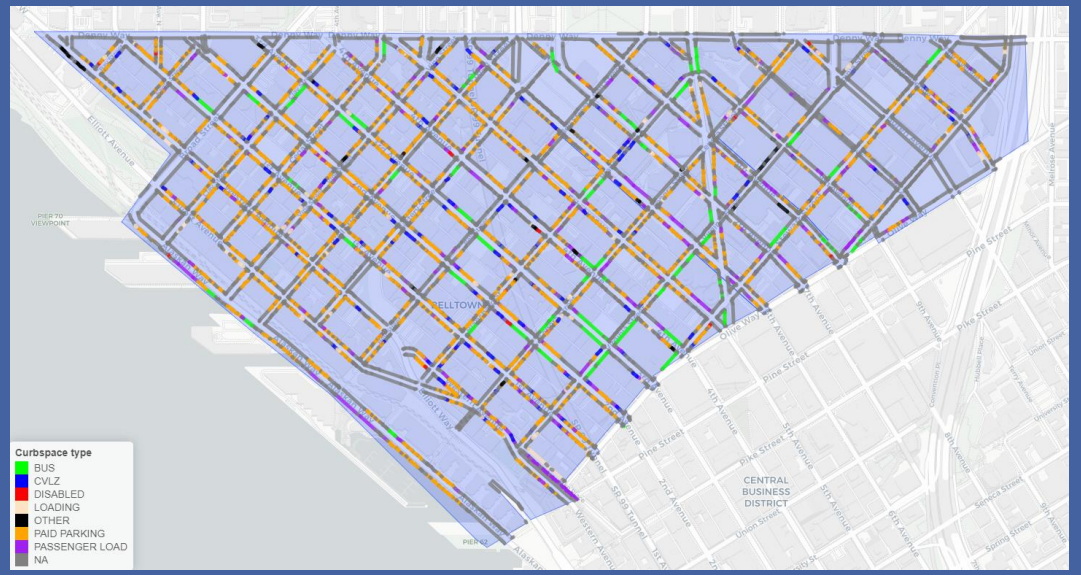
Anne Goodchild

Urban Freight Lab, Seattle
DISCOCURB experience

Funded by
the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101103954

Pilot study area

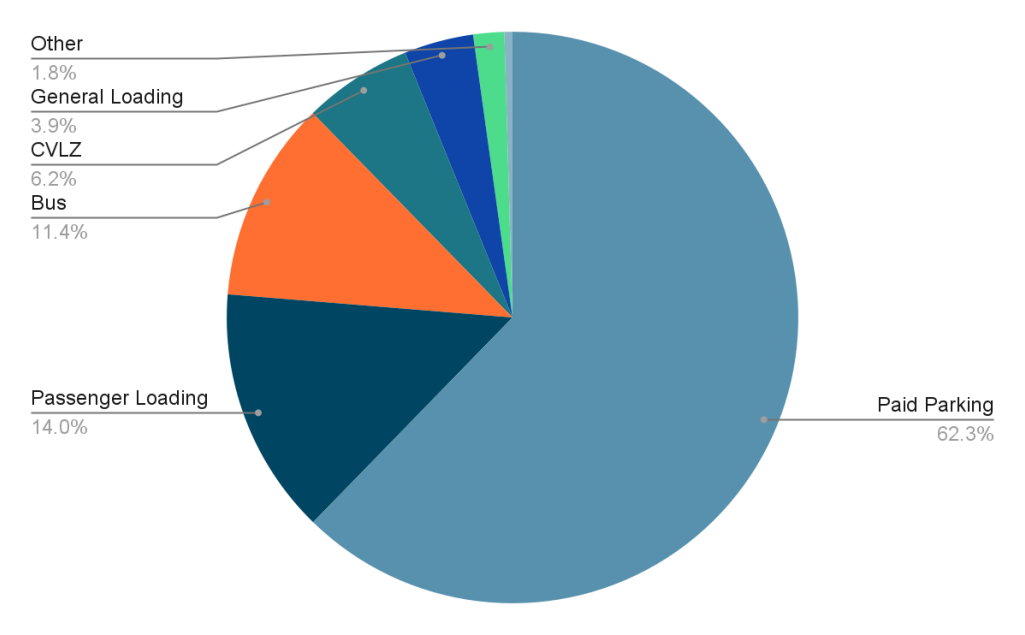


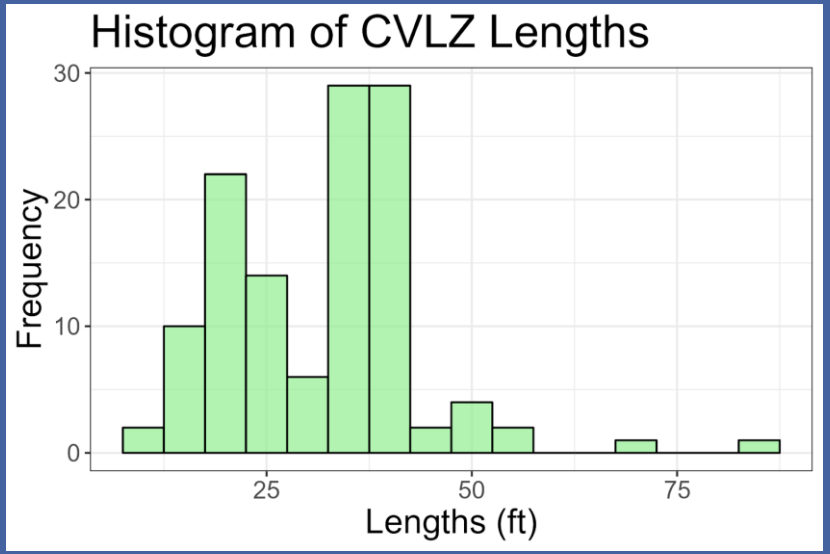
DISC

King County
Certified Customer
2021
COMMERCIAL VEHICLE LOAD ZONE
2020
COMMERCIAL VEHICLE LOAD ZONE
2022
COMMERCIAL VEHICLE LOAD ZONE
2019
COMMERCIAL VEHICLE LOAD ZONE
2018
COMMERCIAL VEHICLE LOAD ZONE

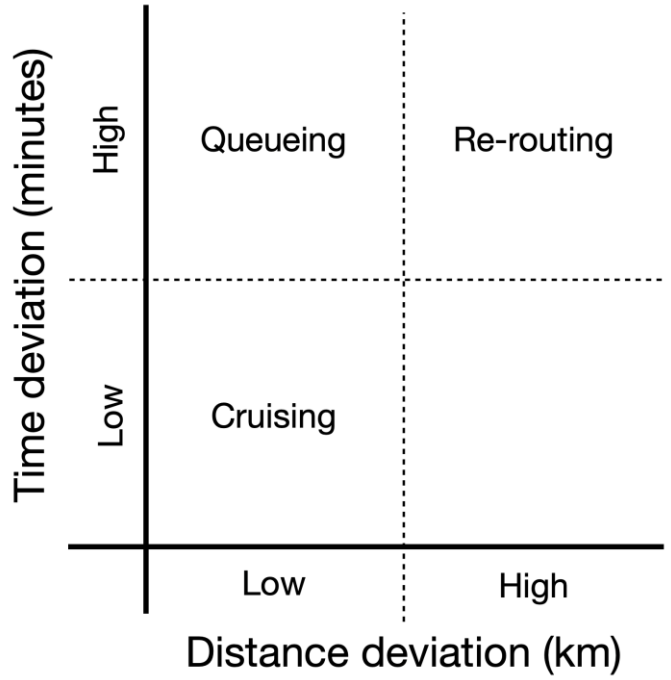
MARKET
5017
TURKISH DELIGHT
STOP
It's Cookie o'clock Somewhere
MARKET
we have sandwiches
445

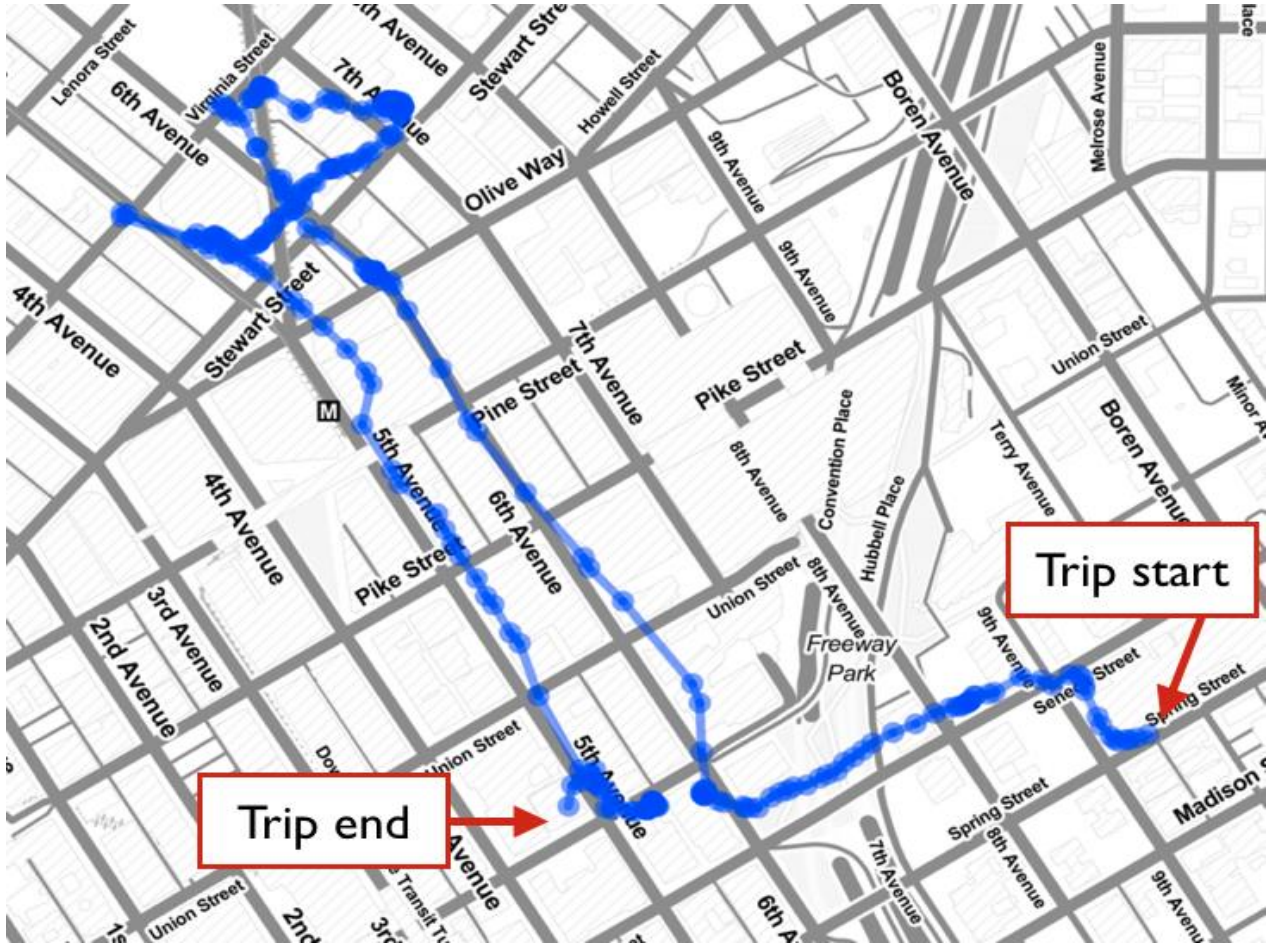
CVLZs are a minority of curb allocations and zones are about 8 meters in length



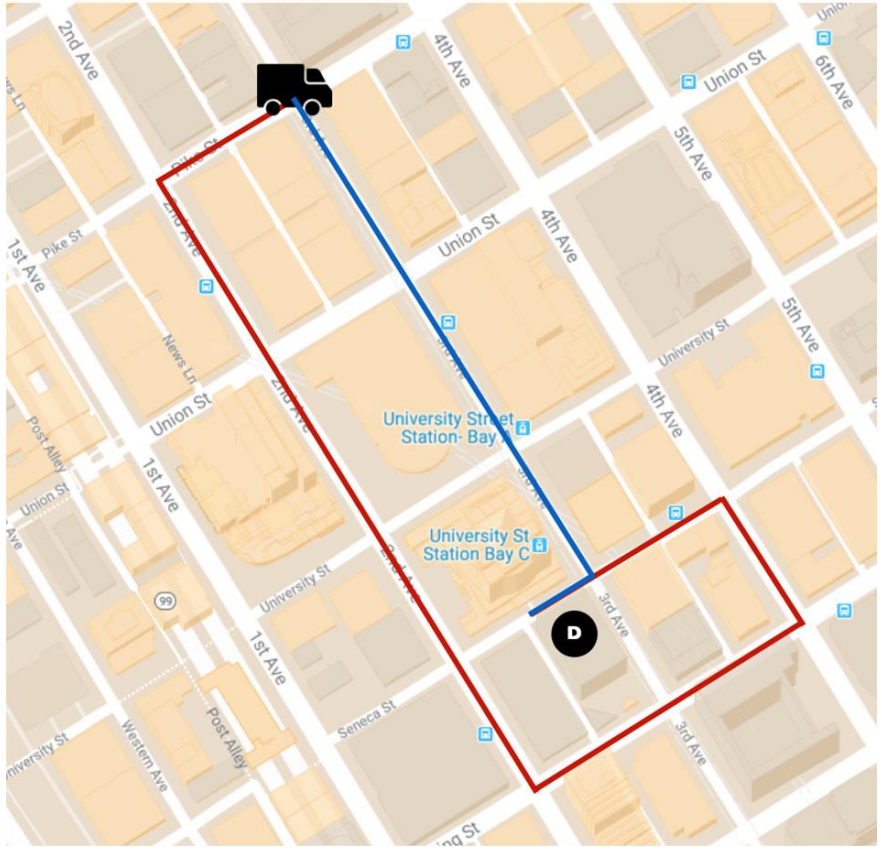


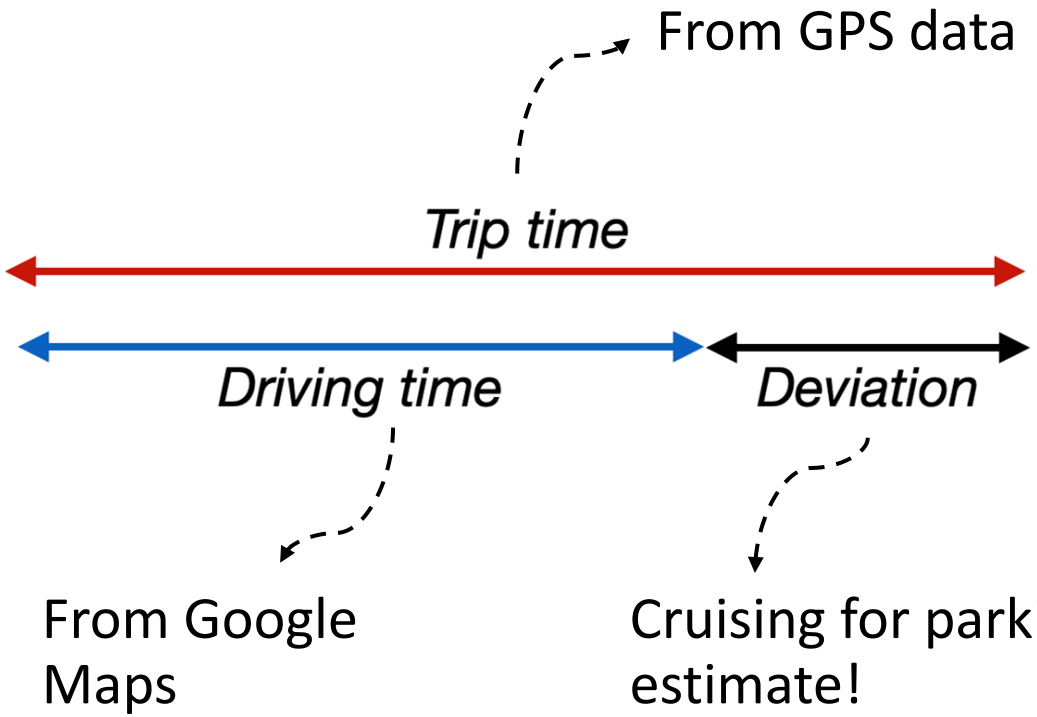
Do commercial vehicles search for parking?





Measuring cruising for parking

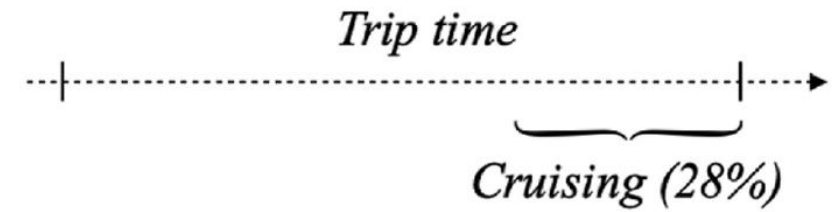




G. Dalla Chiara & A. Goodchild (2020) *Do commercial vehicles cruise for parking?*

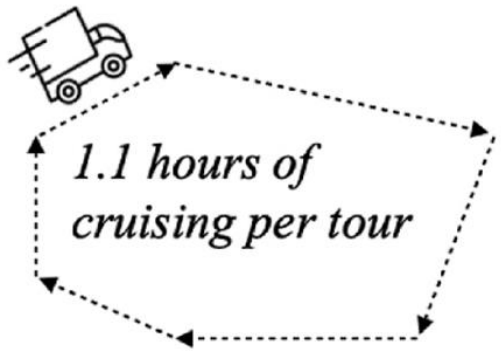
Given a sample of 2,900 trips by a parcel delivery company operating in Seattle, we obtained the following descriptive statistics:

1) On average, a commercial vehicle spent **2.3 minutes cruising per trip**.



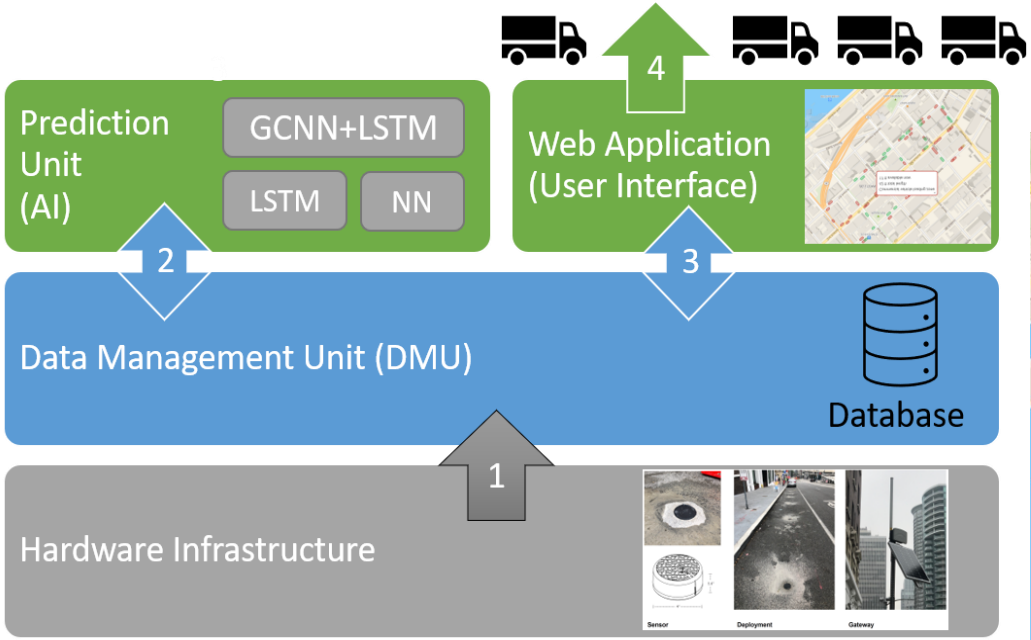
2) Cruising represents **28% of total trip time** on average.

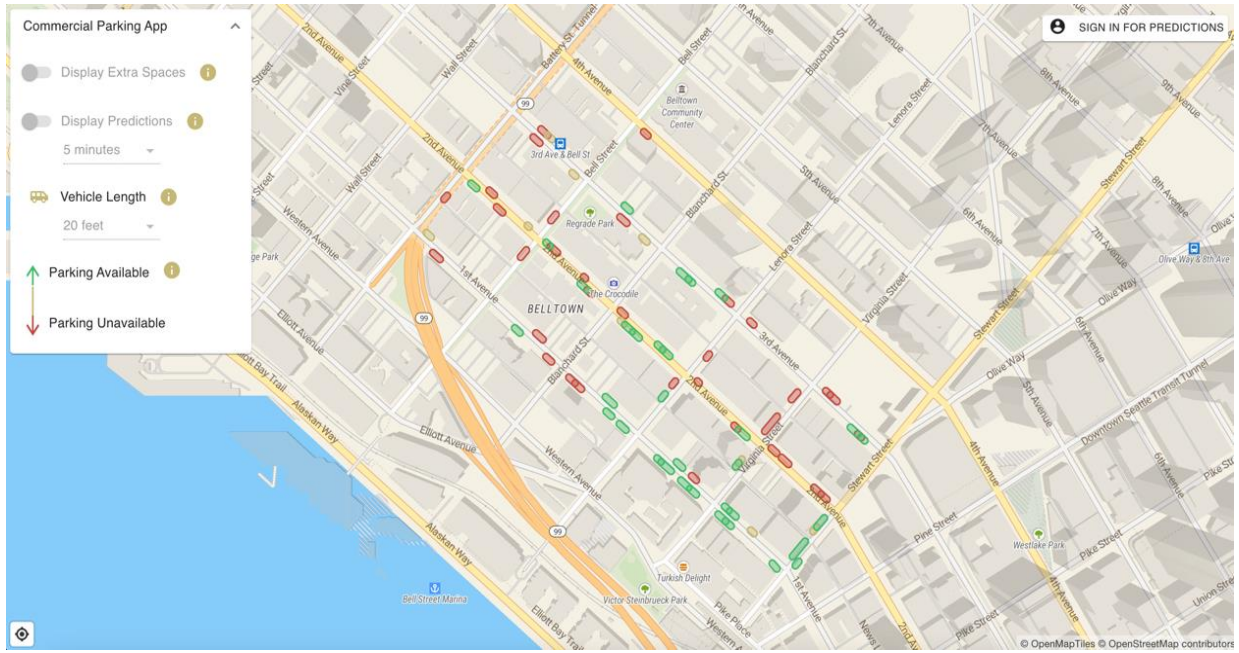
3) The total average cruising per tour was **1.1 hours**.



4) Cruising times decreased as more curbside was allocated to **commercial vehicles** and **paid parking** and as more **off-street parking areas** were available at a destination, whereas it increased as more curb space was allocated to a **bus zone**.

Commercial Vehicle Parking App (Open Park)





1 The Data Management Unit (DMU) uses a Restful API to collect the occupancy data from the deployed hardware in near-real time and store in a MariaDB database.

2 The Prediction Unit takes historical data from the DMU to develop a data model that can predict at 5-, 15-, and 30-min horizons. DMU stores those predictions into the database.

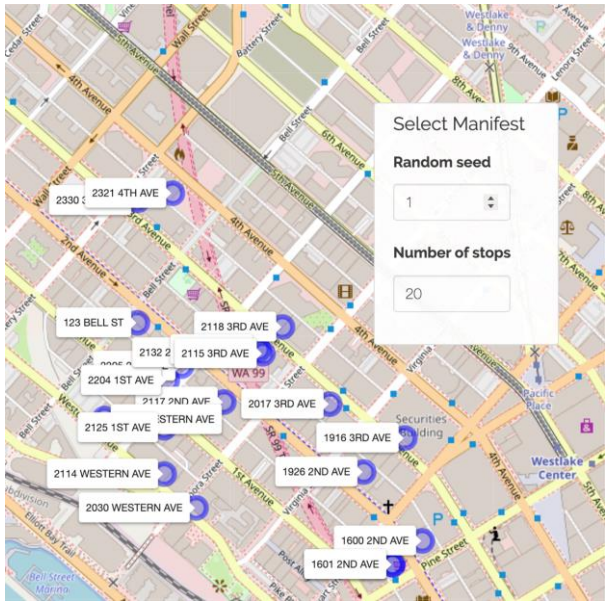
3 The Web API interacts with the DMU to access the historical data and predictions from the database.

4 The commercial fleet can use the web application to visualize the data and check availability of the parking spaces for five, fifteen, and thirty-minutes time horizons.

Evaluation

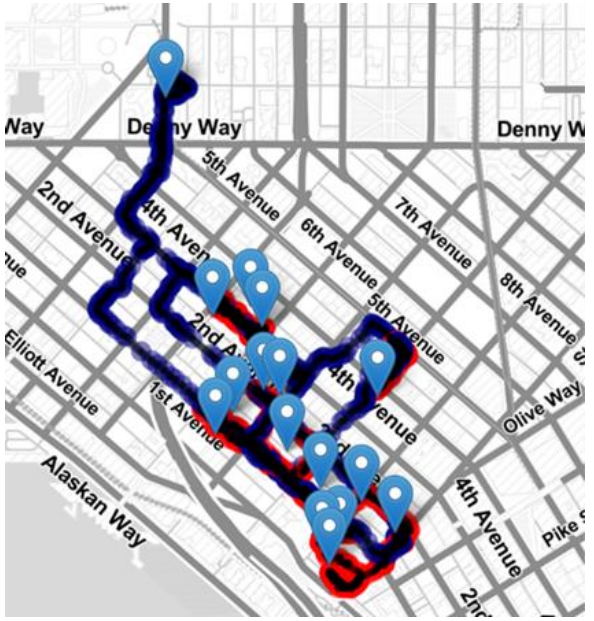
→ Randomized experiment (treatment=app, control=no app.)

1) Created synthetic delivery manifests

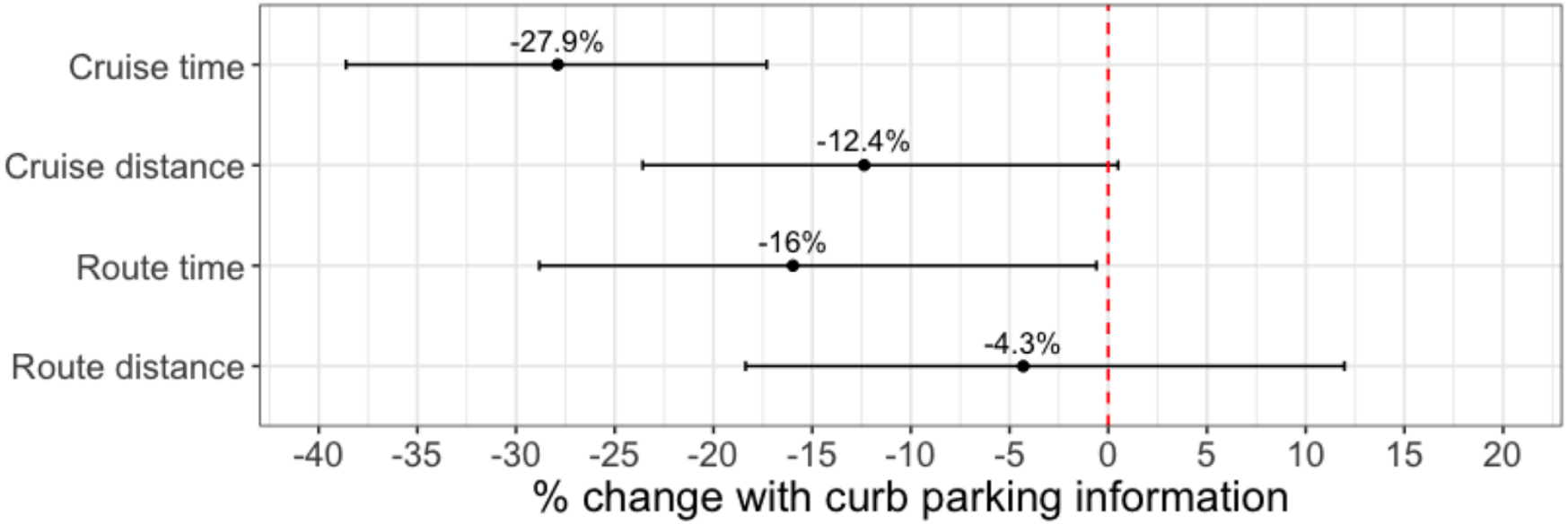


2) Hired drivers to perform deliveries w/o app

3) Data collection & analysis (app vs. no app)



- Estimated four mixed-effect random intercept regression models
- Each model contained a binary variable $1_{[App]}$ which takes value 1 whenever OpenPark was used
- The estimated coefficients for $1_{[App]}$ quantify the impact of using OpenPark on the performance metrics



Second Seattle DISCOCURB

SMART Project timeline

Past projects and conceptualization

Collect and analyze baseline data

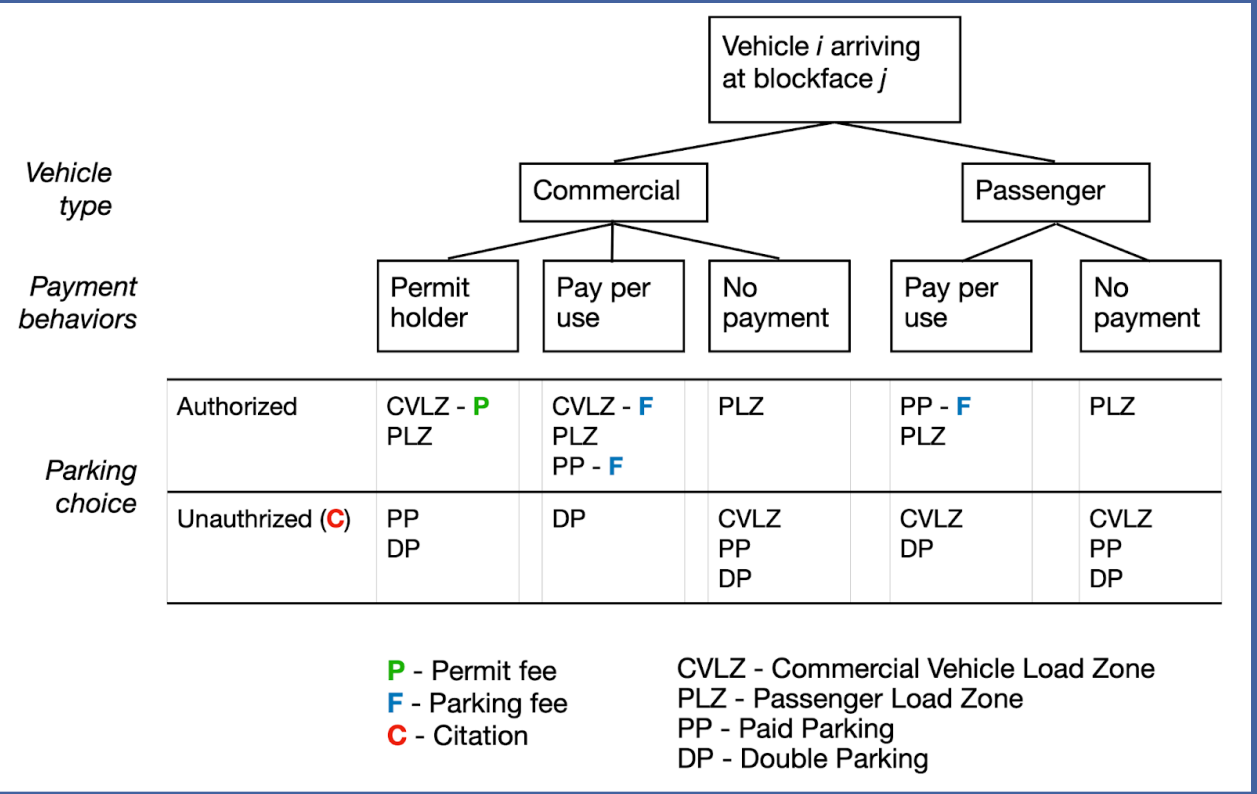
Technology selection and pilot implementation

Pilot evaluation

Scale-up

We are here

Existing pricing mechanisms



Transaction type	No. transactions	Tot. revenue (%)	Revenue per feet of CVLZ
CVLZ - P	Unknown	$134,040.6 (57.0%)[2]	$34.4
CVLZ - F	13,080	$11,400.0 (4.8%)	$2.9
CVLZ - C	1,697	$89,941.0 (38.2%)	$23.1
Total	**Unknown**	**$235,381.6**	**$60.4**

1.we use 2022 as reference year
2.the total revenue from permit purchases is multiplied by the total share of CVLZs in study area wrt total CVLZ length

- CVLZ - P: Commercial vehicle that carries a valid permit and chooses to park at a CVLZ
- CVLZ - F: Commercial vehicle not carrying a permit that chooses to park at a CVLZ and pay a one-time parking fee
- CVLZ - C: Commercial vehicle not carrying a permit that chooses to park at a CVLZ

Permit purchasing dwindling

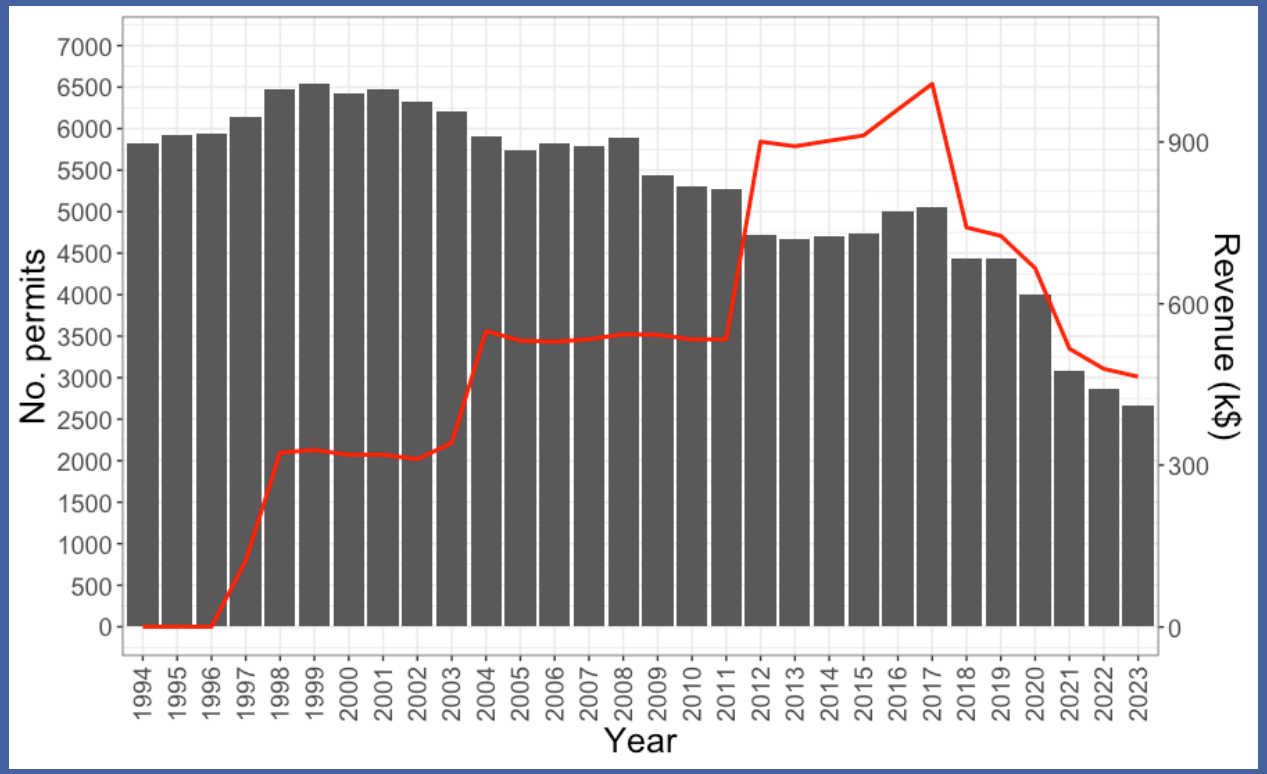


Table 7. Permit issued and percentage by primary business activity type (2017-2023)

Primary business activity type	**No. issued permits**	**Percentage issued permits**
Wholesale Trade	6488	26.2%
Construction	3925	15.8%
Other Services (except Public Administration)	2951	11.9%
Retail trade	2227	9.0%
Information	1710	6.9%
Manufacturing	1439	5.8%
Admin. Support, Waste Manag. and Remediation Services	1394	5.6%

Current State

80% of users of CVLZ are unauthorized

62% of permit holding CVs comply with regulations

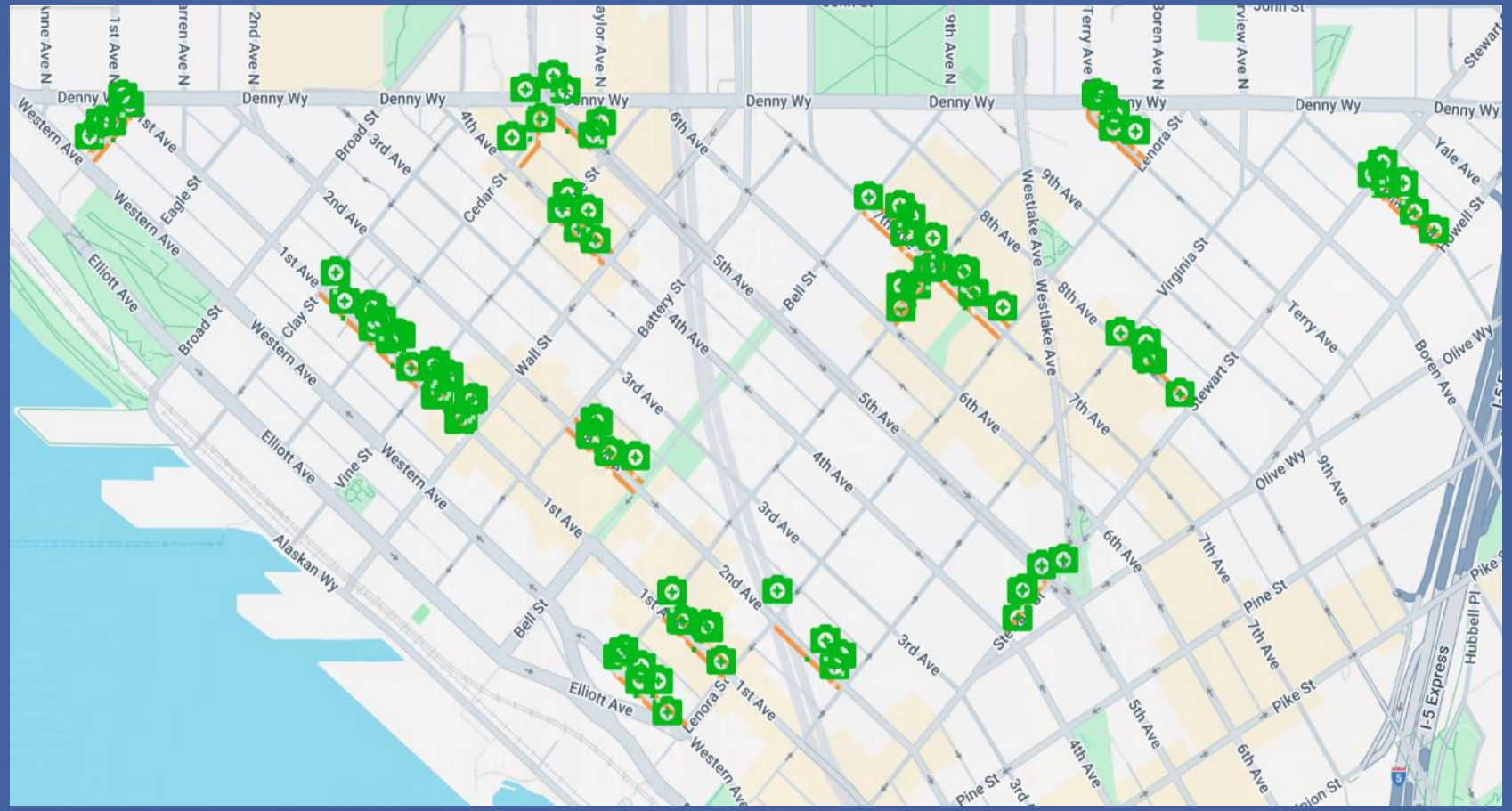
>75% of CVLZ permit holders are “service” vehicles

Goal

Increase number of CVLZ permits purchased

Increase automated enforcement of CVLZ use

Installed technology



Summary

- **Current method of commercial curbspace management in Seattle is not sufficiently widely used and penalizing good actors**
- **Industry desire for more active management and equality in enforcement**
- **Demonstrated upsides to technology implementation for both city and carriers**
  - Major challenges with technology delivering on expectations and the political appetite for technology implementation

Anne Goodchild

Urban Freight Lab, Seattle
DISCOCURB experience

Funded by
the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101103954