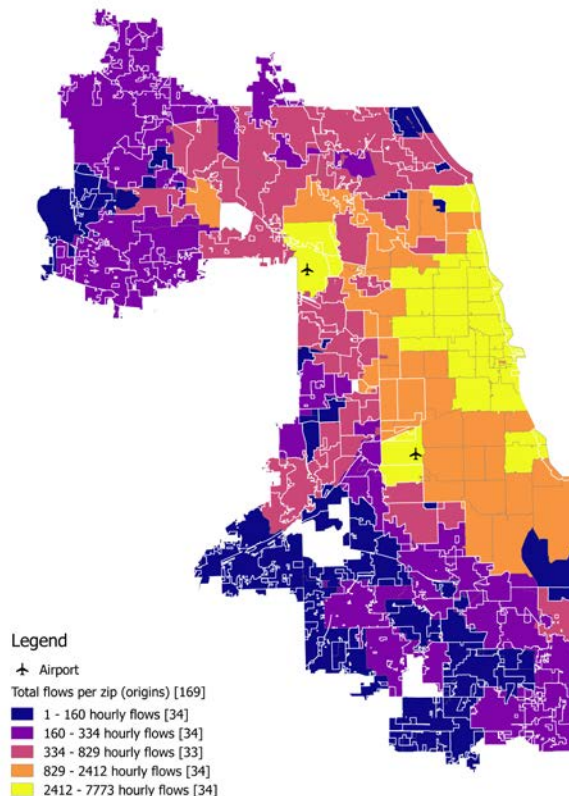
# 1: TNC use: When is it at its greatest?

- 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

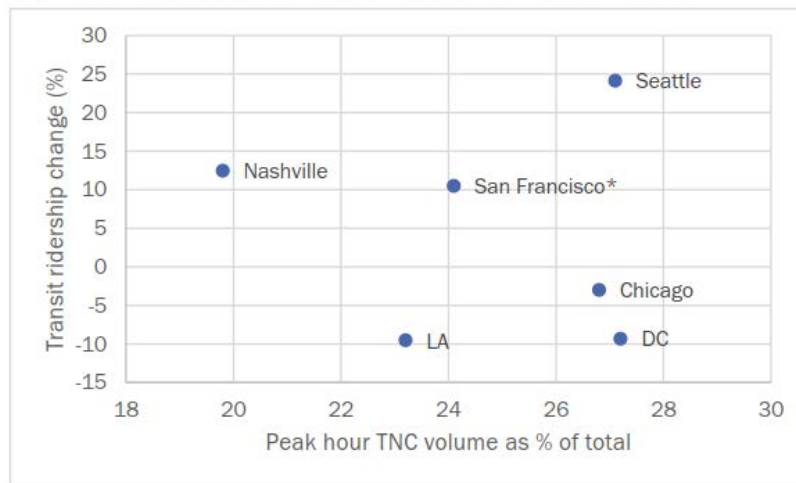
- Most trips are short—less than 3 miles—and concentrated downtown, often within single zips (14-30% of total volume).
- Exception: airport trips  
Highest non-core areas of TNC activity in most study regions.
- But some activity *everywhere*



# 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.

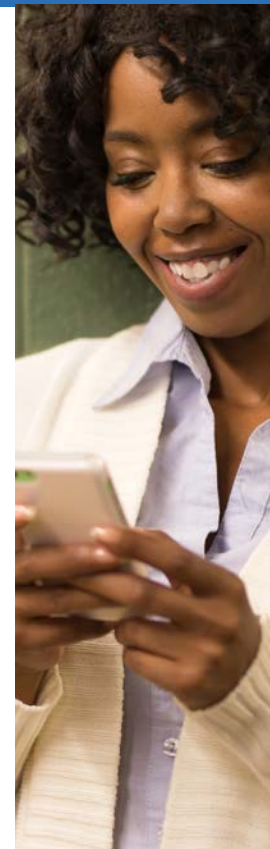


## 4: Transit and SOV commuting tend to be routine while TNC usage is more occasional

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.

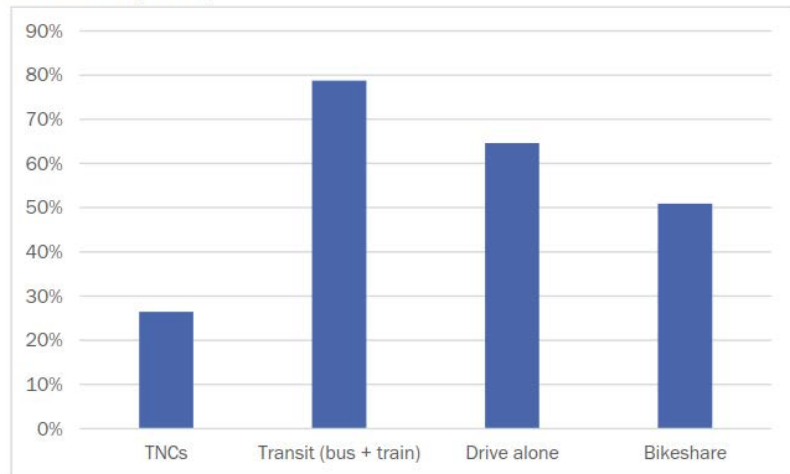
**Table 10: TNC use within the last week** (no data for NJT). *Source: Four-Agency Survey.*

Frequency (no. of days)	BART	MARTA	WMATA
None	83%	86%	71%
1-2	14%	10%	25%
3-4	3%	3%	3%
5	0%	2%	1%
6-7	0%	2%	0%

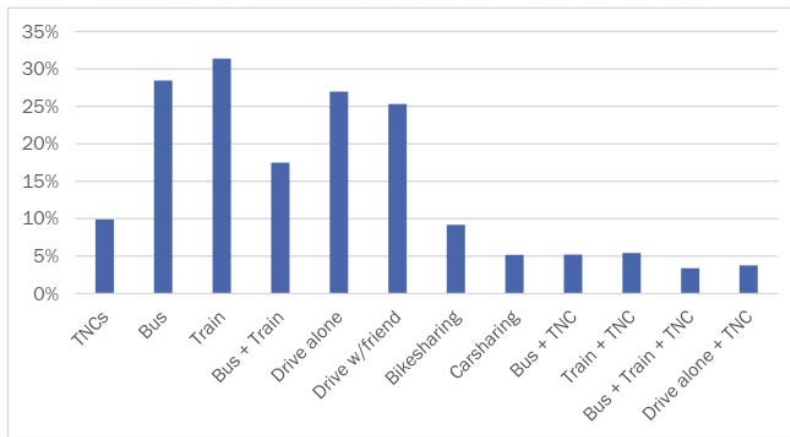


# TNC use widespread, but infrequent: SUMC Survey

**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.*





## 5: Transit travel and wait times top concerns for replacement of transit trips with TNC trips

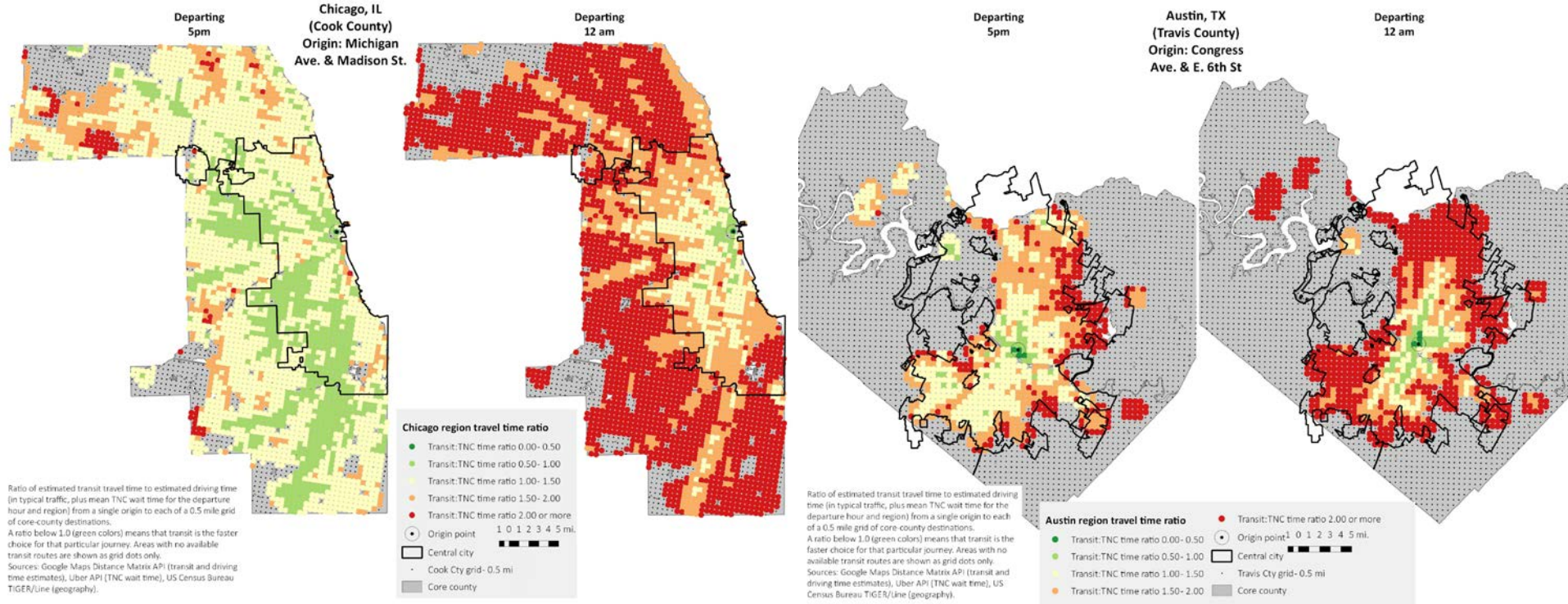
- In Agency Survey, faster travel times and lower wait times were overwhelmingly (57%-87%) top reasons cited for choosing TNCs when transit was an option
- Reliability also a big concern (especially at WMATA)
- At trip level, 3-16% of TNC trips connected to transit; 11-39% could have taken place on transit.

# Agency Survey: TNC trip reasons

**Table 11: Reason for most recent TNC trip vs. transit trips.** *Source: Four Agency Survey.*

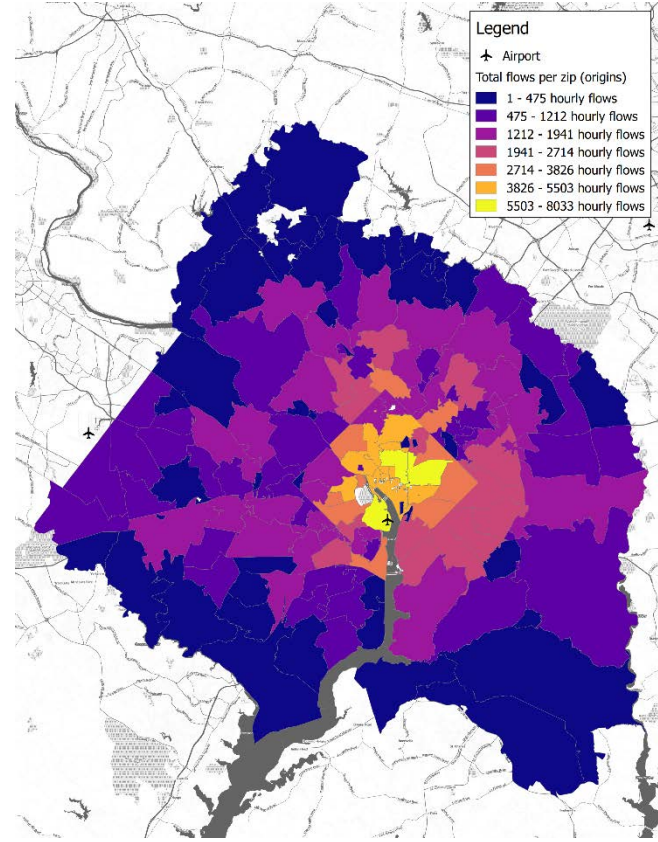
	BART <sup>15</sup>	MARTA	NJT	WMATA
TNC connecting to transit	16%	6%	8%	3%
TNC instead of transit	11%	16%	17%	39%
Transit not an option (reason)	32% (26% hour, 6% route)	16% (8% hour, 8% route)	19% (no data for reason)	13% (4% hour, 9% route)
Haven't used TNC in region	41%	62%	56%	45%

# From TCRP 188: Transit v. TNC Travel Time Tradeoffs



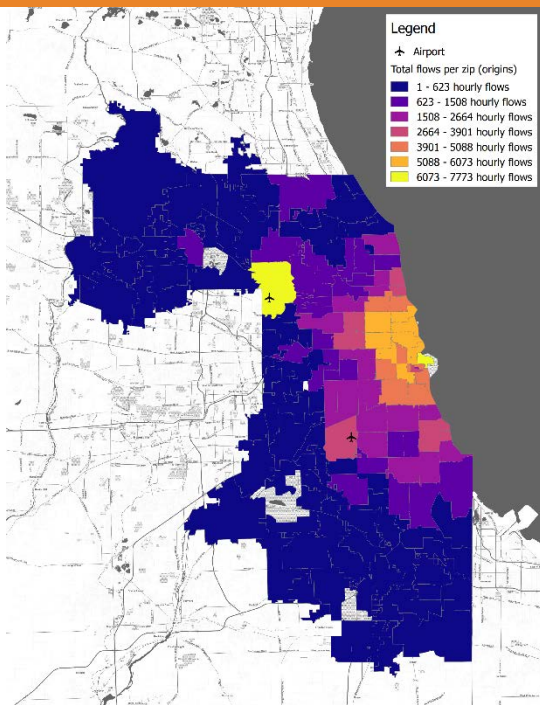
## 6: TNCs in communities of all income levels

- 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

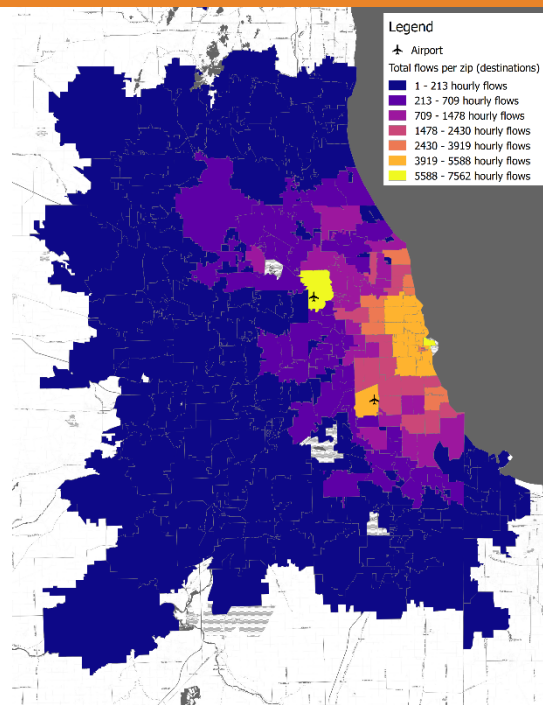


# Chicago (Cook Cty.)

## Origins



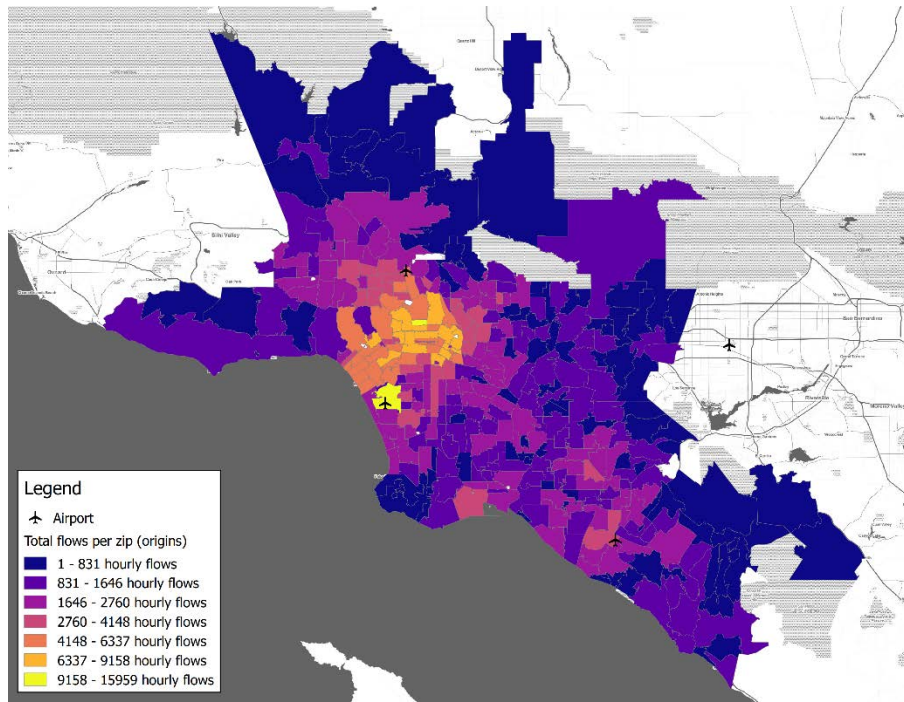
## Destinations



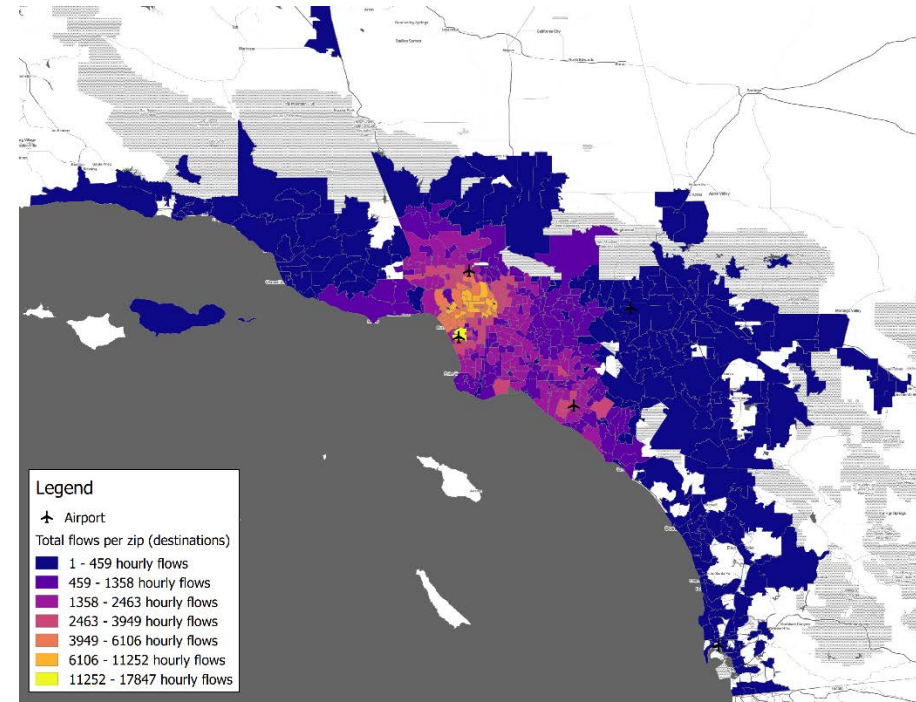


# Los Angeles (LA & Orange Ctys.)

## Origins



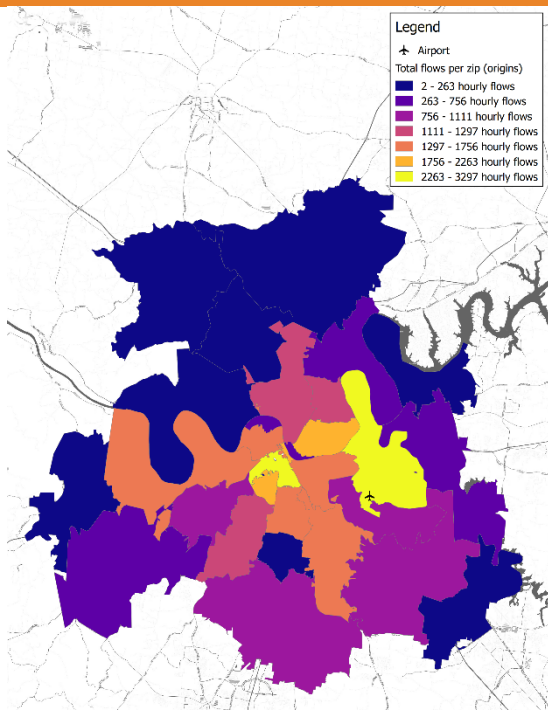
## Destinations



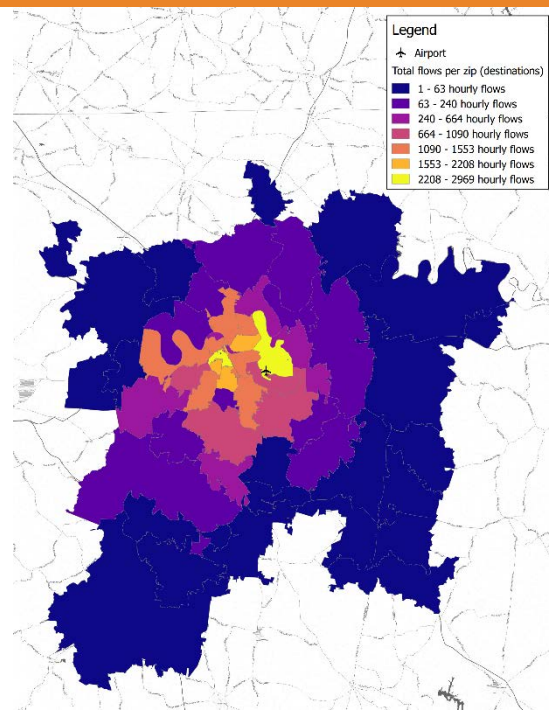


# Nashville (Davidson Cty.)

## Origins

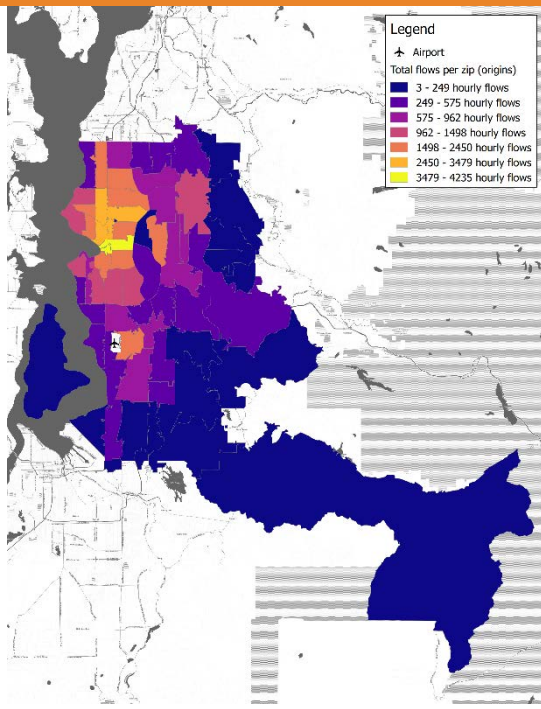


## Destinations

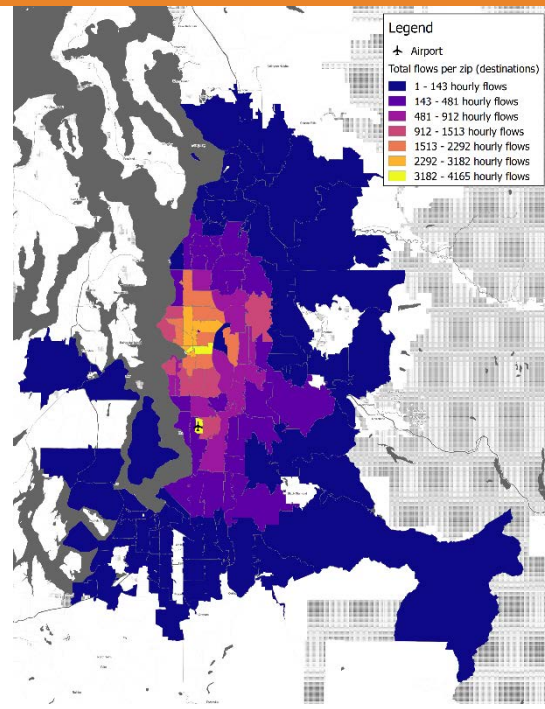


# Seattle (King Cty.)

## Origins

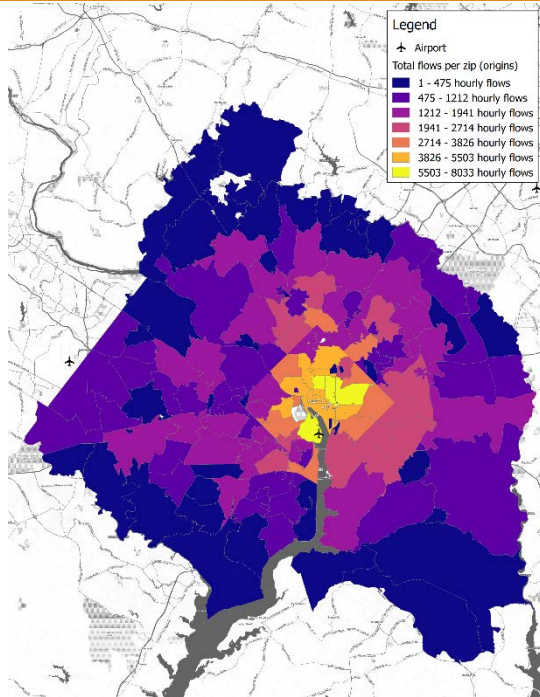


## Destinations

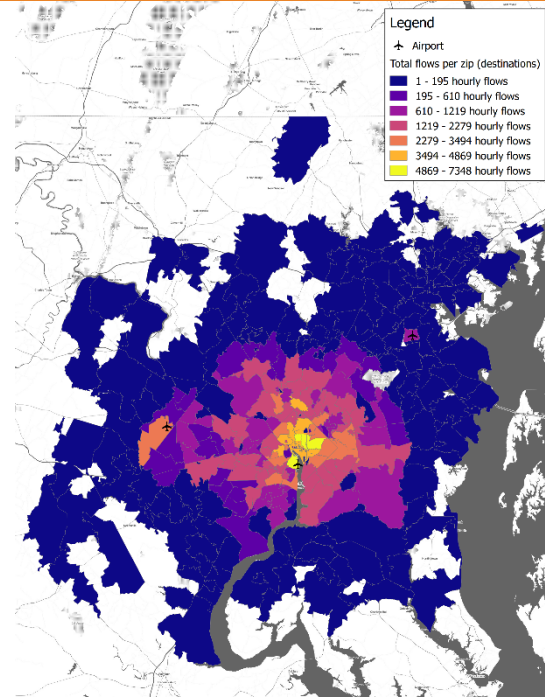


# Washington (DC; Montgomery & P.G., MD; Alexandria, Fairfax, Falls Church, VA)

## Origins



## Destinations



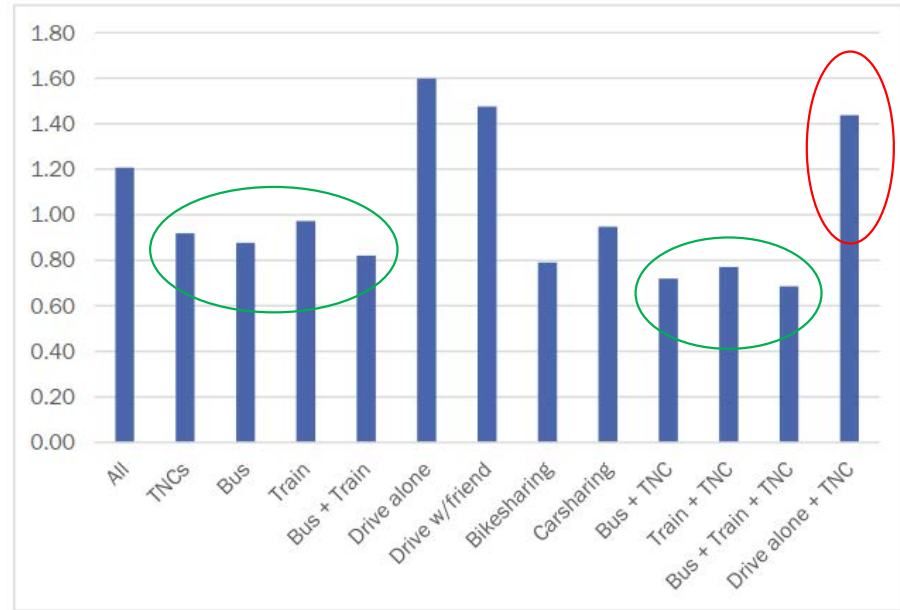
# 7: TNC impacts on vehicle ownership, driving, and use of other modes

- 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

# SUMC Survey: HH vehicles and frequent mode

- 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

Figure 14: Average household vehicles, by frequently used mode (weekly+). Survey



# Agency Survey: TNC impacts on other modes

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

	BART			MARTA			WMATA			NJT		
	More %	Less %	Net %	More %	Less %	Net %	More %	Less %	Net %	More %	Less %	Net %
Drive own car	2	12	-10	2	6	-4	2	22	-20	--	--	--
Use agency trains/buses	7	6	1	6	5	1	4	32	-28	14	19	-5
Use other transit	4	18	-14	3	4	-1	2	24	-22	--	--	--
Use taxis	1	34	-33	4	8	-6	1	62	-61	--	--	--
Bicycle	2	6	-4	2	4	-2	2	4	-2	--	--	--



# 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.*

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

# SUMC Survey: Regional differences

Figure 9: Top shared mode, by region. Source: Shared Mobility Survey.<sup>10</sup>

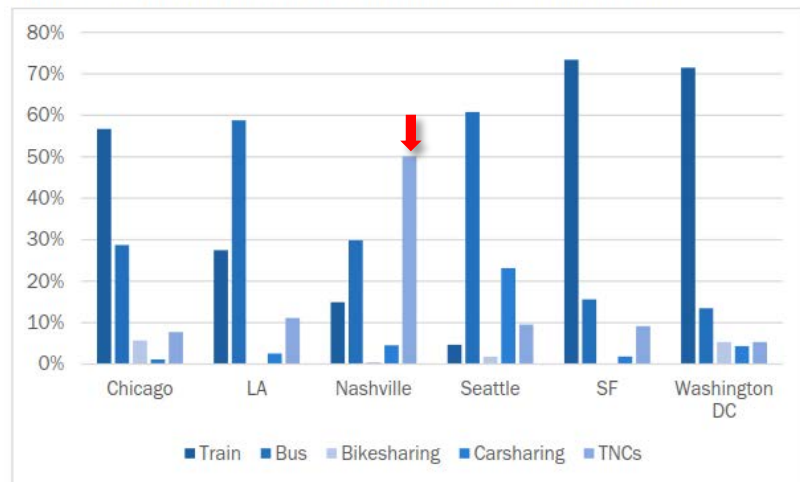
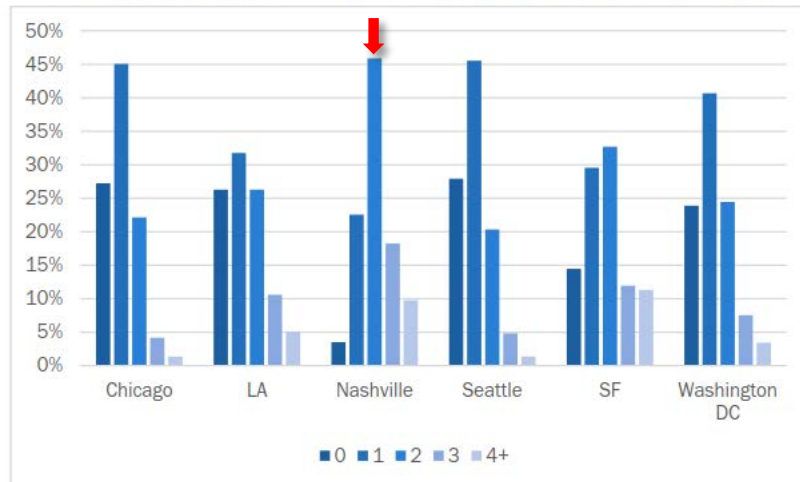


Figure 10: Reported number of household vehicles, by region. Source: Shared Mobility Survey.<sup>11</sup>



# 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



**TD**  
*late shift*

Transportation Disadvantaged (TD) riders now have a new way to get home late at night with **TD Late Shift**.

 [Click here for more info](#) 



# 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

A map of a region, likely a metropolitan area, with various colored overlays. The central area is colored in shades of yellow, orange, and pink, while the surrounding areas are dark blue. Three airplane icons are placed on the map: one in the top right, one in the middle left, and one in the bottom center. The word "Questions?" is written in large white text in the center of the map. Labels for "Nokesville", "Shady Side", "Deale", "Beech", "Booth", "Edgemere", "Patuxent Woods Research Center North Tract", and "dr" are visible on the map.

# Questions?

# Thank you.

[www.sharedusemobilitycenter.org](http://www.sharedusemobilitycenter.org) | @SharedUseCntr  
[sharon@sharedusemobilitycenter.org](mailto:sharon@sharedusemobilitycenter.org) | @SharedTransport  
[colin@sharedusemobilitycenter.org](mailto:colin@sharedusemobilitycenter.org) | @murcoil

# Today's Participants

- Prashanth Gururaja, *Shared-Use Mobility Center*,  
[prashanth@sharedusemobilitycenter.org](mailto:prashanth@sharedusemobilitycenter.org)
- Sharon Feigon, *Shared-Use Mobility Center*,  
[sharon@sharedusemobilitycenter.org](mailto:sharon@sharedusemobilitycenter.org)
- Colin Murphy, *Shared-Use Mobility Center*,  
[colin@sharedusemobilitycenter.org](mailto:colin@sharedusemobilitycenter.org)



SHARED-USE  
MOBILITY CENTER

# Panelists Presentations

<http://onlinepubs.trb.org/onlinepubs/webinars/180515.pdf>

*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](mailto:pwilson@apta.com) to volunteer to host a local event, or with any questions. More information is also at [bit.ly/2rkyTm0](http://bit.ly/2rkyTm0)





# Get Involved with TRB

- Getting involved is free!
- Join a Standing Committee (<http://bit.ly/2jYRrF6>)
- Become a Friend of a Committee  
<http://bit.ly/TRBcommittees>
  - Networking opportunities
  - May provide a path to become a Standing Committee member
- For more information: [www.mytrb.org](http://www.mytrb.org)
  - Create your account
  - Update your profile