

Emerging Shared Mobility for moveDC 2020

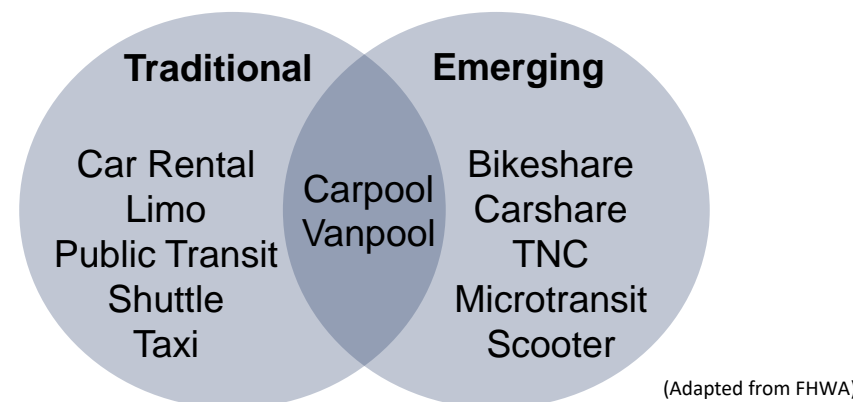
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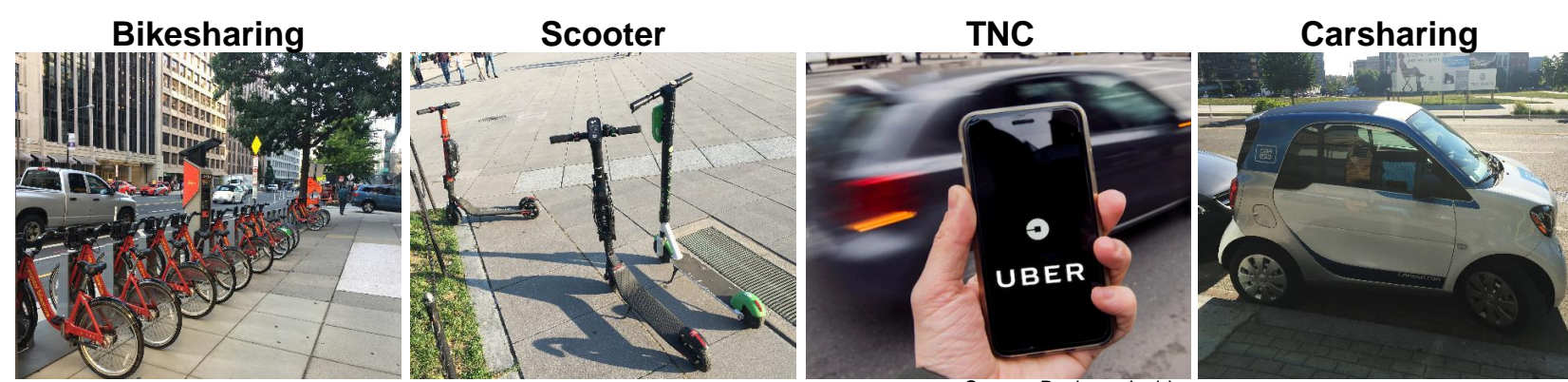
What is "Shared Mobility"?

"Shared Mobility" is the shared use of a vehicle, bike, or other transportation mode.

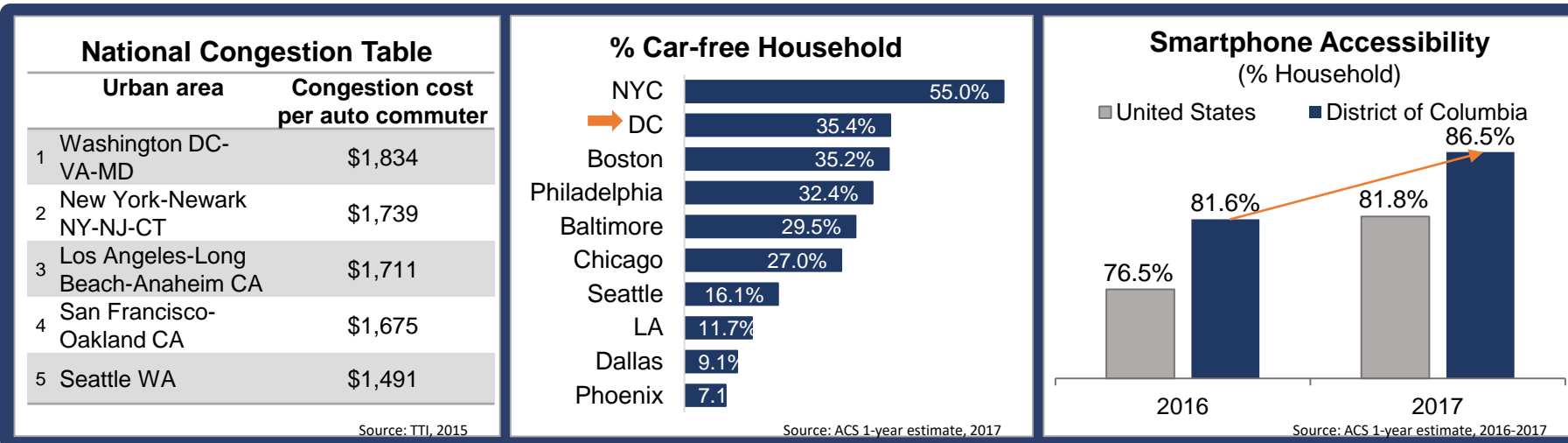
- Traditional:** "... existing core and incumbent services"
- Emerging:** "... implement innovative technologies or service models"



Common Types of Emerging Shared Mobility



Factors including congestion rates, car ownership, and smartphone access lead to greater use of emerging shared mobility.



Objectives

moveDC 2020 will establish goals related to safety, sustainability, accessibility, and mobility. Understanding how people move using emerging shared mobility and establishing corresponding recommendations are keys to meeting the moveDC 2020 goals. The objectives of this research are:

- Understand spatial, temporal, and behavioral patterns of emerging shared mobility use in the District.
- Provide high-level recommendations for infrastructure and policies related to emerging shared mobility for moveDC 2020.
- Provide input on shared mobility use patterns into DDOT plans, policies, and studies.

Dashboard: Trip Quantity and Duration

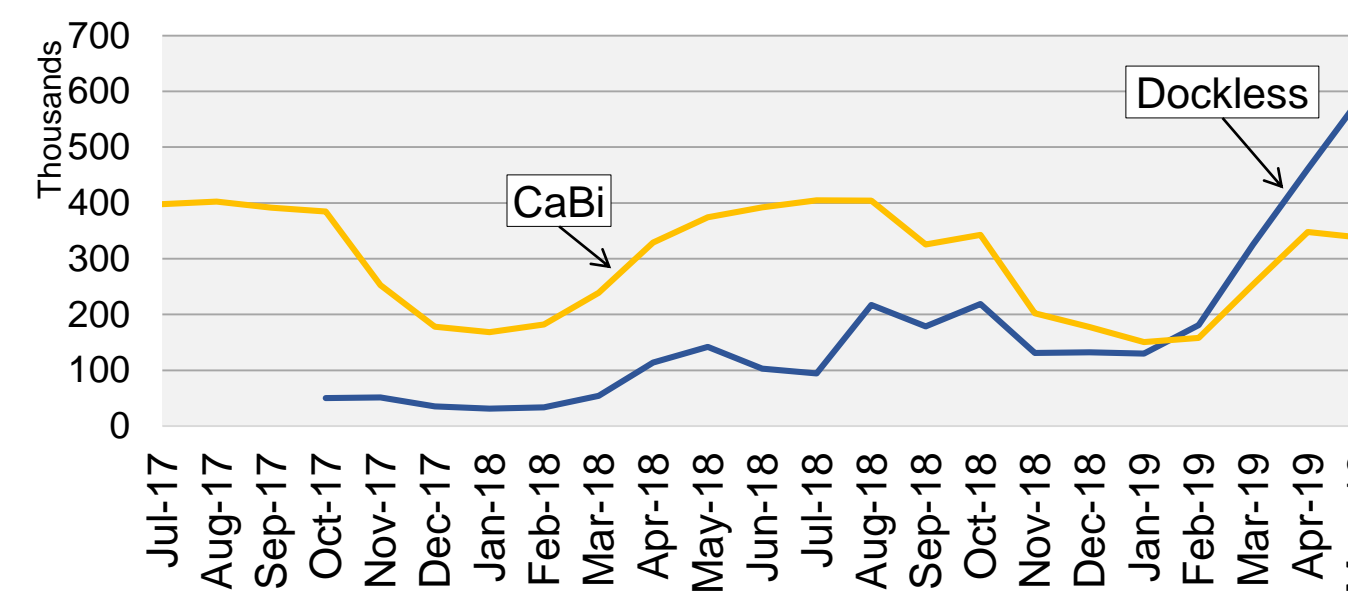
		Avg #trips per day (weekday)	Avg #trips per day (weekend)	Avg travel length (miles)	Avg travel time (min)	Data
Capital Bikeshare	Casual	1,388	3,927	N/A	44.8	04/2019
	Member	9,660	9,204	CaBi doesn't have a GPS	15.6	04/2019
Dockless	e-scooter	13,015	17,287	1.0	18.6	04/2019
	e-bike	938	1,063	2.4	22.3	04/2019
TNC (Uber/Lyft/Via)		212,429	238,280	5.7*	18.2	10/2018
Taxi		37,448	25,889	3.5	10.8	10/2017

* Travel length data only provided by Lyft, not other TNCs.

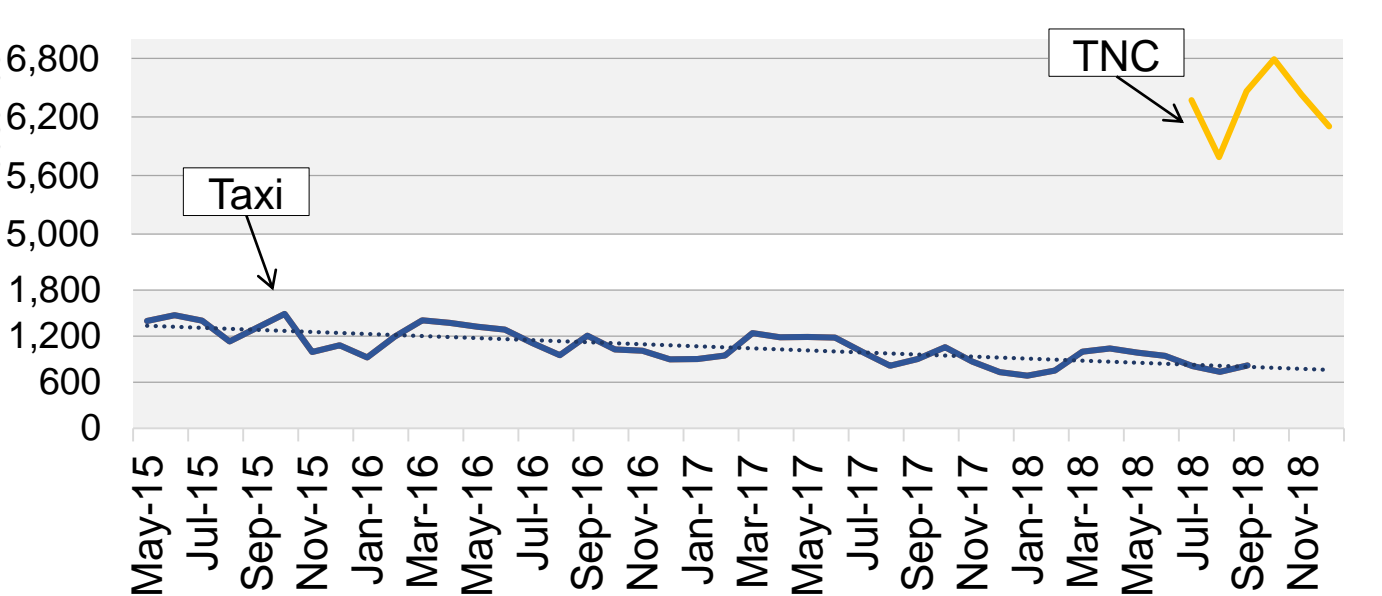
Summary of Data Analysis

Number of Trips by Month

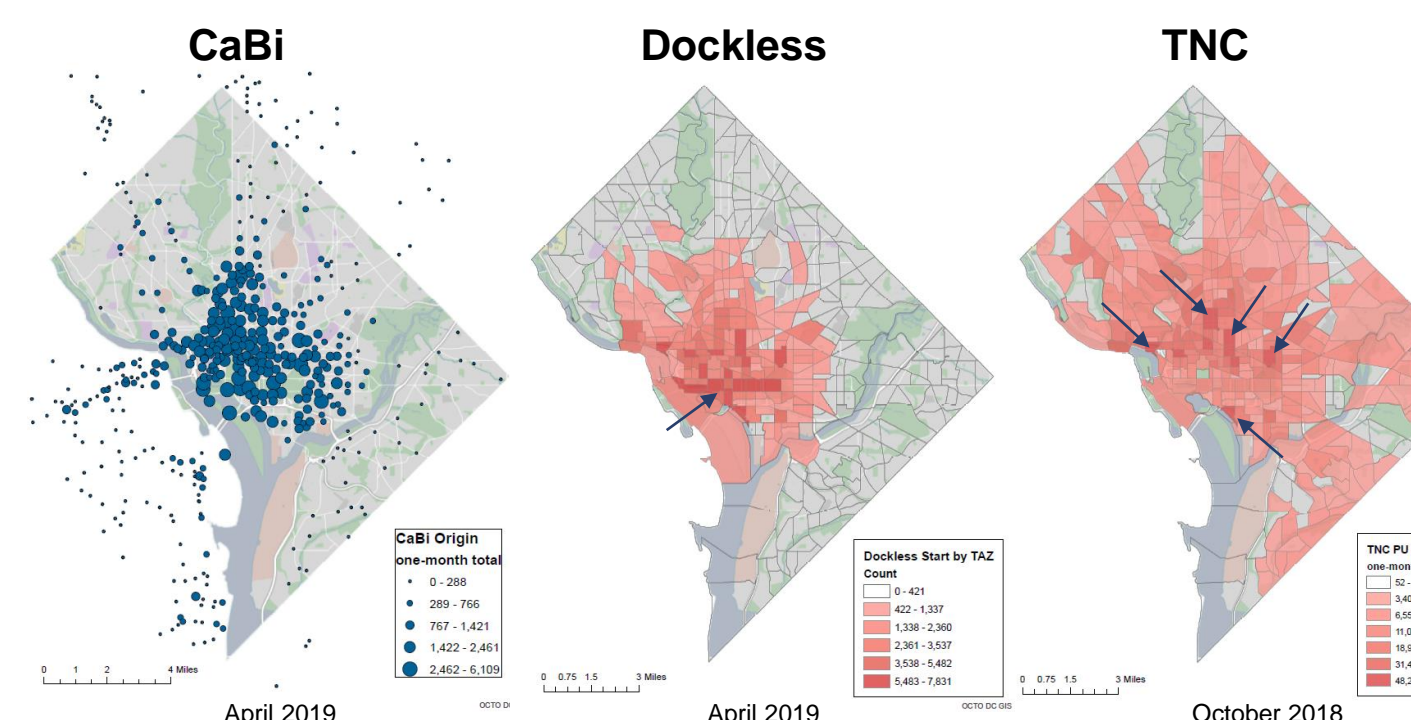
Since the dockless vehicles came to the U.S., the number of dockless trips has grown very fast with a notable spike (and overtaking Capital Bikeshare) since March 2019.



While taxi trips have been decreasing slowly since 2015, TNCs are replacing them and the number of monthly TNC trips is approximately eight times larger than that of taxi trips.



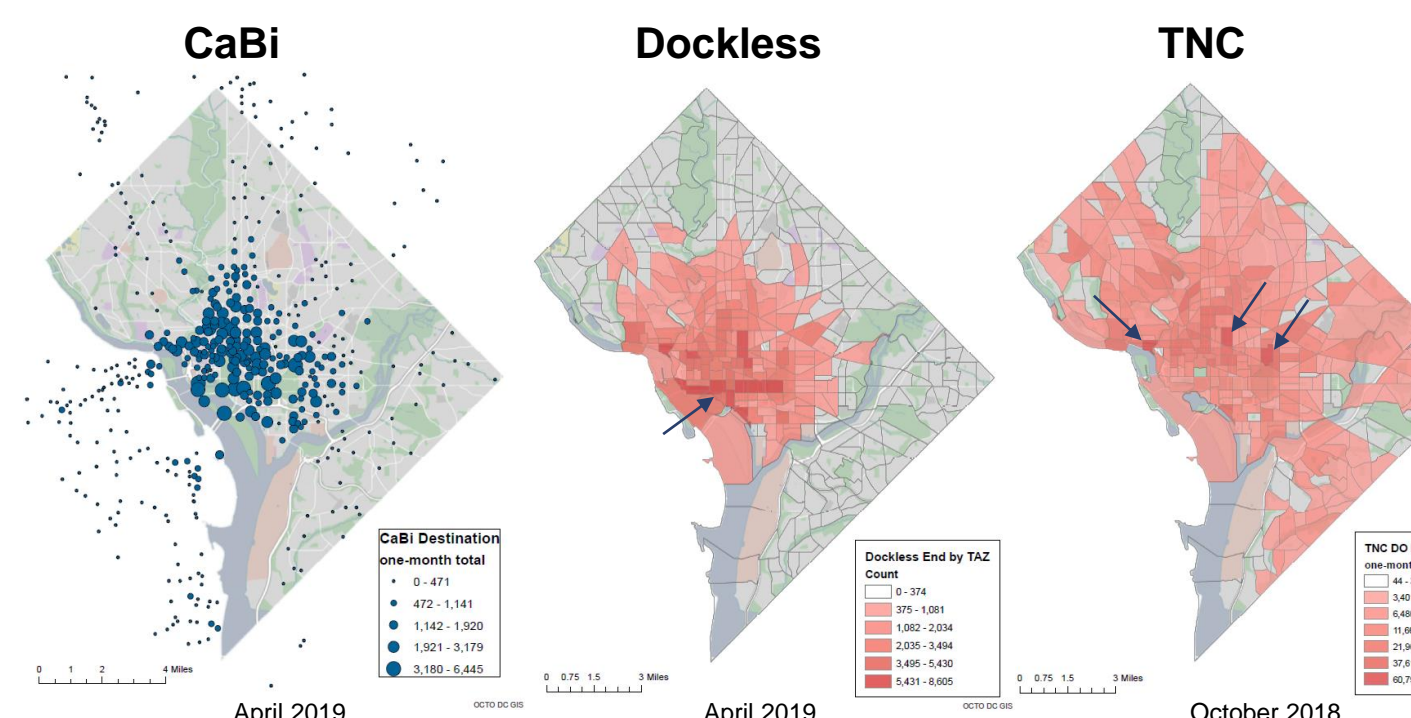
Spatial Pattern (Trip Origin)



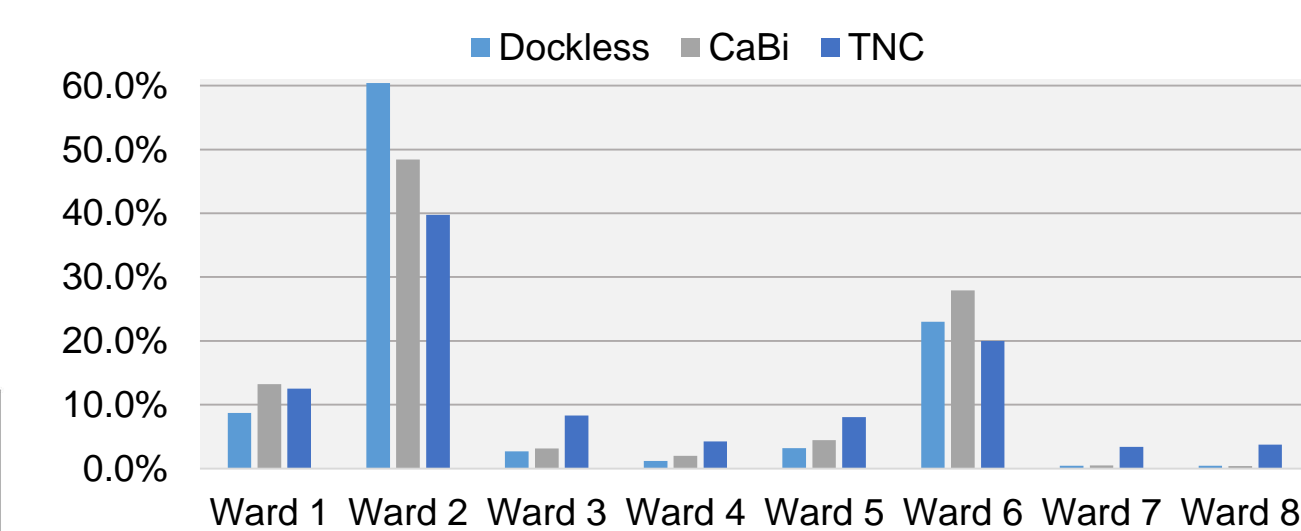
Emerging shared mobility use differs significantly across the city. Trip origins across all emerging shared modes are highly concentrated in Ward 2 and Ward 6. Less than 3% of CaBi/Dockless trips originate in Ward 4, 7, and 8. Only 10% of TNC trips originate in Ward 4, 7, and 8. Trip destination is similar to trip origin.

- CaBi:** 48% of trips originated from Ward 2 and 28% from Ward 6.
- Dockless:** 60% of trips originated from Ward 2 and 23% from Ward 6. Substantial amounts of trips are originated from National Mall.
- TNC:** TNCs are more distributed than other two modes. 40% of trips originated from Ward 2 and 20% from Ward 6. Large trip generators include the Wharf, Union Station, Convention Center, and Georgetown.

Spatial Pattern (Trip Destination)

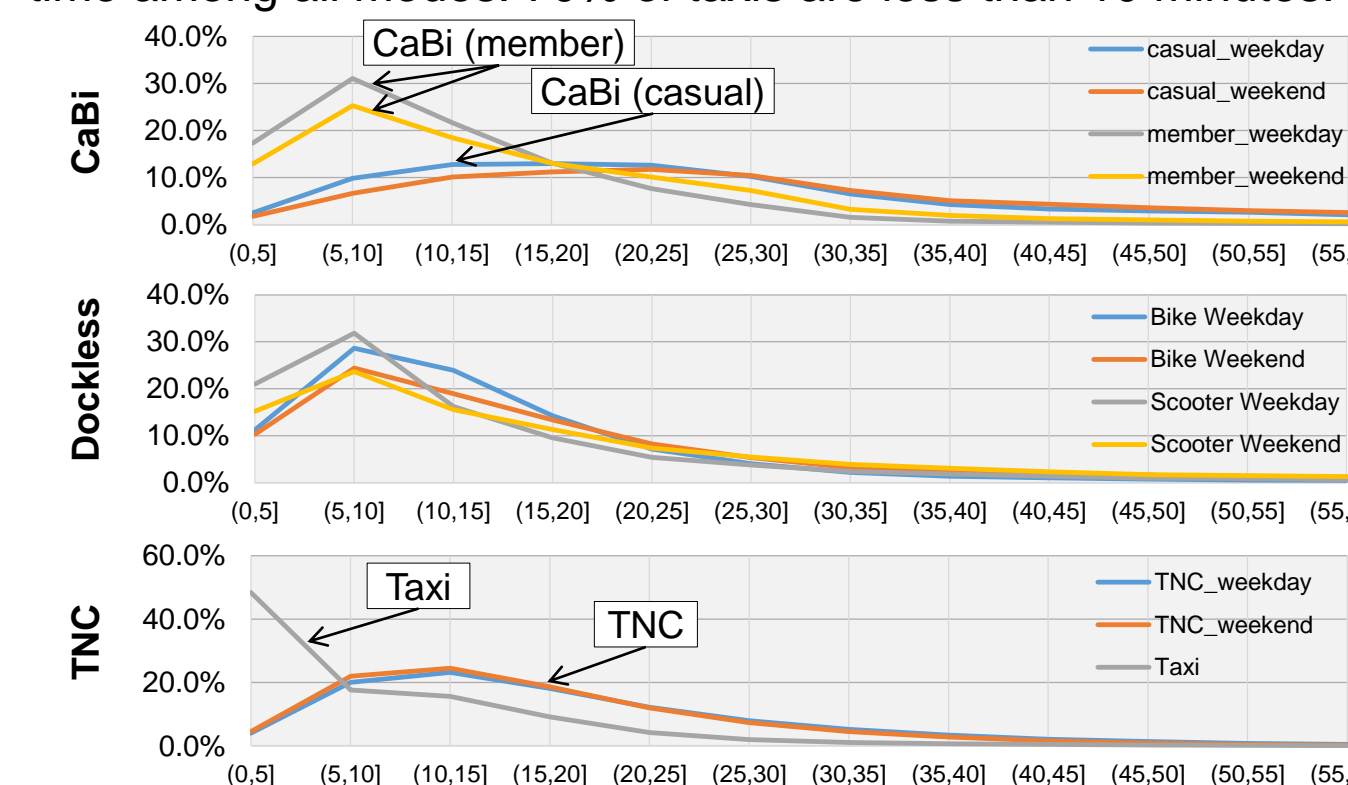


Trip Origin by Ward



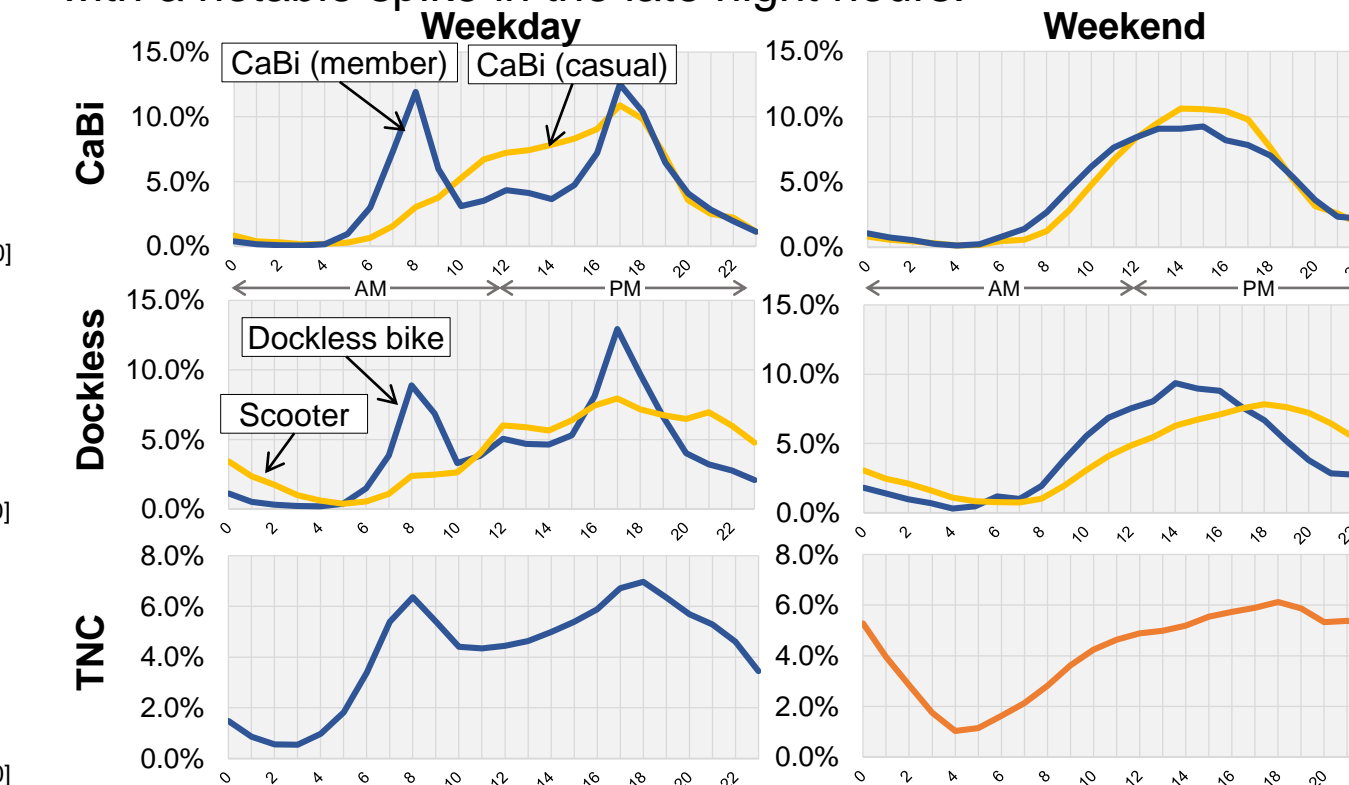
Behavioral Pattern (Travel Time)

CaBi (member), dockless bike, and scooter are most likely to travel less than 20 minutes, while CaBi (casual) varies from 5 to 40 minutes. TNCs have generally longer travel times than dockless or CaBi. Interestingly, taxis have the shortest travel time among all modes. 70% of taxis are less than 10 minutes.



Temporal Pattern (Time-of-Day)

CaBi (member), dockless bike, and TNC show clear commute hour peaks at 8 AM and 5 PM during weekday, while CaBi (casual) and scooters are used more consistently throughout the day. During weekend, all modes are used throughout the day with a notable spike in the late night hours.



Recommendations

Based on the findings from the data, DDOT should consider the following recommendations in moveDC and other plans, studies, and policies.

Data

- Actively collaborate between DDOT teams to apply data to project prioritization and planning
 - e.g. O/D data can be useful to prioritize corridors that need supportive infrastructure
- Require a robust data sharing agreement from private companies as a future requirement for permits
 - Current data contains significant errors; approx. 7% of dockless trips have travel times of "0".
- Consider emerging shared mobility needs and implications in all DDOT data collection
 - Estimate future mode share, impact on congestion

Infrastructure

- Expand PUDO zones for TNC in high demand areas
- Provide bike racks / staging area for dockless vehicles in high demand areas (e.g. Metrorail stations)

Equity

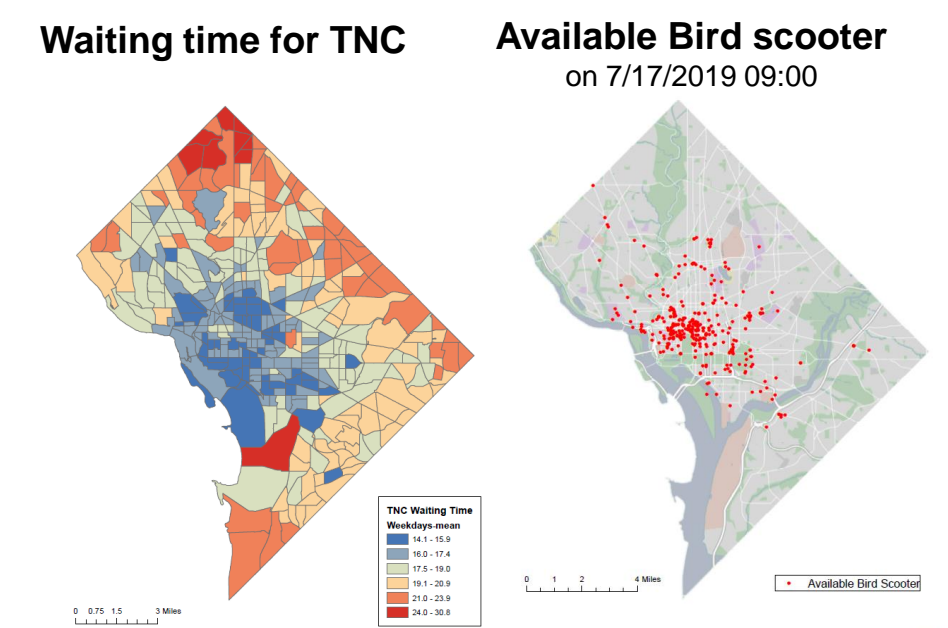
- Include more stringent requirements for equitable distribution of dockless vehicles and faster response times for TNC vehicles as part of use agreements
 - Scooter availability is limited outside of Ward 2 and 6.
 - TNC waiting times differ significantly across the city.
- Consider pilots that target underserved areas
 - Partnerships with TNCs to offer discounted fares where transit service is not available
 - Use surveys and community outreach to understand demand for and barriers to emerging shared mobility use

Public

- Actively solicit public opinion on how emerging shared mobility is being used
 - Where do we need to serve better? Any issues related to service? Perceived infra needs? (e.g. No connected bike lanes to use, Companies don't respond quickly)
- Advertise rules / regulations for safe use
 - Webpage (see VeoRide) and Flyer (see Austin's Scooter etiquette flyer)

Safety / Mobility

- Protect vulnerable users by establishing strict restrictions from riding on sidewalks
 - LA example: "No Riding On Sidewalks" (min 48-point font) located on the platform of every scooter"
- Partnership between operating companies and DDOT/Wmata
 - Approx. 4% of daily dockless trips headed to metro entrance (around 100 ft)
 - Numerous TNCs produced by / attracted to the Union Station
 - Potential for policies or programs that encourage linking of public transit and emerging shared modes
- Designate dockless vehicle parking at strategic locations that do not conflict with freight loading zones, PUDO zones, or others



Acknowledgement

The author greatly appreciates the support and guidance provided by Ms. Haley Peckett and all DDOT staff.

Disclaimer

Data and results from the data are intended for internal DDOT use only and shall not be distributed outside of DDOT.