Smart Cities Collaborative

Boston

Bellevue

Minneapolis
Bellevue Into The Future

DOWNTOWN GROWTH

Source: David Boynton
Evolution of the Curb

Source: District Department of Transportation
Evolution of the Curb

- **TNCs – 2010**
- **On Demand Delivery – 2016**
- **Bikeshare – 2018 (Bellevue)**
- **Carshare - 2012**
- **eCommerce Growth**
Challenges at the Curbside

Competing Needs at the Curb

• On-demand Delivery (eCommerce, Goods Delivery, Food Delivery)
• Micromobility
• Transit
• TNC/Taxis
• Parking
• Connected/Autonomous Vehicles
• Delivery Robots
Challenges at the Curbside
Parking Fines in Boston, MA

Source: City of Boston
Curb Management Recent Work

- Downtown Demonstration Bikeway (2018)
- Preliminary Curbside Lease Fee framework for employer shuttles (2019)
Curb Management Recent Work

**Dynamic Curb Map**

- Curb Inventory
- SharedStreets CurbLR Standardized Methodology
- Provides a dynamic capture of curb utilization relative to time and geography
Pilot Location

106th Avenue NE in Downtown Bellevue

NE 4th Street – NE 8th Street
Pilot Corridor
106th Avenue NE

Project Timeline
- May/June 2020: Finalize techniques & metrics
- June/July 2020: Launch pilot
- Summer/Fall 2020: Monitor conditions, determine next steps
Bellevue Approach

Determine Curbside evaluation metrics
  • Dwell time
  • Curb friction factor (double parking, etc.)
  • Curb activity factor (passenger load/unload, parking, deliveries)
  • Others

Evaluate curbside trends using 4 data collection techniques:
  • Automated camera monitoring (video analytics)
  • RFID assessment
  • Third Party Data Sources
  • Manual video collection & data validation
Curb Management
Pilot Hypothesis

Pairing curbside designations with observed behaviors will:
- Create safer & more predictable conditions on our busier city streets
- Provide clarity to multitude of curbside users (transit, freight, TNC, shuttles)
- Allow the city to make informed changes to the curbside to promote the most efficient use
Automated Camera Monitoring

- Utilize advance video analytics to gain insights on curb usage (i.e. dwell times, mode types, activity types, operator types)
RFID Methods

- Intent: gain a comprehensive understanding of the usage of the shuttle zone

Curb usage monitored while in zone
Third Party Data Sources

**INRIX Freight Data**

- Includes INRIX freight operators
- Monitor travel times along OpenStreetMap segments (i.e. longer travel time = potential freight load/unload activity)
- Enables comparison of freight load/unload demands
Third Party Data Sources

**SharedStreets/Uber TNC Data**

- Includes Uber PUDO Data
- Enables comparison of TNC load/unload demands
- Available for some cities in the US (Bellevue Data is expected in July 2020)
Make curbside changes to match existing behaviors

• Compare the data collection techniques
  • Make specific modifications to curbside uses that better match conditions
  • Changes to incentivize good street behaviors

• Communicate changes to the traveling public using various methods

• Monitor & evaluate changes, assess before-and-after scenario
Challenges

Traffic Reductions =
- Different traffic issues
- Lack of need to “optimize” curb

Nascent technologies
Smart Cities Collaborative Scope Development

Ultimately...

- Bellevue does not have a legacy curbside management program
  - No municipal court to collect revenues
  - No paid on-street parking (free time-limited)
  - One enforcement vehicle
- Bellevue has limited existing dynamic curbside
  - Superblock street grid (600’ long blocks)
- Bellevue is on an exponential growth trajectory
  - Any recommendations should aim to be scalable & flexible

• **Bellevue is fundamentally data-driven.**
  • We want to establish framework how to study & respond to curb uses.

• Hope to use pilot to guide recommendations in upcoming Curbside Management planning efforts
Thank you

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