

June 30th, 2026
Western ITE Annual Meeting

Understanding Carrier Preferences for Urban Freight Parking Pricing



URBAN FREIGHT LAB
UNIVERSITY of WASHINGTON
College of Engineering

Giacomo Dalla Chiara

Senior Research Scientist, Urban Freight Lab

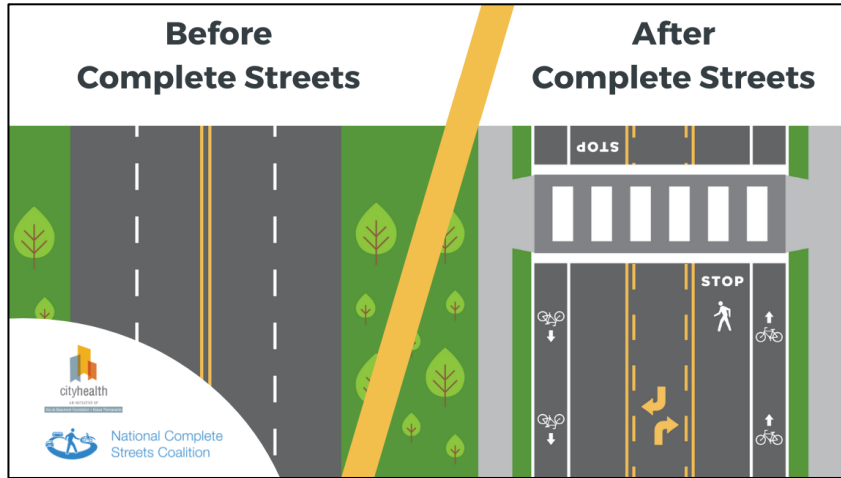
Co-authors:

Arsalan Esmaili (lead author), **Kelly Rula**, **Rubina Singh**, **Don MacKenzie**, **Anne Goodchild**

Demand vs. supply of road space

- Increase in curb demand and competition
- Decrease in curb supply for commercial vehicle parking
- Increase in freight challenges and conflicts

Increased need to better **manage** existing **curb parking infrastructure**



Pricing as a travel demand management tool



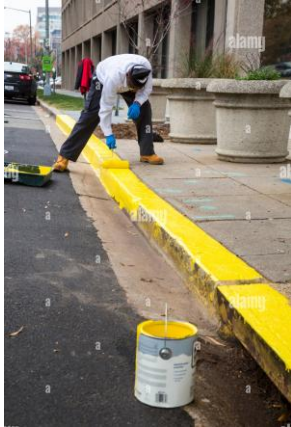
Curb and road pricing are well-known travel demand management policies (in passenger transportation)



Commercial vehicle load zone (CVLZ) programs

Commercial vehicle load zones (CVLZ) programs are a set of infrastructure, policy and regulatory strategies cities implemented to manage freight parking.

Allocation



Users



Dwell time



Enforcement



Pricing



Alternatives



Pricing in CVLZ programs

1. Permit program

2. Pay- per-use

3. Installation & maintenance

Who pays

Fleet manager

Driver / fleet manager

Business Establishment

Cost

\$100-1,700 / year

\$1-6 / 30 min

\$100-1,000 / one time + per year

Cities

Austin, Miami
Beach, Portland,
Seattle, Washington
DC

Chicago, Miami
Beach, NYC,
Seattle, Washington
DC

Chicago,
Minneapolis,
Philadelphia



Research questions

What are delivery carriers' preference towards parking pricing?



- 1) Are freight operators willing to pay for parking?
- 2) What pricing scheme do carriers prefer?
- 3) Are carriers' preferences towards pricing heterogeneous?



Case study: Seattle Department of Transportation (SDOT) operates the oldest CVLZ program in the US, and obtained in 2024 USDOT SMART funding to modernize it

Methodology

The Seattle CVLZ program: permit

The Seattle CVLZ program was established in 1989

Two types of load zones:



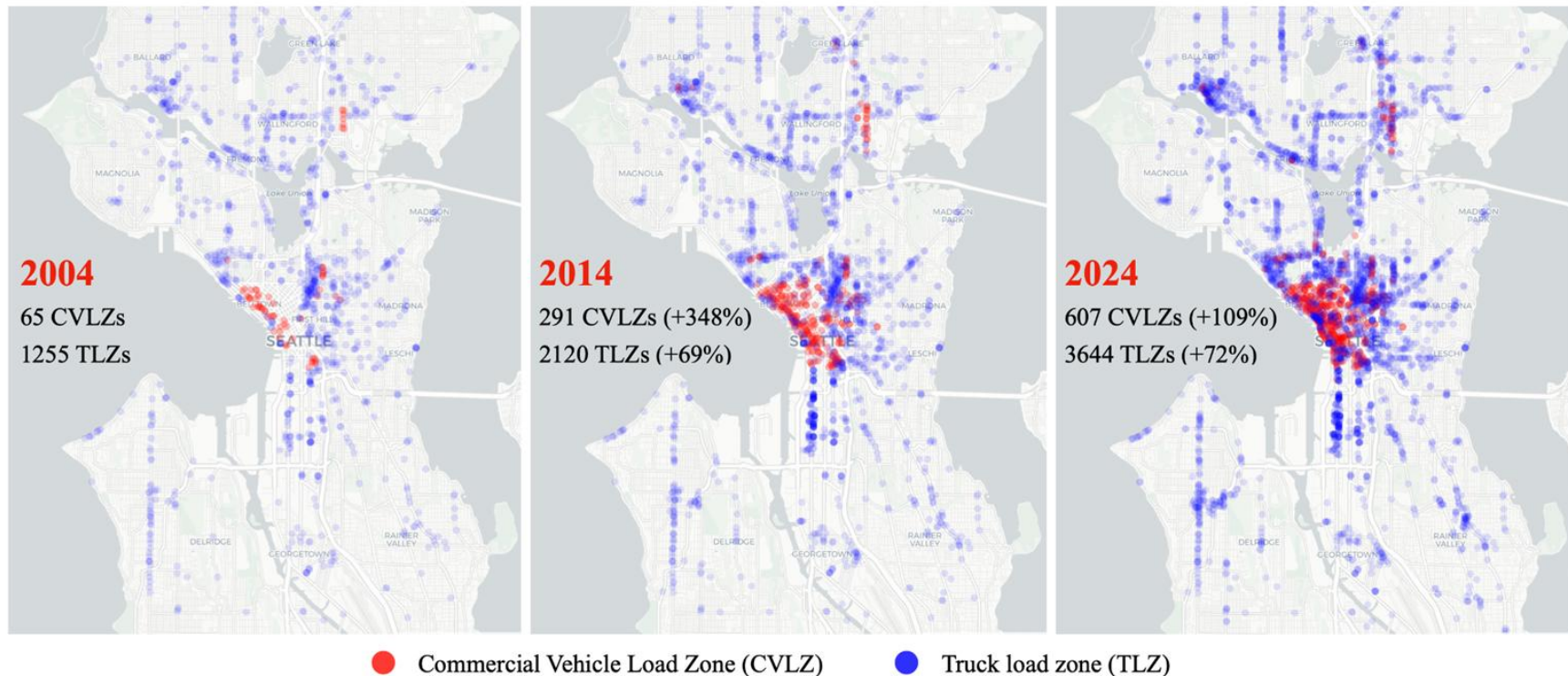
CVLZ requires permit (\$250/year):



Max dwell time: 30 minutes

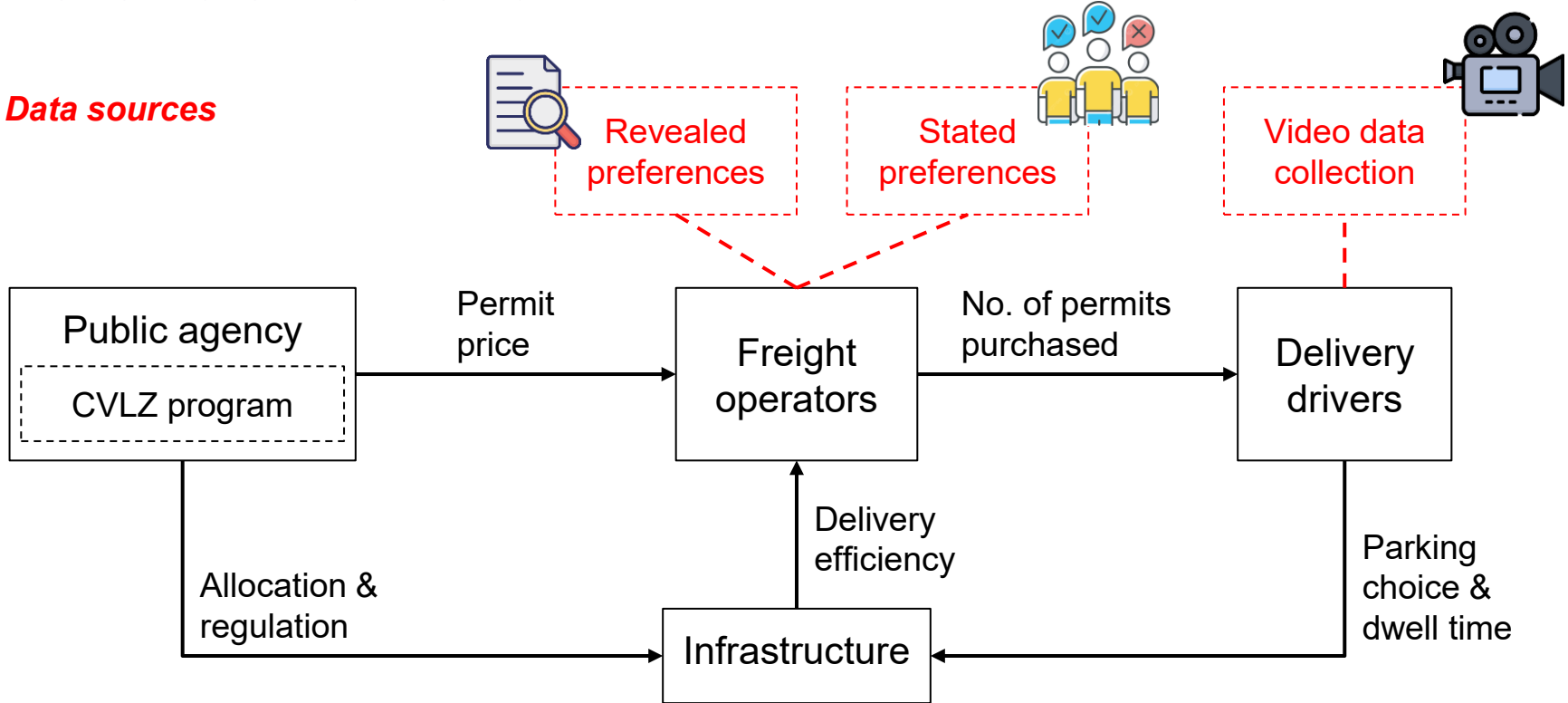
The Seattle CVLZ program: infrastructure

Approximately 11% of allocated curb is for commercial vehicles



Behavioral framework

Data sources



Discrete choice experiment

1. Stated preference survey

Designed a survey for fleet managers/ business representatives. Survey questionnaire:

- General company & fleet information
- Operational profile
- Stated preference on parking pricing scenarios among:



Annual
Permit



Pay- Per-
Use



None

2. Survey distribution

Survey was distributed through email list of current and past permit holders, SDOT & UW social media, and physical flyers to drivers



Question 4/4

Which parking method do you prefer?

	Annual Permit	Pay-Per-Use
Payment Method	Pre-Paid	Mobile app
Base Cost	\$250	\$50
Price per Park	\$0	\$10
Total Allowed Parking Time	30 minutes	120 minutes

Your choice:



Annual Permit



Pay-Per-Use



I would choose not to
pay for parking

3. Data modeling

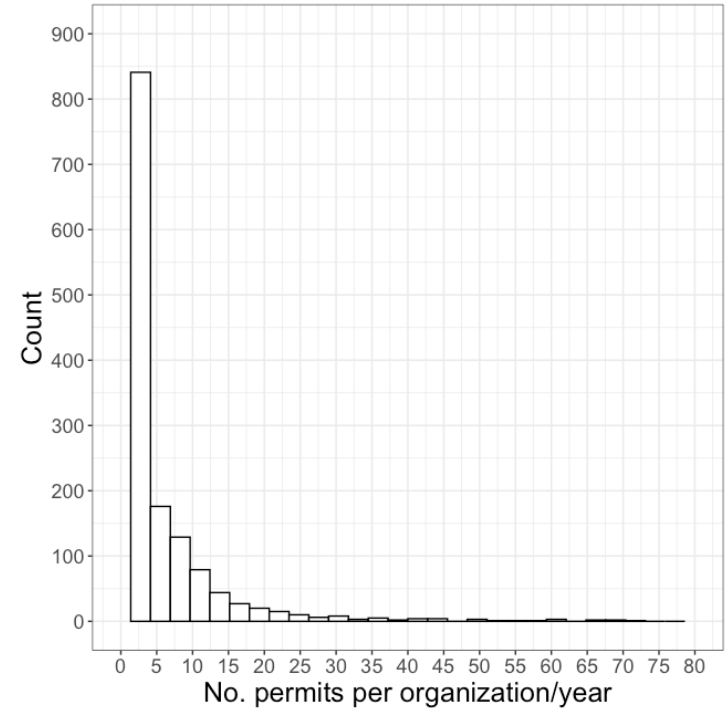
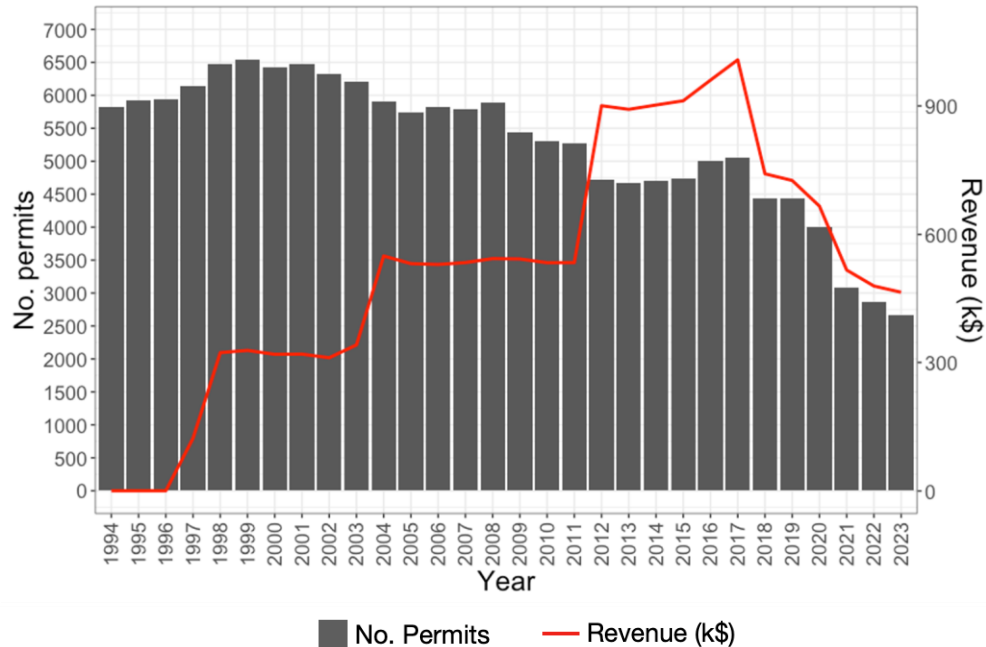
Obtained sample of **126 respondents**, and **364 choices observed**, was used to estimate a Mixed Logit choice model with interactions.

- Economic indicators
- Policy simulation



Six key results

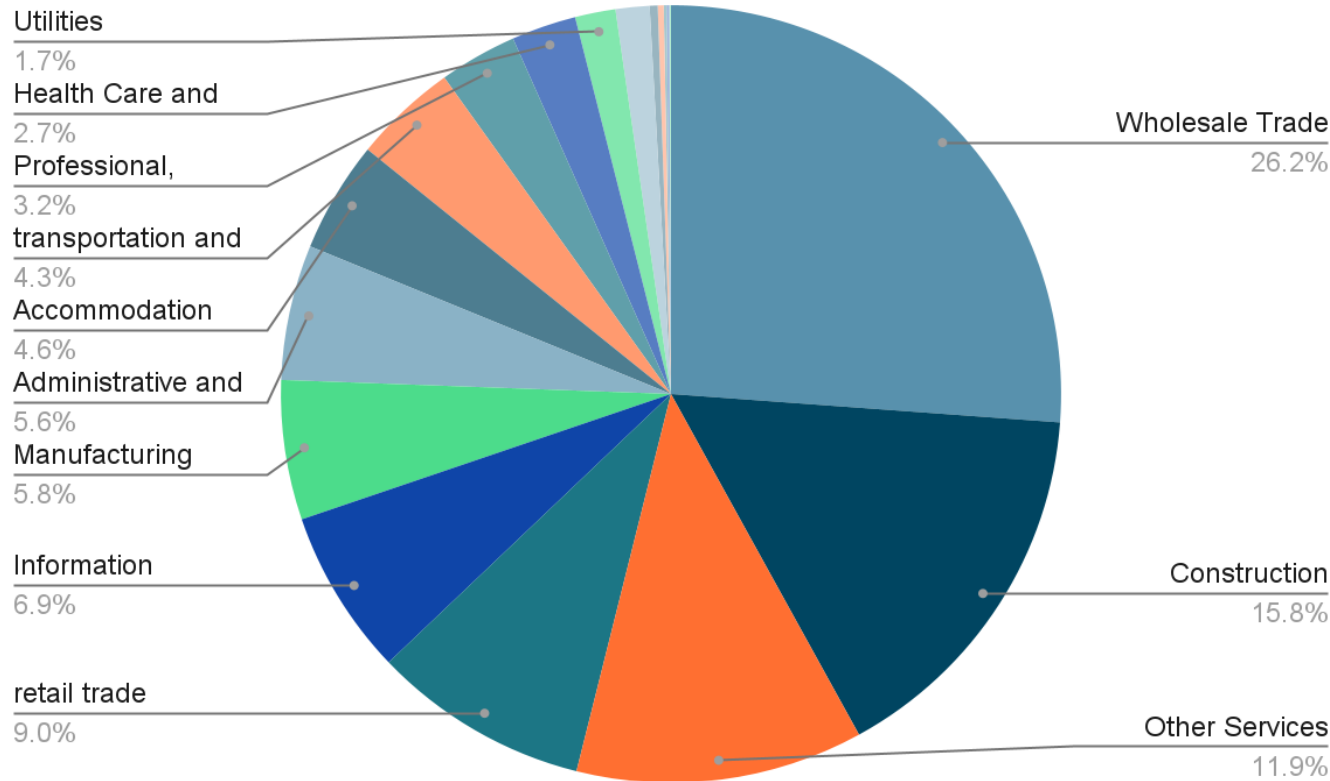
1) On average 5,000+ permits are purchased each year



5,260 CVLZ permits/year purchased on average

95% of permit holders purchased 20 or less permits yearly

2) Permit holders are NOT who you would expect



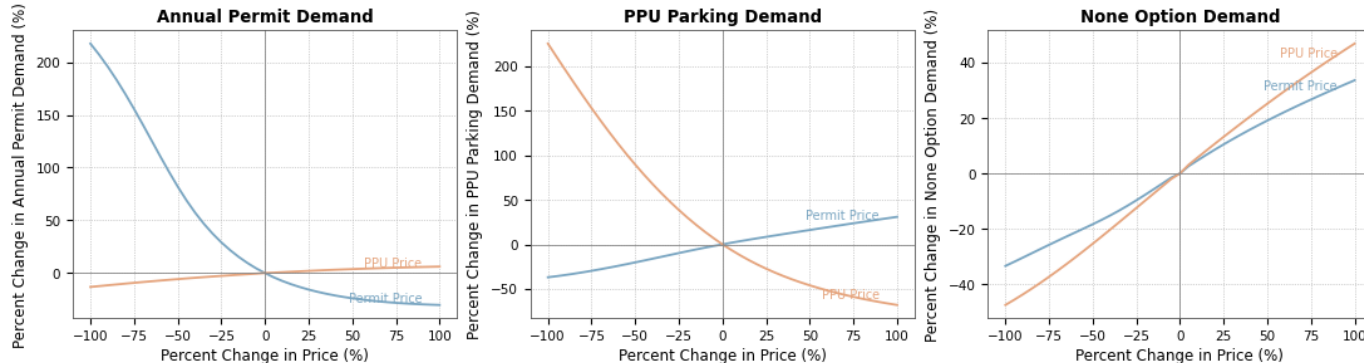
Permit holders are generally sectors characterized by long dwell-times & heavy vehicles

3) Freight parking demand is price sensitive

Demand for both permit & Pay-Per-Use (PPU) is elastic, but PPU users are more sensitive to price changes. Price elasticities:

- Annual Permit: -0.97
- Pay-Per-Use: -1.20

Substitution Effect: As Permit prices rise, carriers switch to the "None" option (risking fines) rather than switching to PPU.



4) Preference towards longer parking duration

- **Annual Permit:** Carriers are willing to pay \$2.39 for each additional minute of allowed parking time
- **Pay-Per-Use:** Negligible WTP for time extensions (\$0.008), suggesting PPU users prioritize short, cost-minimized stops

A \$100 increase in permit price can be compensated for by adding ~42 minutes of max parking time.



5) Carriers are highly heterogeneous

Factor	Effect
Large Companies (# of employees>100)	 Prefer Annual Permit
Companies with truck with trailer in their fleet	 Prefer Annual Permit
Companies in transportation and warehousing sector	 Dislike Pay-Per-Use
Companies with Annual Permit	 Prefer Annual Permit (high retention)
Companies that prefer unauthorized parking	 Prefer not pay for parking
Morning operations	 Increase both Annual Permit and Pay-Per-Use demand

6) Drivers with parking permits are more compliant

	Paking choice		
	CVLZs	Un-authorized	Dwell time <30 min
Permit holders	87%	13%	68%
NON-Permit holders	59%	41%	79%

Conclusion

- **Freight operators are willing to pay for curb access**
- Heterogeneity in responses to price
- Importance of other attributes: parking dwell time, reliability, flexibility, and operational certainty
 - **Need to develop curb policies that reflect operational needs**
- Parking price, within a general CVLZ program, **induce participation and compliance**, also at the driver's level

Thank you!

Giacomo Dalla Chiara (giacomod@uw.edu)
giacomodc.github.io urbanfreightlab.com



URBAN FREIGHT LAB
UNIVERSITY *of* WASHINGTON
College of Engineering