Curb Management

A Smart Cities Collaborative

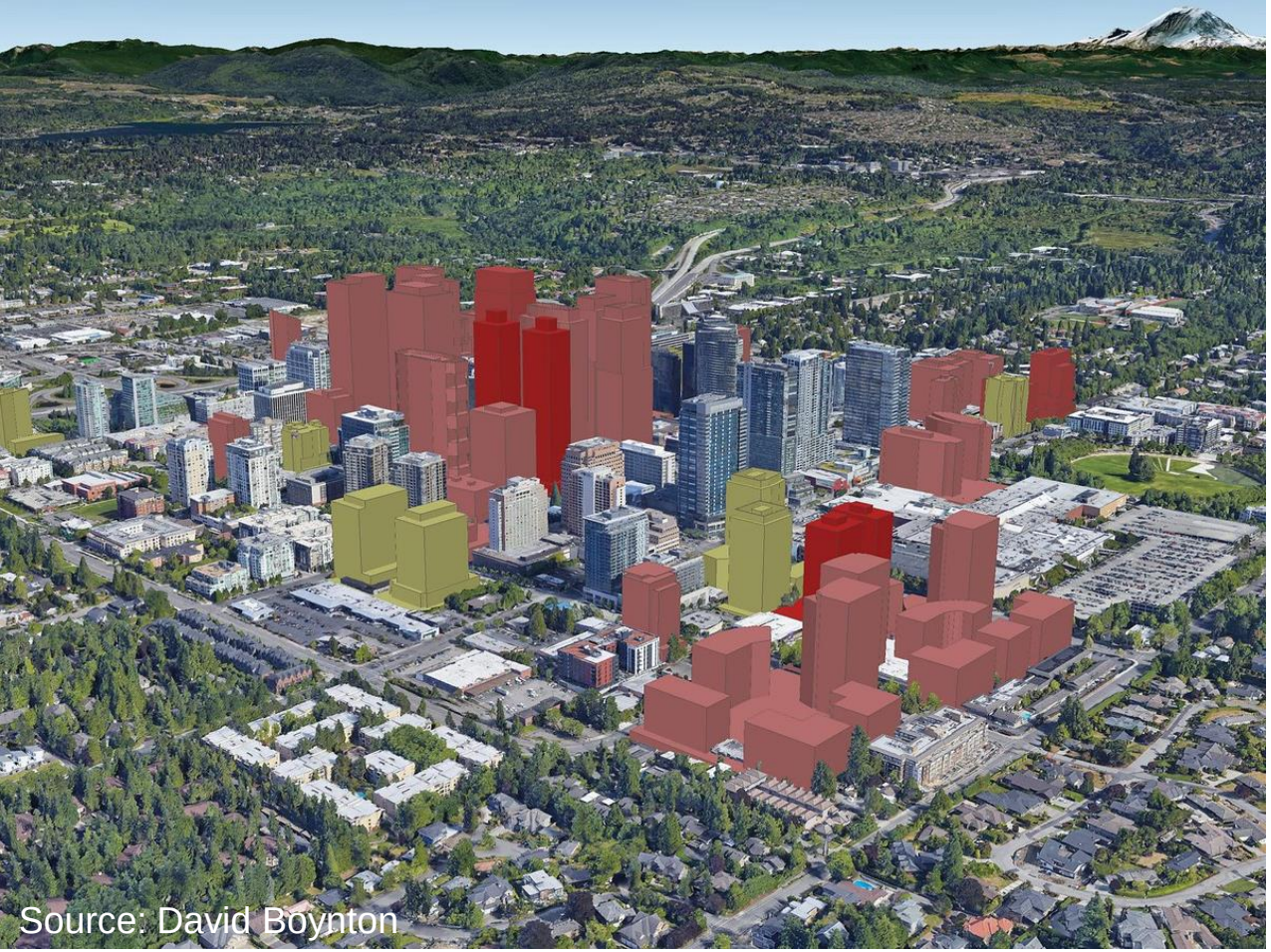
Western ITE Conference 2020

June 28, 2020

VIRTUAL 2020 Annual Meeting
Joint Western & Mountain Districts
Broadcast to you June 28 - July 1
'O kākou ka 'oi
"Together we are the best"

Transportation for America

Smart Cities Collaborative

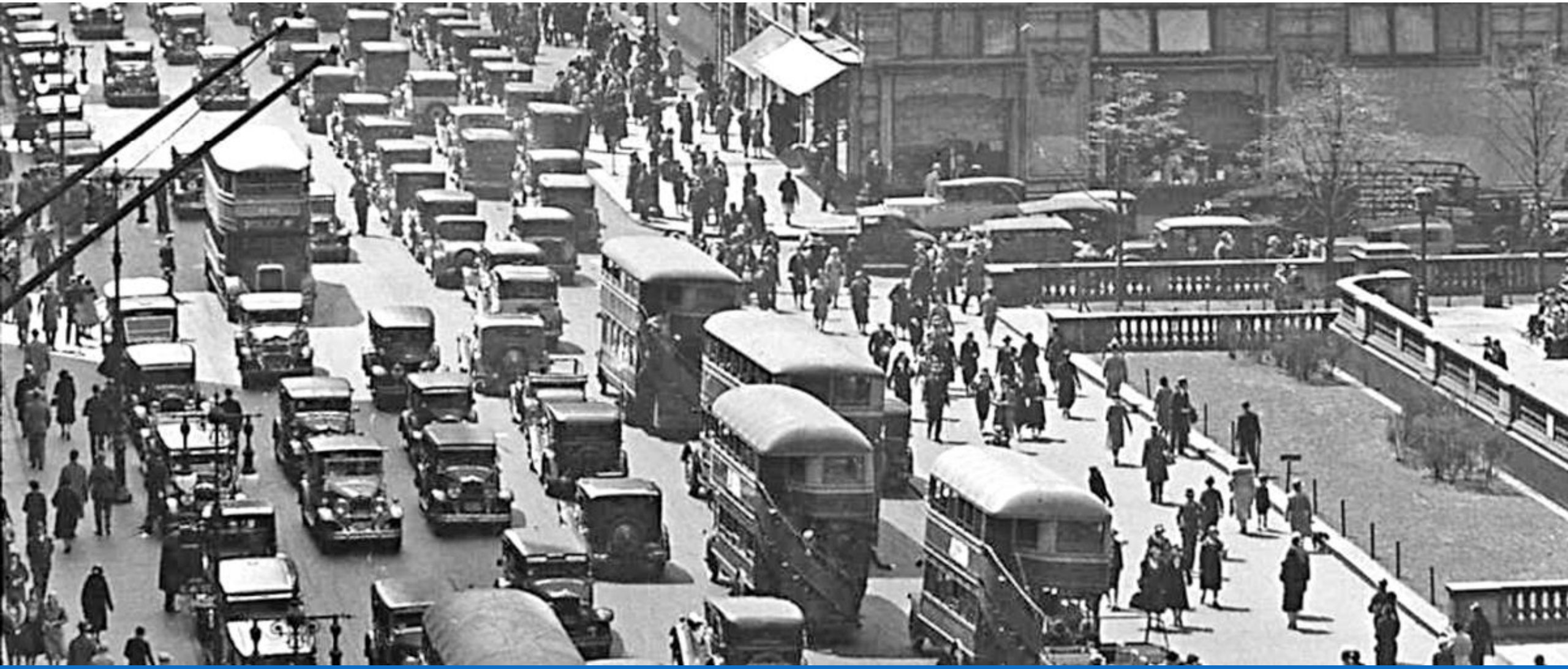


Bellevue Into The Future

DOWNTOWN GROWTH

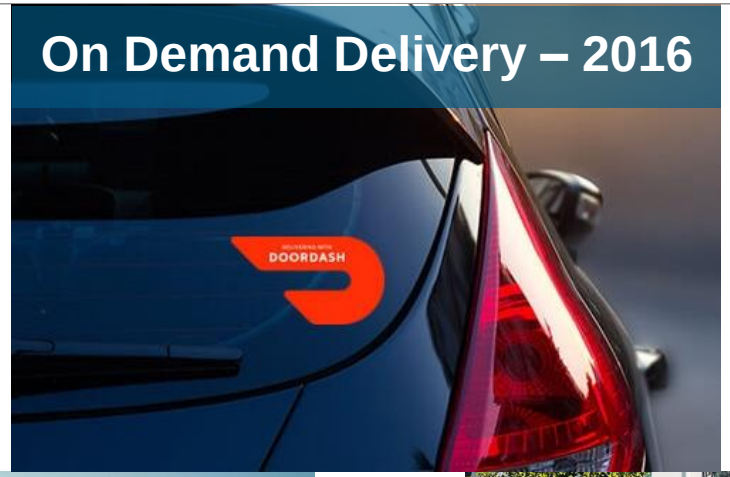
Street grid comparison

Evolution of the Curb



Evolution of the Curb

TNCs – 2010



On Demand Delivery – 2016

Bikeshare – 2018 (Bellevue)

Carshare - 2012

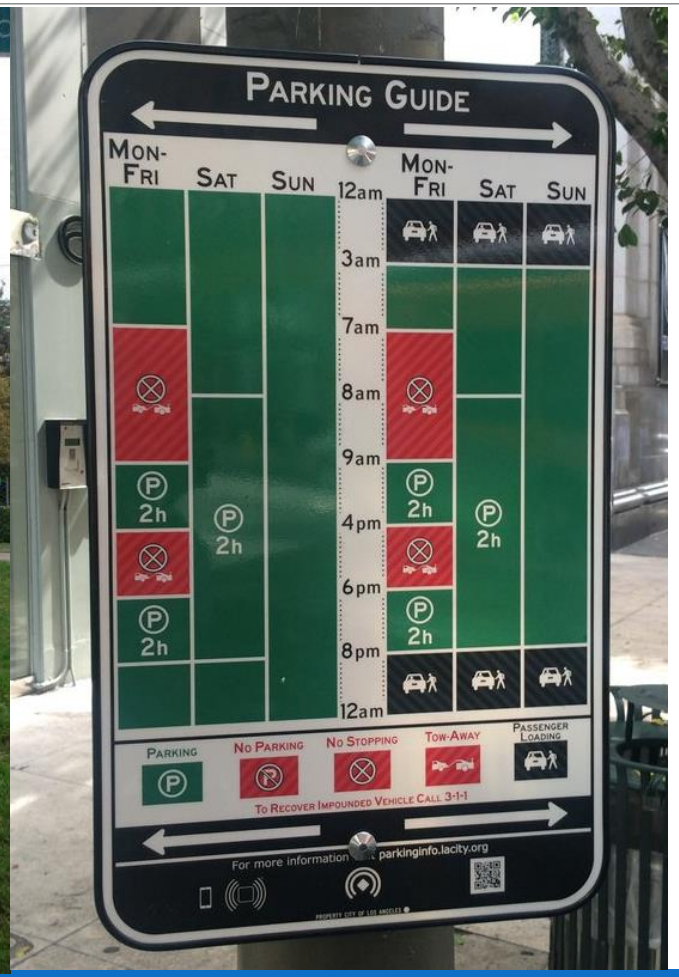
eCommerce Growth

Challenges at the Curbside

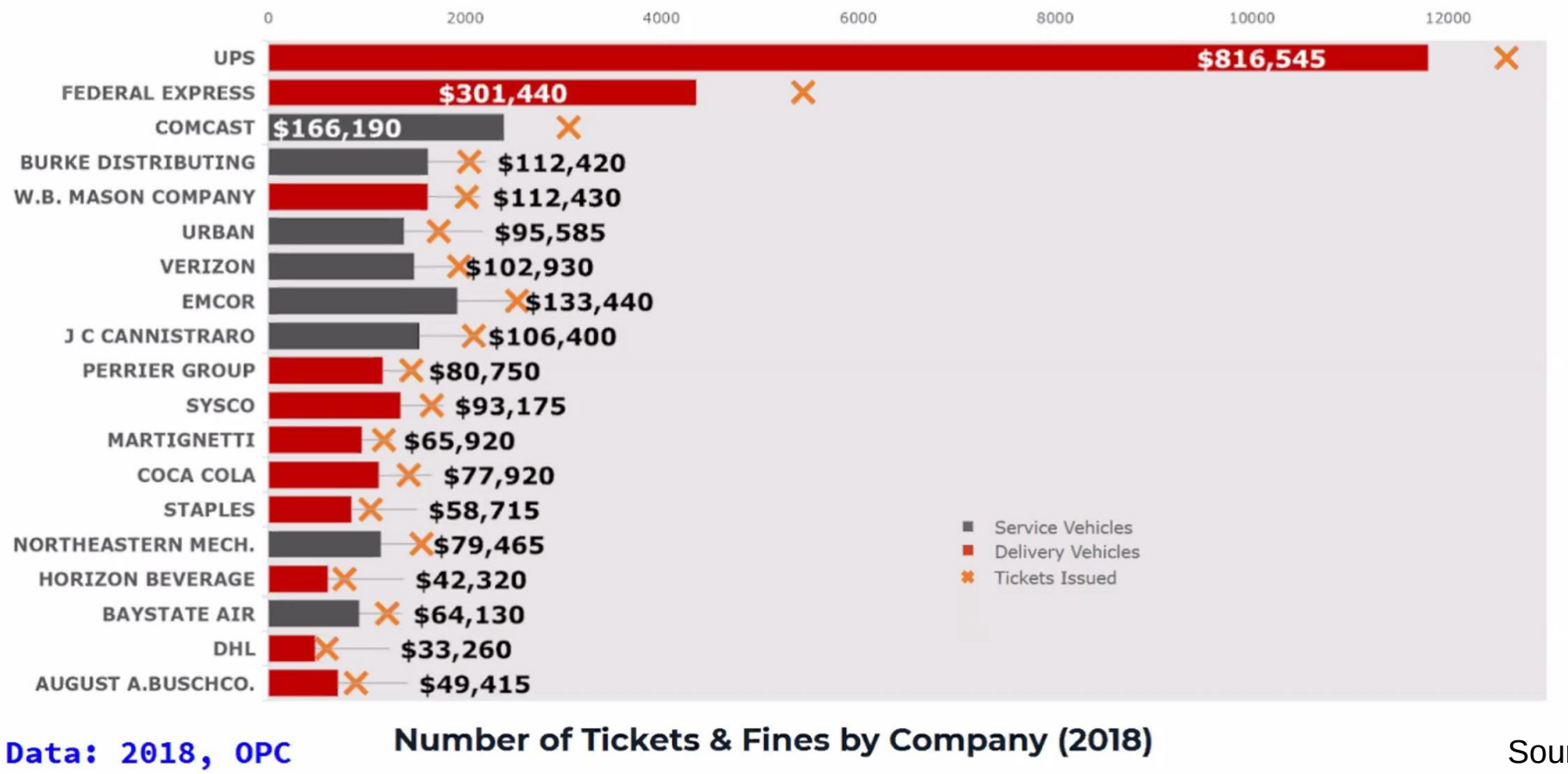
Competing Needs at the Curb

- On-demand Delivery (eCommerce, Goods Delivery, Food Delivery)
- Micromobility
- Transit
- TNC/Taxis
- Parking
- Connected/Autonomous Vehicles
- Delivery Robots

Challenges at the Curbside



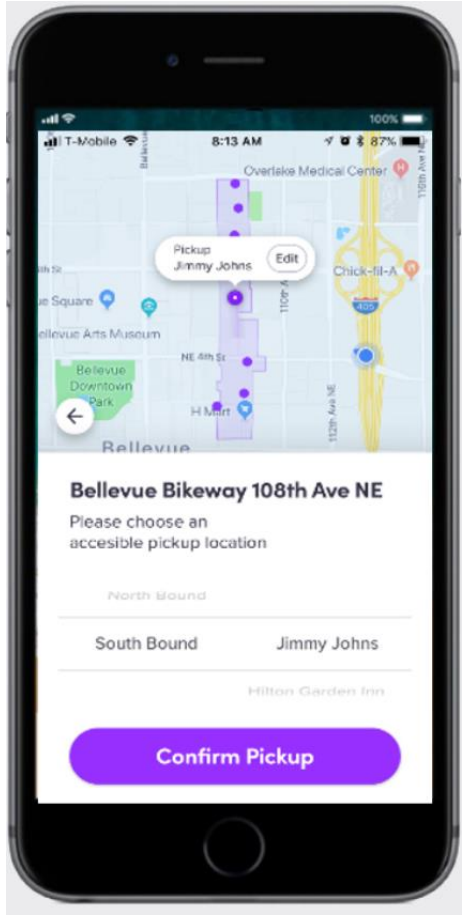
Parking Fines in Boston, MA



Source: City of Boston

Curb Management Recent Work

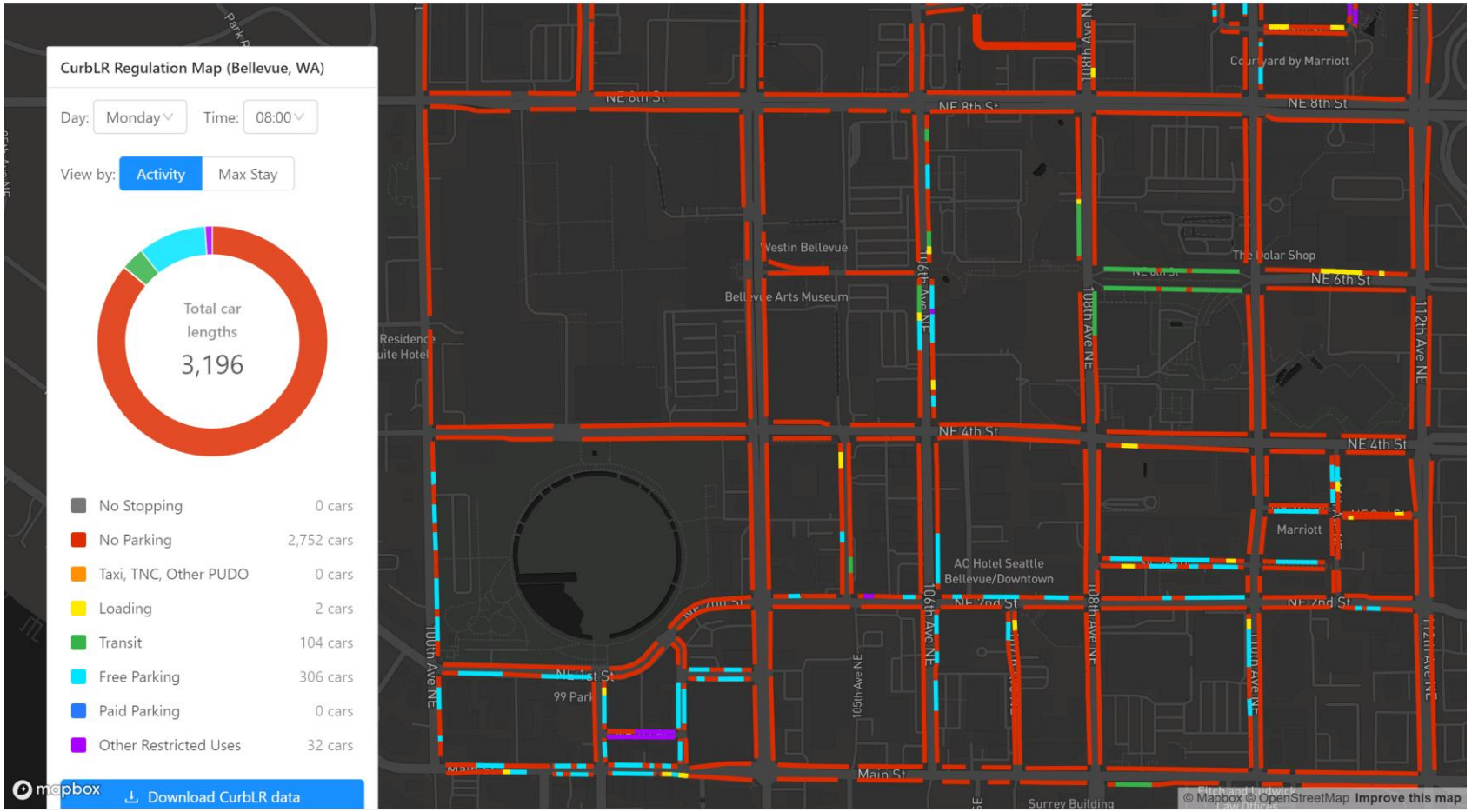
- Downtown Demonstration Bikeway (2018)
- Preliminary Curbside Lease Fee framework for employer shuttles (2019)



Curb Management Recent Work

Dynamic Curb Map

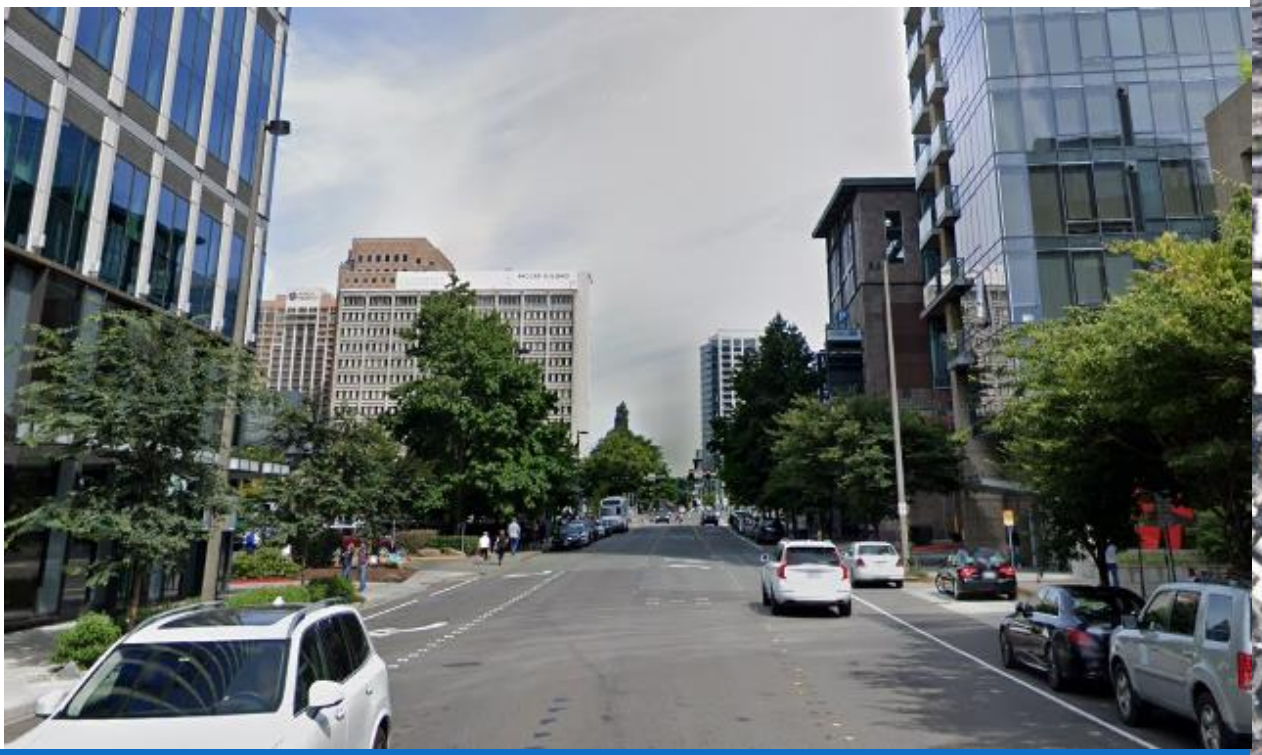
- Curb Inventory
- SharedStreets CurbLR Standardized Methodology
- Provides a dynamic capture of curb utilization relative to time and geography

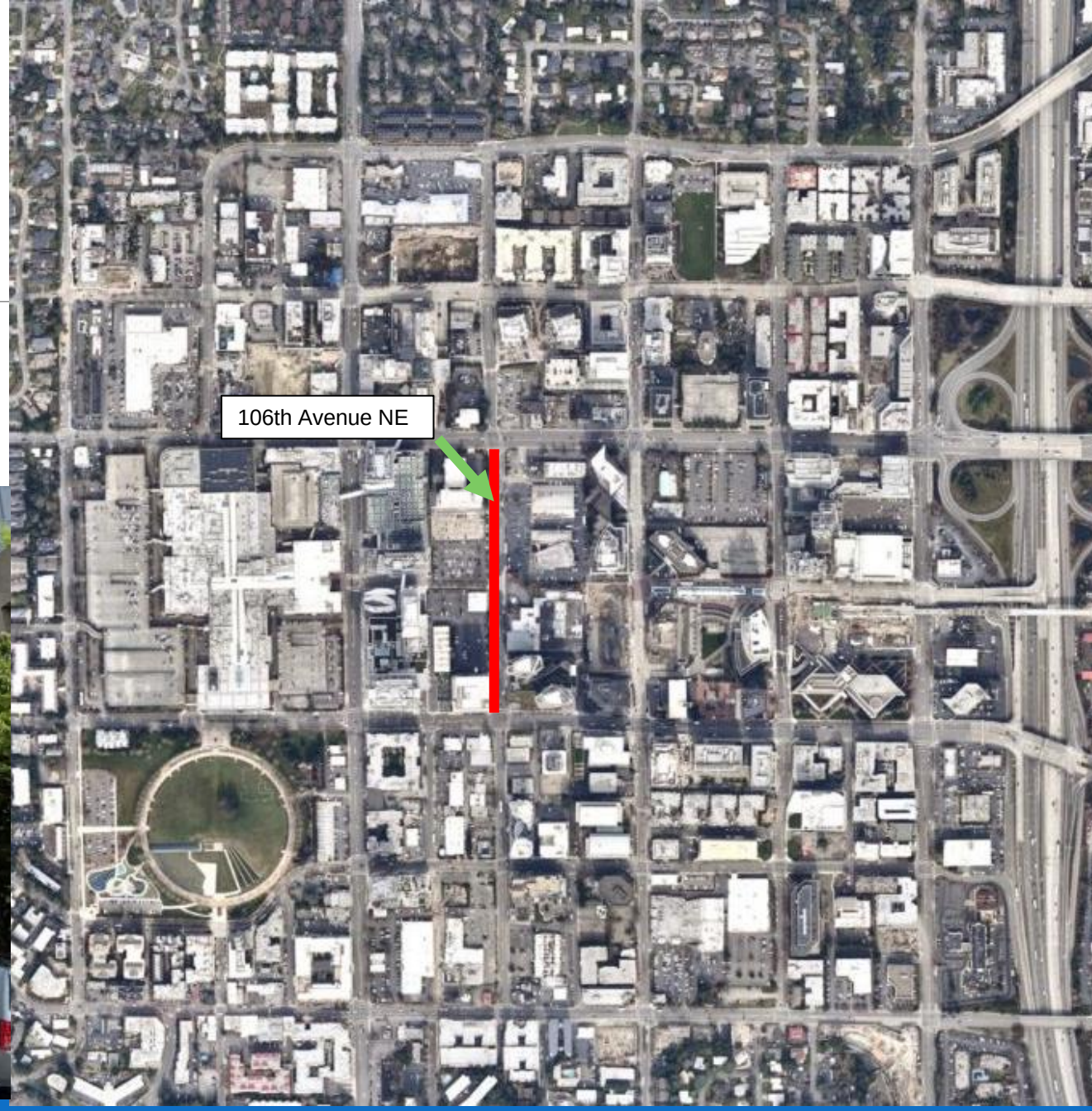


Pilot Location

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

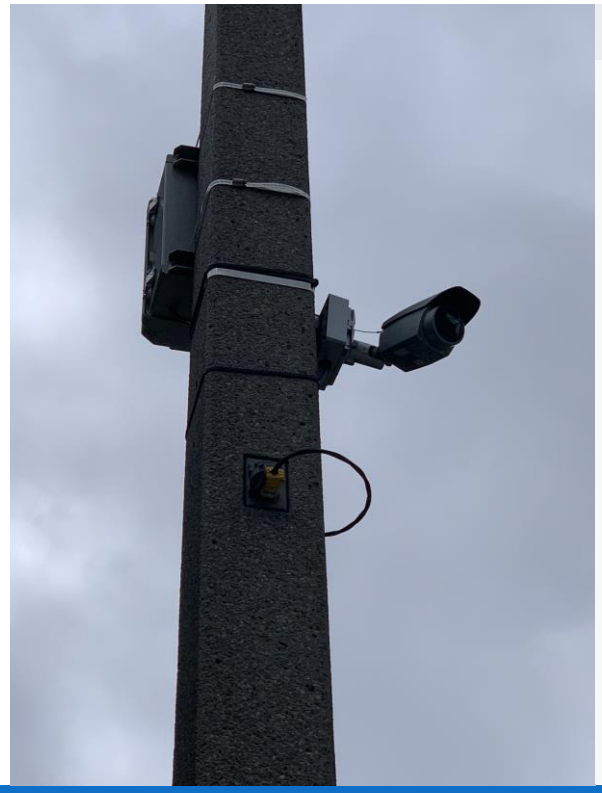
Curb Management Pilot Hypothesis

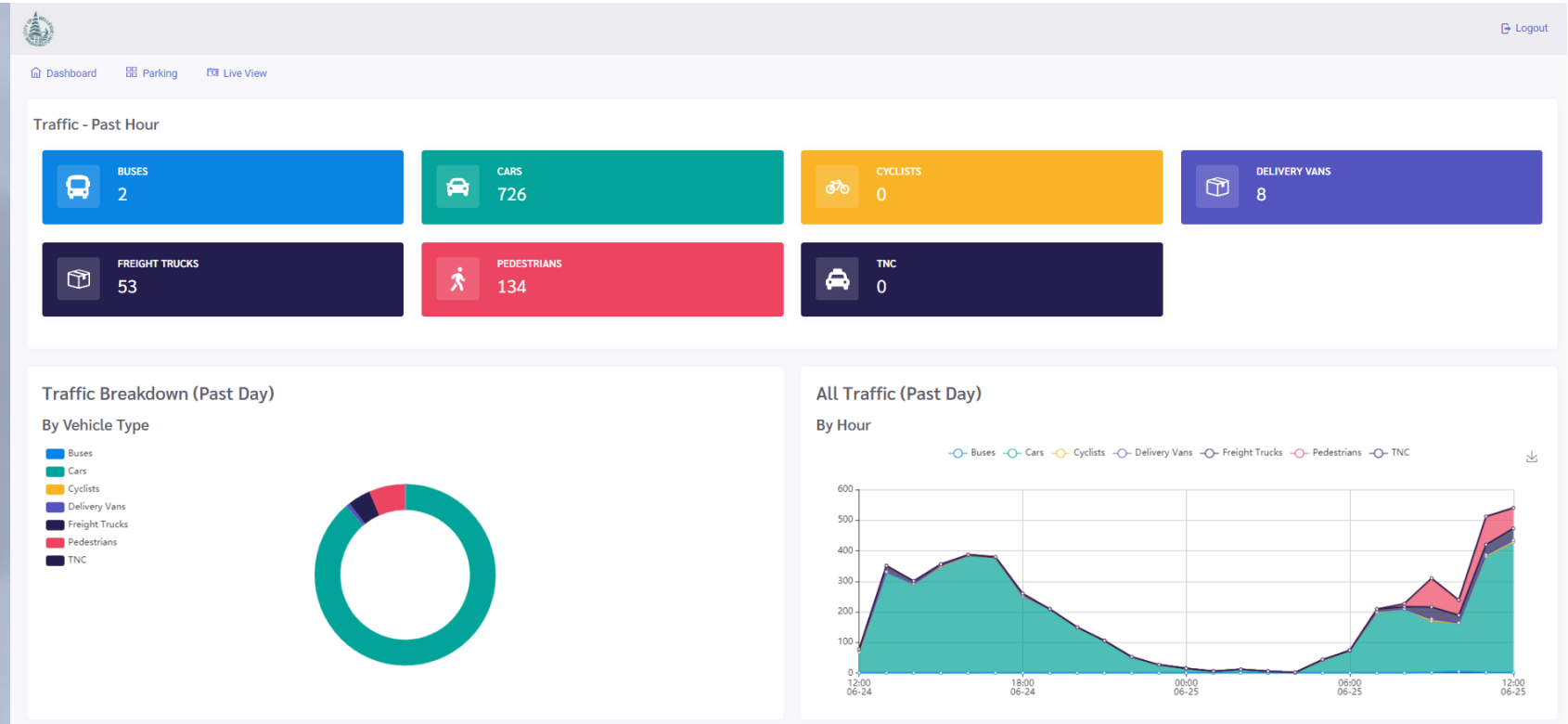
Pairing curbside designations with observed behaviors will:

- 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

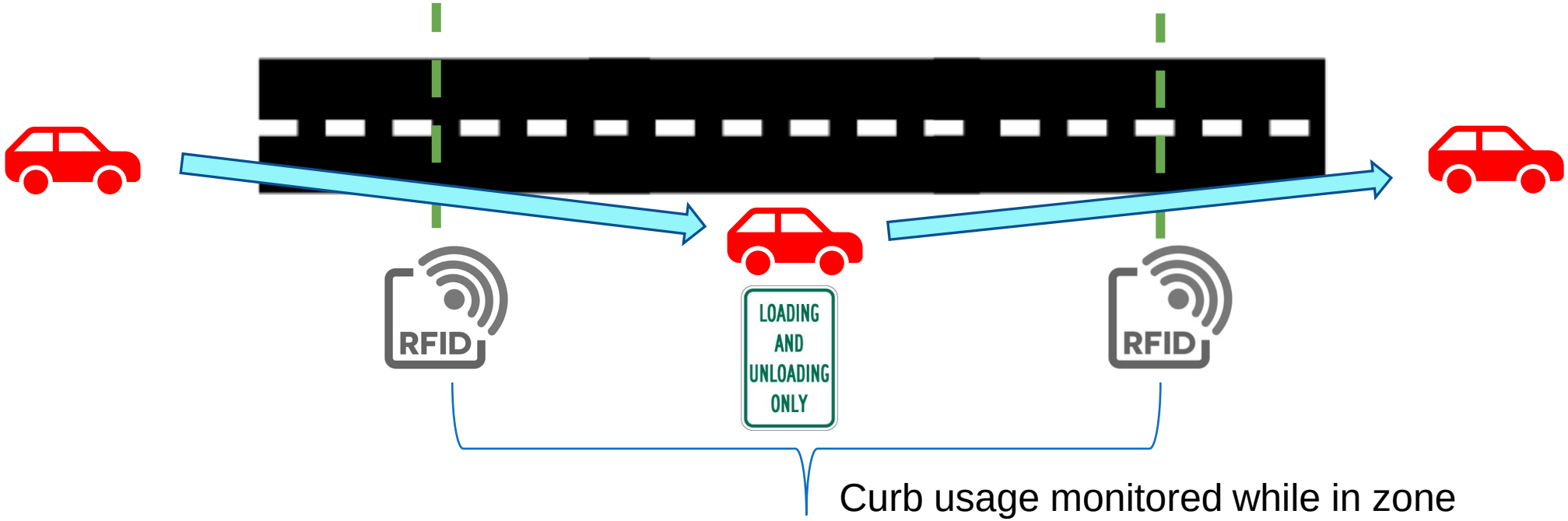
- Utilize advance video analytics to gain insights on curb usage (i.e. dwell times, mode types, activity types, operator types)





RFID Methods

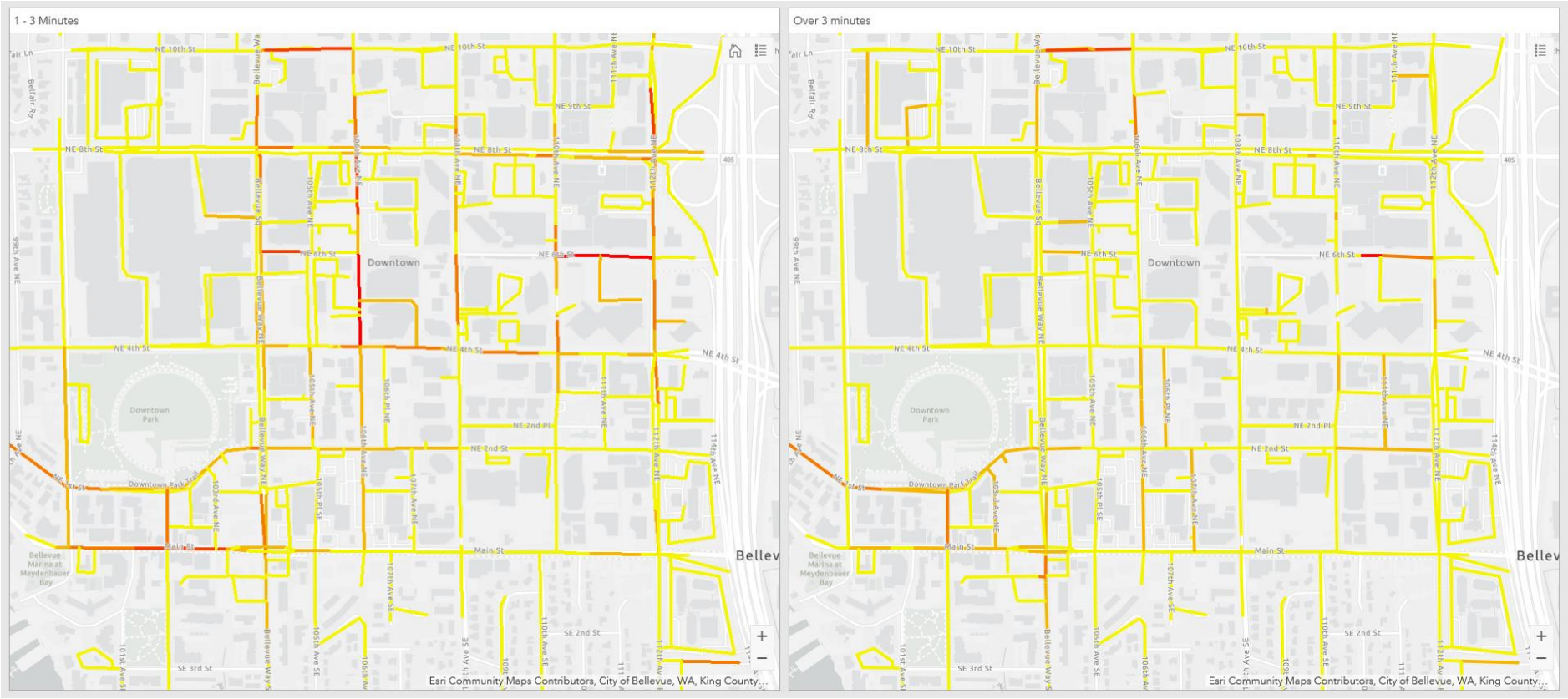
- Intent: gain a comprehensive understanding of the usage of the shuttle zone



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



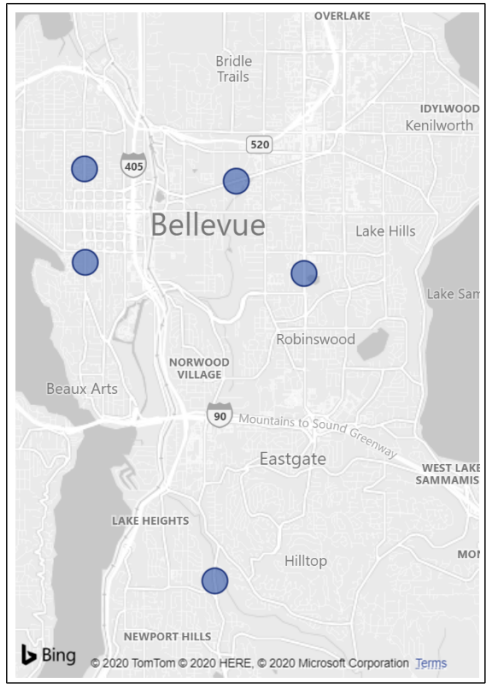
Third Party Data Sources

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



Volumes are collected from the City's adaptive signal system SCATS. Detector data has been compared to traditional volume counts to validate accurracy and consistency but are still estimates. Days with missing or incomplete data were not included.

Traffic Volumes during COVID-19

Choose one location (overall average will show if none are selected)

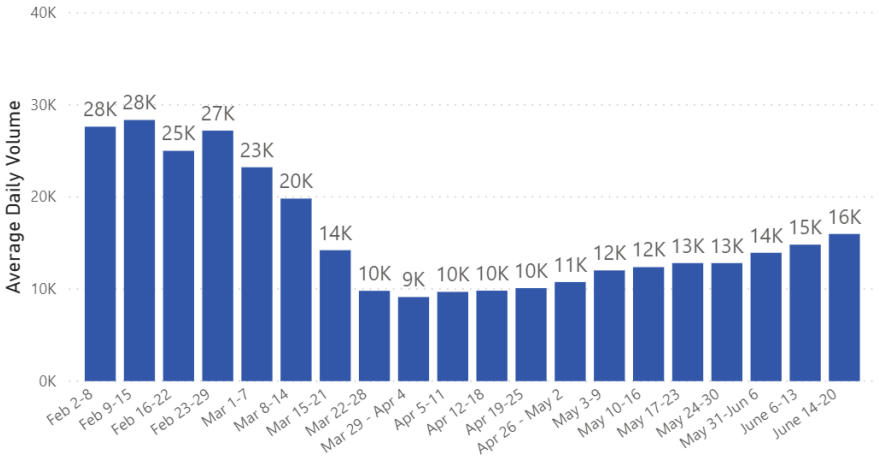
148th Ave SE south of Main St | Bellevue Way north of Downtown | Bellevue Way south of Downtown | Bel-Red Rd east of 134th Ave NE | Coal Creek Pkwy south of Forest Dr

Choose dates:

2/1/2020 6/21/2020

Choose weekdays or all days of the week:

Weeekdays Only | All Days of the Week



Choose to show volume graph by day or by week

By Day

Volumes include both directions of travel and for a 24 hour period

Version 1

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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Transportation