SHARED MOBILITY DEVICES

Lessons from the Washington Region

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Future of Transportation
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Shared Micromobility in the DC Region

Station-based Bikeshare
(Capital Bikeshare)
• Regional
• Publicly provided
• Mostly long-term memberships

Dockless Shared Mobility
• e-scooter
• e-bike
• pedal-bike (2017-2018)
• smartphone-based
• Private providers
• Per-minute charge

Content Credit: DDOT
E-scooter Boom

- E-scooters have largely replaced dockless bike share
  - A national trend, driven by the operators
  - E-scooters have higher demand, generate more revenue
  - Jump offers e-bikes and e-scooters
  - No shared pedal bikes still in operation

- E-scooters are driving rapid growth in SMD trips
  - Ex: In DC dockless vehicle monthly trips increased from 140,000 (May 2018) → 590,000 (May 2019)

- Capital Bikeshare (station-based) ridership is flat
National Trends

84 Million Trips on Shared Micromobility in 2018

Source: NACTO

AMPO Conference
Future of Transportation
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Factors favoring SMD use in DC

- Low car ownership
- High Smartphone use
- High Income & Education
- Auto Congestion

<table>
<thead>
<tr>
<th>Rank</th>
<th>Urban area</th>
<th>Congestion cost per auto commuter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Washington DC-VA-MD</td>
<td>$1,834</td>
</tr>
<tr>
<td>2</td>
<td>New York-Newark NY-NJ-CT</td>
<td>$1,739</td>
</tr>
<tr>
<td>3</td>
<td>Los Angeles-Long Beach-Anaheim CA</td>
<td>$1,711</td>
</tr>
<tr>
<td>4</td>
<td>San Francisco-Oakland CA</td>
<td>$1,675</td>
</tr>
<tr>
<td>5</td>
<td>Seattle WA</td>
<td>$1,491</td>
</tr>
</tbody>
</table>

% Car-free Household

- NYC: 55.0%
- DC: 35.4%
- Boston: 35.2%
- Philad...: 32.4%
- Balti...: 29.5%
- Chicago: 27.0%
- Seattle: 16.1%
- LA: 11.7%
- Dallas: 9.1%
- Phoenix: 7.1%

Smartphone Accessibility % Household

United States: 2016 - 76.5%, 2017 - 81.6%
District of Columbia: 2016 - 81.8%, 2017 - 86.5%

Content Credit: DDOT
## Shared Dockless Mobility Permit Programs in the Washington Region

<table>
<thead>
<tr>
<th></th>
<th>DC</th>
<th>Arlington, VA</th>
<th>Alexandria, VA</th>
<th>Montgomery County, MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitted Fleet Size as</td>
<td>6210</td>
<td>2700</td>
<td>1400</td>
<td>2000 (e-scooters and e-bikes)</td>
</tr>
<tr>
<td>of 9/2019*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Operators</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Trips/Month</td>
<td>590k</td>
<td>80k</td>
<td>40k</td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td>All</td>
<td>All</td>
<td>All</td>
<td>Silver Spring, Rockville</td>
</tr>
</tbody>
</table>

*Actual number on the street at any one time is less, typically 50% of the permitted number.
Role of MWCOG

COG holds a Regional **Dockless Workshop** every Six Months

Goal:
• Share information on evolving practices

Attendance:
• DDOT, Arlington County, Montgomery County, and City of Baltimore
• Interested agencies, consultants, dockless operators, and members of the public
• Transportation Planning Board Access for All Committee Chair

Workshops were held
• May 31, 2018
• October 31, 2018
• May 30, 2019
• Next workshop will be held on December 9, 2019
• Sponsored by the Bicycle and Pedestrian Subcommittee
Successes

• SMD use is growing rapidly, with positive response from riders
• SMDs increase mobility options for short trips (typically 0.5 – 1.5 miles)
• Reduction in motorized trips, especially ride-hailing and personal motor vehicles

All four jurisdictions are extending their pilot permit programs

Photo Credit: DDOT
E-scooter Boom - DC

Content Credit: DDOT
May saw heavy rain events, likely causing the dip in usage
SMD Mode Replacement (Arlington)

- SMD use is growing rapidly, with positive response from riders.
- SMDs increased mobility options.
- Reduction in other motorized trips, especially ride-hailing and personal motor vehicles.

**Data Source:** Arlington County Feedback Form
Areas of Concern: Parking

Blocking the ramp

Photo Credit: DDOT
Parking Solutions

- In-street parking corrals, in high use areas (DC, Arlington, Alexandria)
- Geofencing to exclude scooters from selected areas
- Offer discounted trips for parking the e-scooter in a corral
- Lock-to devices

Photo Credit: DDOT
Sidewalk Riding/Inadequate Facilities

Hazard/discomfort for pedestrians due to sidewalk riding

Responses:
• DC, Arlington: 10 mph built-in speed limit
• Accelerate bike lane, protected lane construction
• Protected bike lanes eliminate sidewalk riding
• Dismount zone stencils downtown
• Rider training

14th Street NW Protected Bike Lane
Arlington User Preferences

- 47% of e-scooter users listed Protected Bike Lanes as their first choice
- 37% listed unprotected bike lanes as second choice
- Only 9% list the Sidewalk as their first choice

Data Source: Arlington County online feedback form
## Safety – Arlington Data

### Crashes, Injuries and Fatalities in Arlington County by Mode

<table>
<thead>
<tr>
<th>Year</th>
<th>Crashes</th>
<th>Injuries</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>2,535</td>
<td>998</td>
<td>2</td>
</tr>
<tr>
<td>2018</td>
<td>125</td>
<td>114</td>
<td>1</td>
</tr>
<tr>
<td>[Full year]</td>
<td>92</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>[Nine-month pilot]</td>
<td>69</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>58</td>
<td>43</td>
<td>3</td>
</tr>
<tr>
<td>2018</td>
<td>58</td>
<td>43</td>
<td>3</td>
</tr>
</tbody>
</table>

### Data Sources:
- Car crashes and injuries from DMV, pedestrian and bike crashes and injuries from police reports and TE&O, Arlington County, Capital bikeshare crashes and injuries from active transportation; data is not available for the number of injuries for Capital Bikeshare.
E-scooter Injury Rates

- 29 e-scooter injuries / 453,690 e-scooter trips = Approximately 0.64 injury crashes / 10,000 e-scooter trips during the 9 month pilot

- Baltimore found a rate of about 0.9 emergency room visits per 10,000 e-scooter rides

- E-scooter crash rates appear to be roughly comparable pedestrian and bicycle crash rates

- Crash rates can be expected to decline as users become more experienced

Safety problem has not been judged sufficiently serious to cancel the SMD program

* A study in Austin showed that a third of incidents happen on the first use and that sixty-three percent of people interviewed said they had ridden a scooter less than nine times when they were injured
Training/Regulatory Responses

Training
• Mostly app-based, followed by trial and error
• A third of incidents happen on the first use
• Some agencies/operators sponsor training events

Regulation
• Age restrictions
• Drivers License requirements
• Late night use restrictions
• Built-in speed governors enforce speed
• Geo-fence slow zones and no-service zones
• Patchwork of regulations governing where and how e-scooters e-bikes can be used
  • Complicates enforcement
  • Ex: In Montgomery County e-scooters can be used on trails run by the DOT, but not on most trails run by the parks department
Equity

- Higher percentage of low-income and minority people use e-scooters than Capital Bikeshare
  - Baltimore survey found high proportions of African-Americans reported using e-scooters
  - Major differences were by age, not race. >55 don’t use
- Per-trip pricing structure is attractive to low-income people
- Discount/cash memberships
- Min % of e-scooters deployed to disadvantaged neighborhoods
Equity in Arlington

- E-scooters mostly in denser and more affluent areas with Metro access, developed bike networks

- Daytime population should be considered

Arlington Trip Start Locations
Administration & Permits

• E-scooters are privately provided at no cost to the agency

BUT

• Agencies cannot avoid administrative costs from a scooter invasion
  • Calls from the public regarding badly parked scooters, sidewalk riding, crashes, etc.
  • Demand for needed infrastructure

• Solution: Permit Program
  • Fees on operators
    • Cost recovery is feasible
  • Requirements to share data for planning purposes
    • Anonymized trip data
    • User-reported crashes, etc.
Conclusions/Next Steps

• Dockless Shared Mobility is likely to continue for the immediate future
  • Safety, sidewalk riding, parking issues can be mitigated

• Growth in dockless mobility has come mostly at the expense of ride-hailing, driving, and walking

• Dockless shared mobility serves regional planning goals

• MWCOG will continue to hold regional Dockless workshops twice a year

• Long-term threats
  • Companies are not yet profitable
  • Rising permit fees
  • Rising rates
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