



SUPPLY CHAIN TRANSPORTATION & LOGISTICS

UNIVERSITY *of* WASHINGTON

College of Engineering

Cracking the Freight Data Nut: Estimating Center City Inbound and Outbound Vehicle Volumes from Cordon Counts

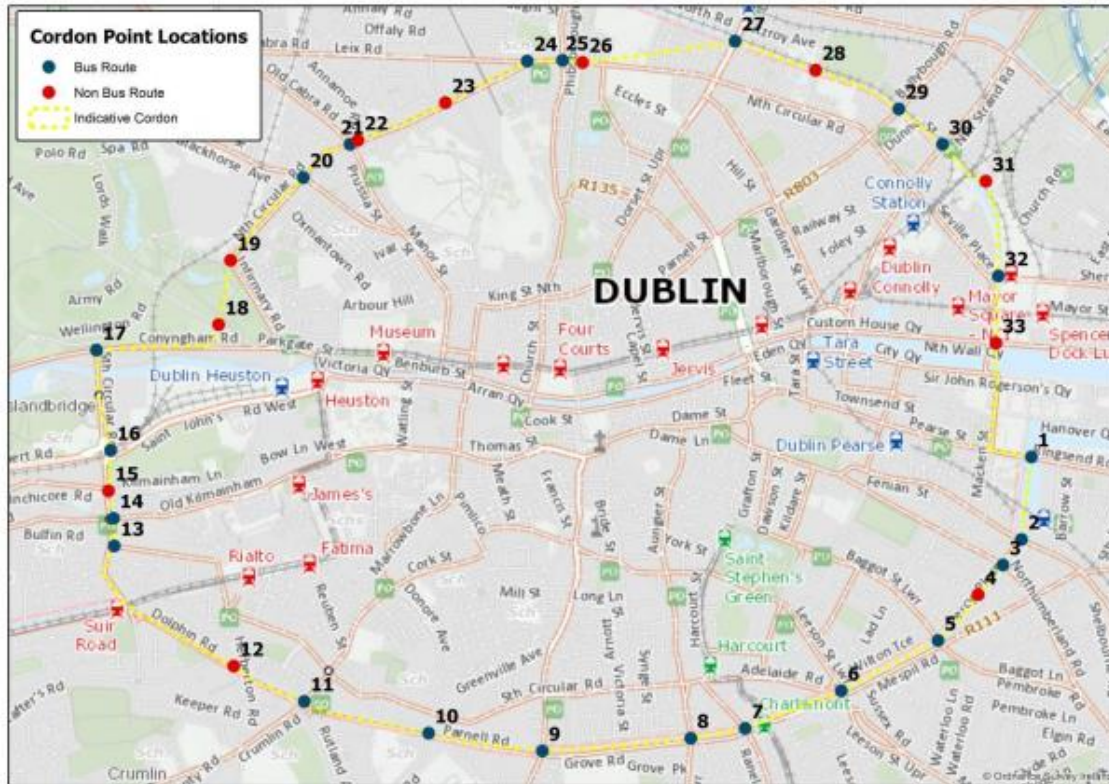
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PhD Candidate

Co-authors: Dr. Anne Goodchild

METRANS International Urban Freight Conference
October 17, 2019

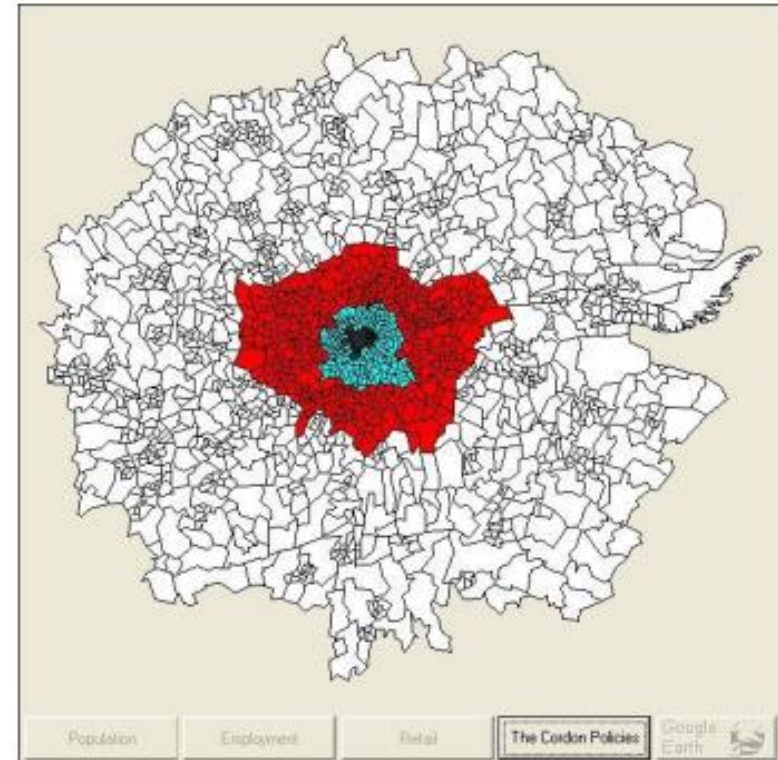


City Center Cordons



Dublin City Council Canal Cordon

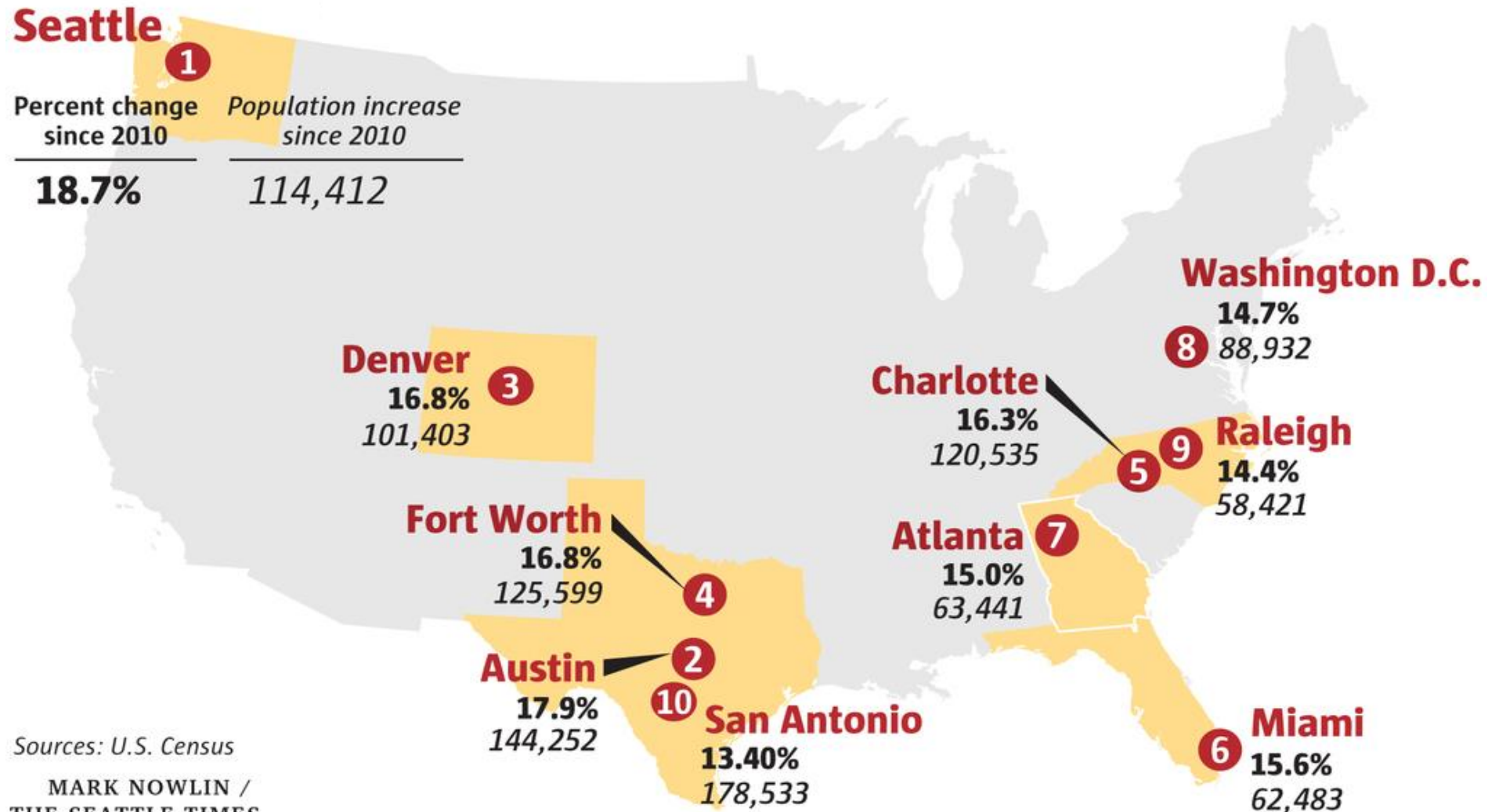
Dublin City Council & National Transport Authority



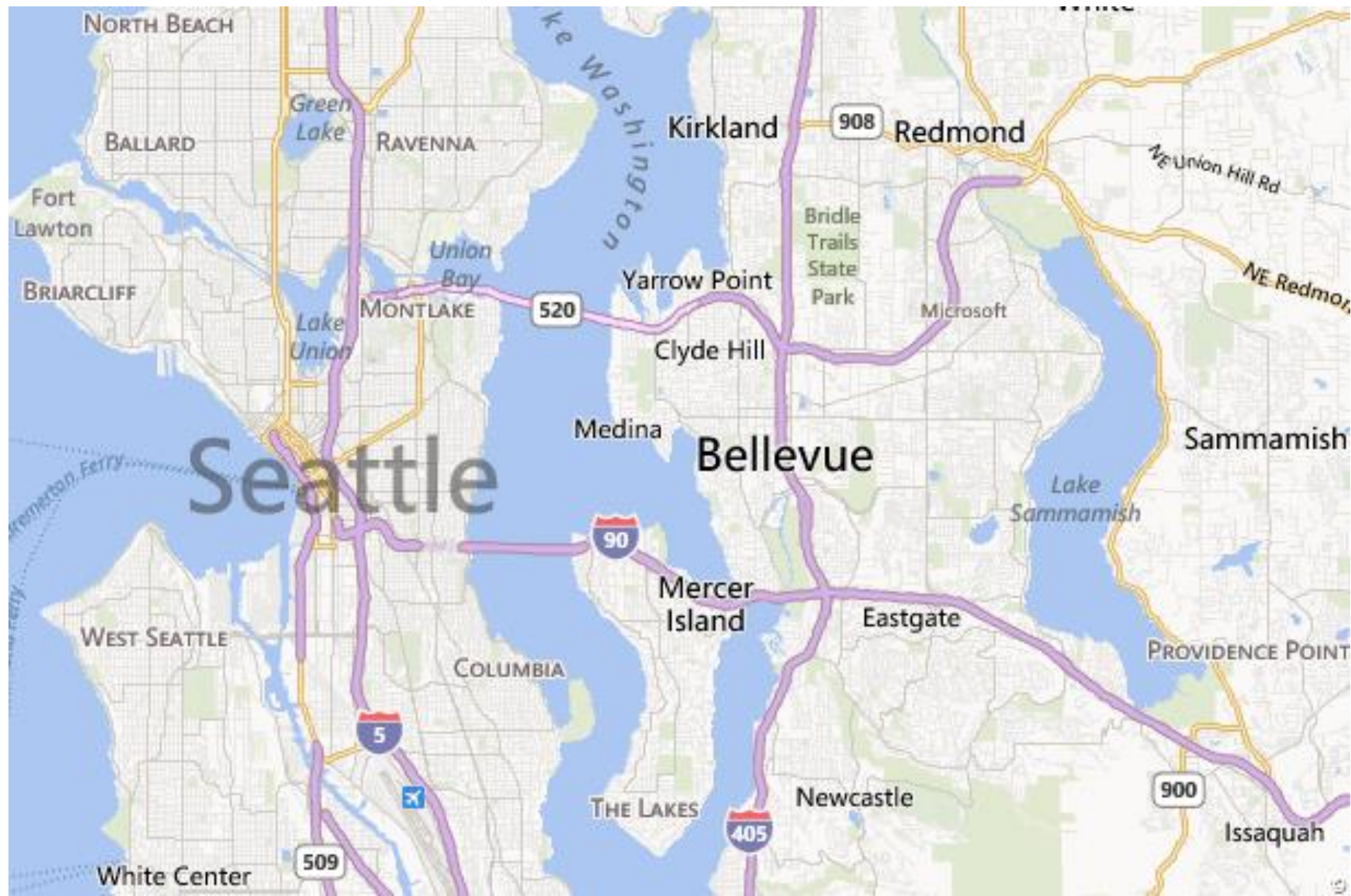
Road Pricing for London

Transport for London

Seattle: the No. 1 growing U.S. city of this decade



Sources: U.S. Census
MARK NOWLIN /
THE SEATTLE TIMES



Data Collection

Seattle's Greater Downtown Cordon Study

The Seattle Department of Transportation (SDOT) engaged the Urban Freight Lab (UFL) to:

- a. Develop a baseline cordon count for the Greater Downtown
- b. Create a vehicle typology with focus on commercial vehicles

Inbound and outbound vehicle volume are being capture by:

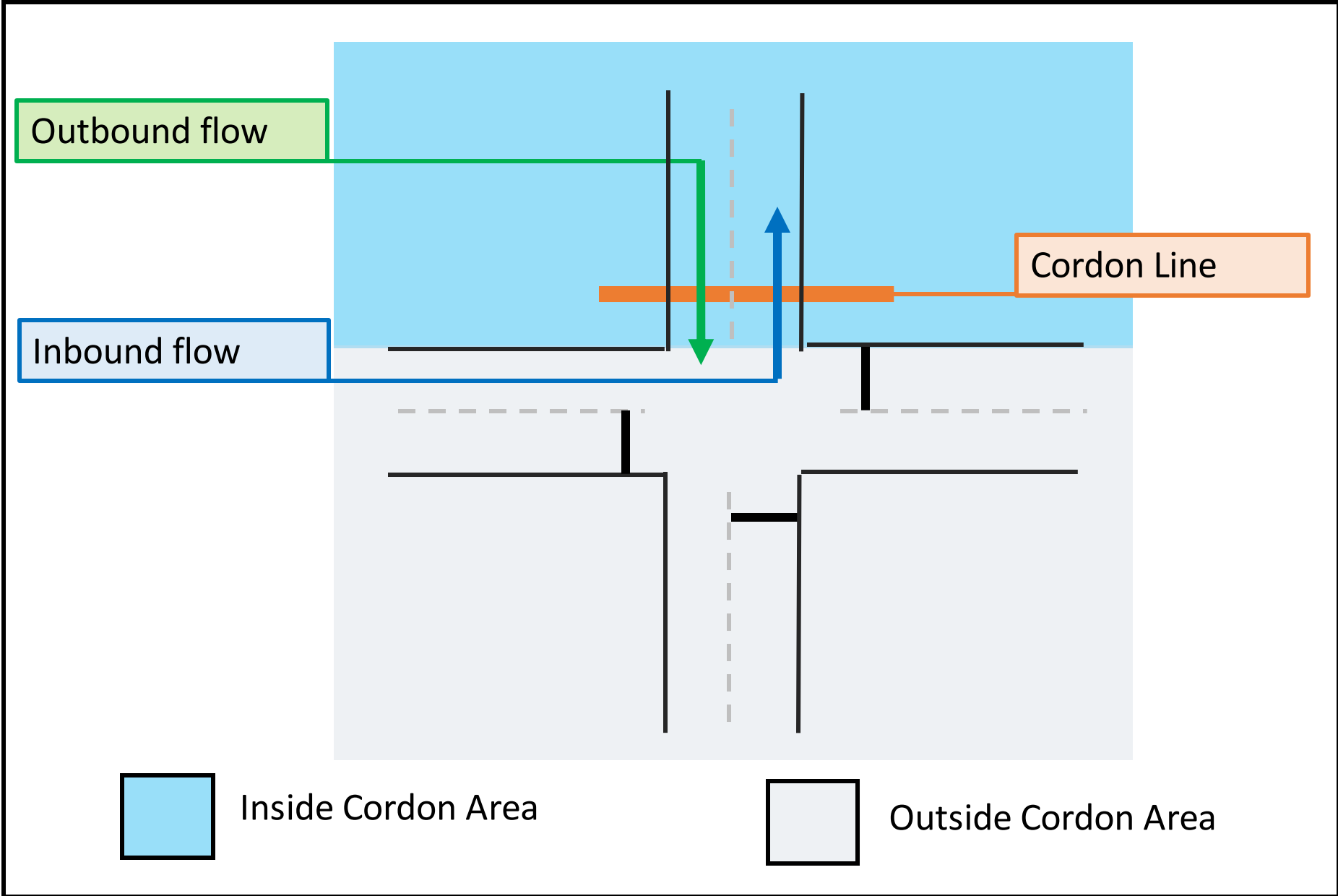
- a. Day of the week
- b. Time of day
- c. Vehicle body type
- d. Vehicle use
- e. Number of axles.



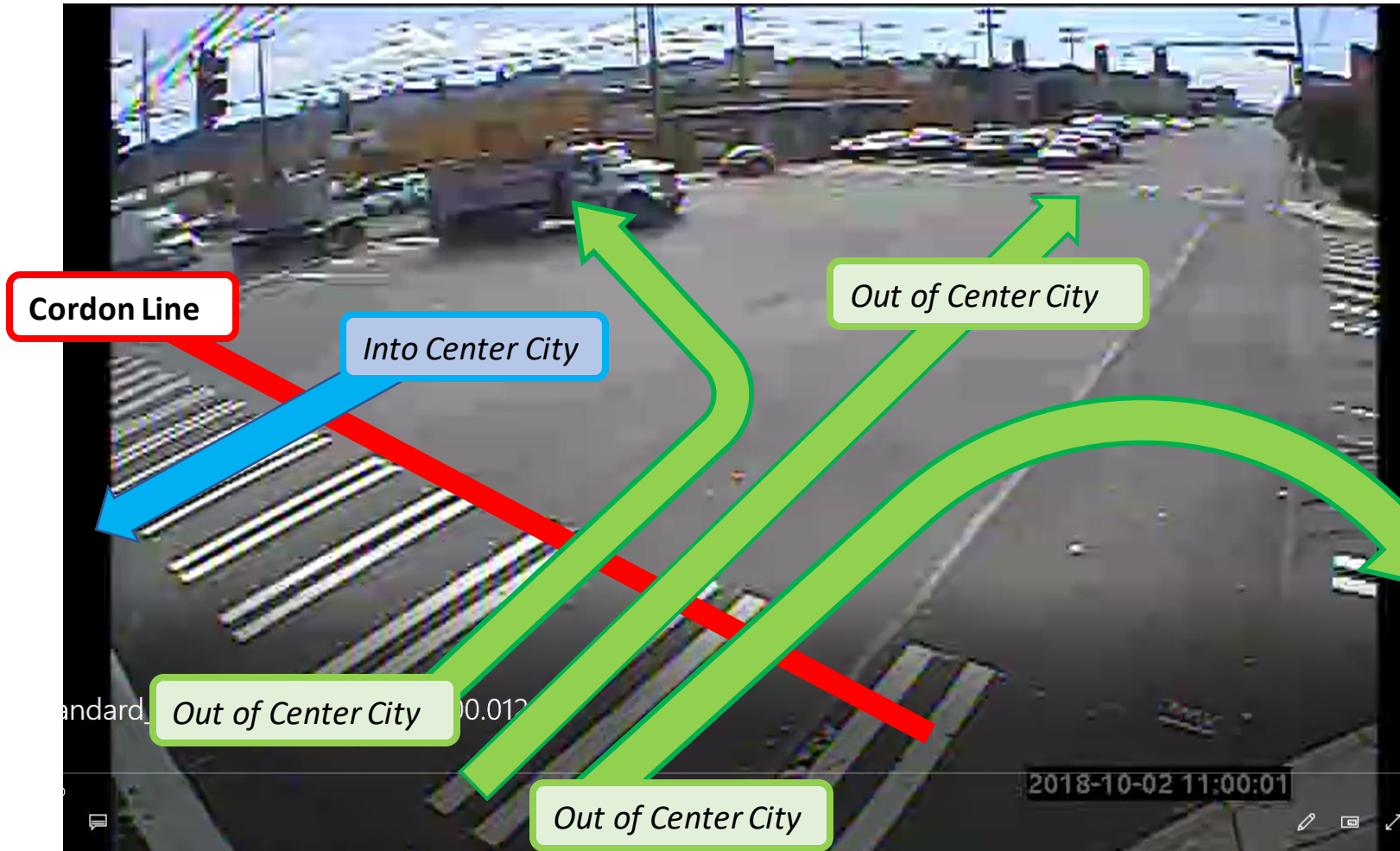
Gateway Locations

Gateway Type	No.	Days
Intersections	3	M – Su
Additional Intersections	19	T – W
I-5 On and Off-Ramps	20	T – W





Outbound Camera View



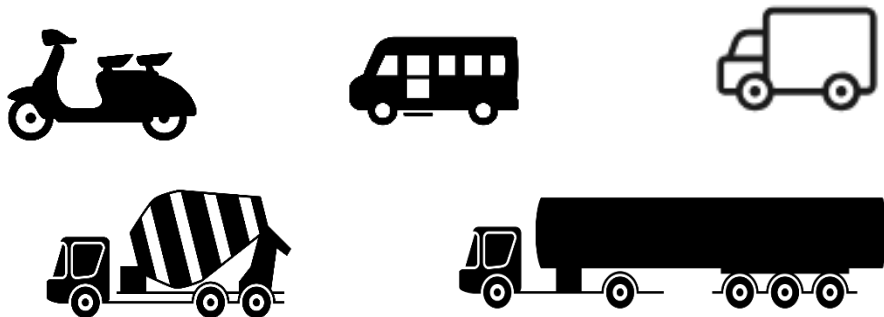
Intersection
4th Ave S. & S. Holgate St.

Video Footage
7 days – 24 hrs. per day

Vehicle Typology (1/2)

UFL researchers created a vehicle typology with 65 categories based on two levels of classification:

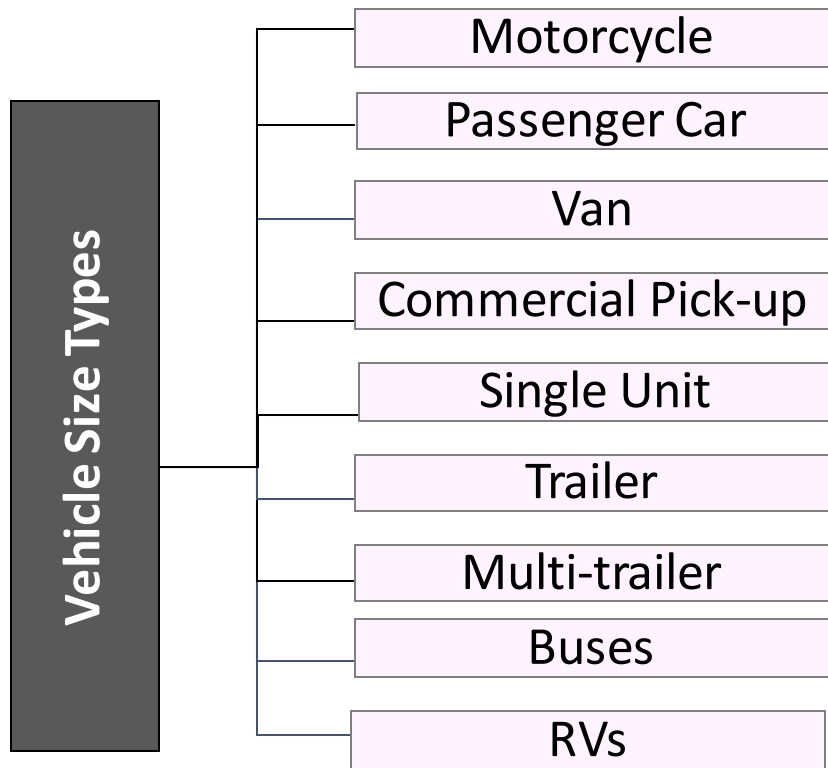
- 1st Level = Vehicle Body based on the vehicle frame and number of axles.



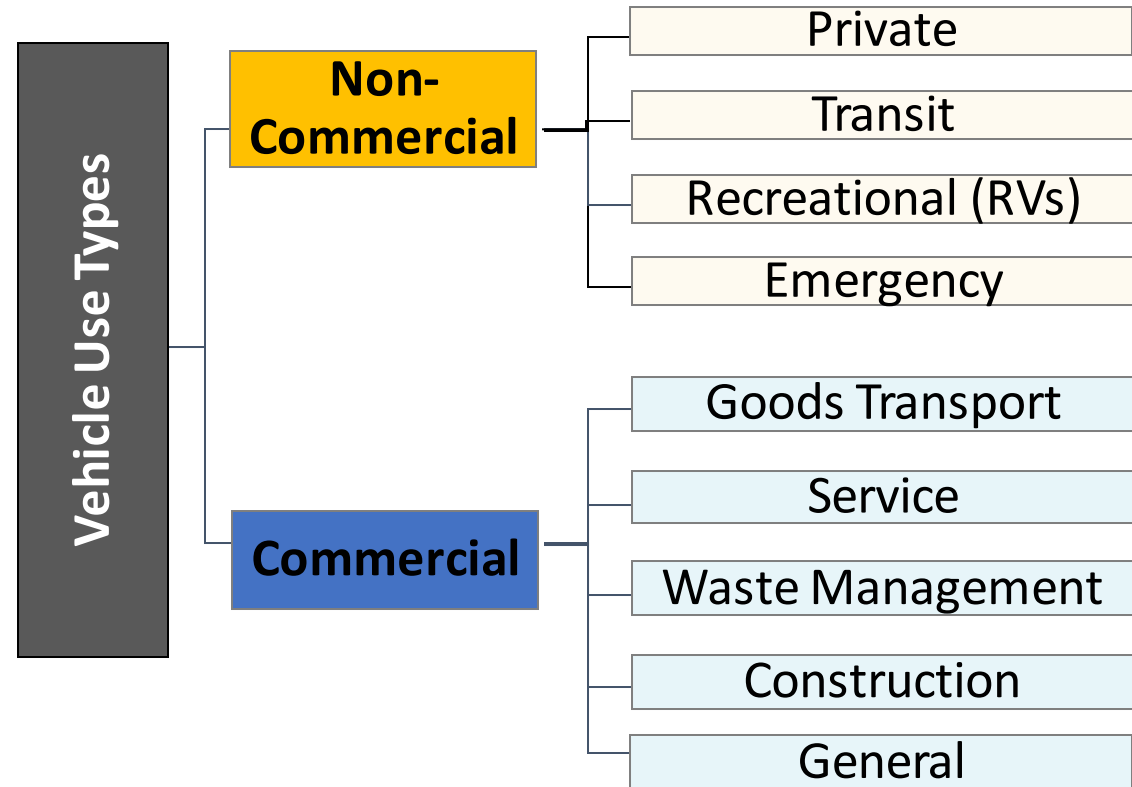
- 2nd Level = Use based on the primary use of the vehicle.



Vehicle Typology (2/2)



(a)



(b)

Data Collection Effort

Sample Size

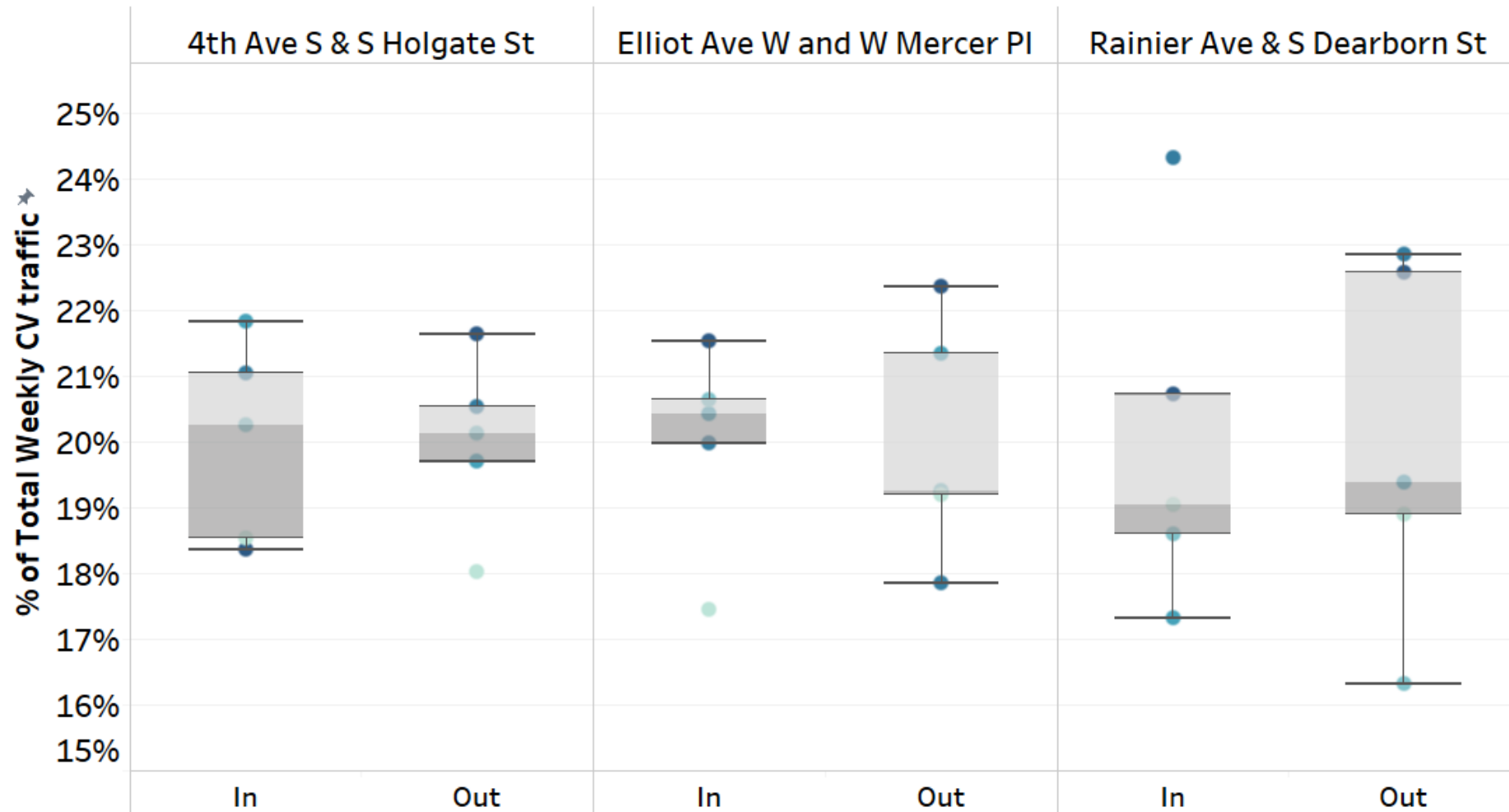
Total CVs crossing the cordon captured in a 48hrs period for all gateways = **89,490 veh**

	Intersections	Off Ramps	On Ramps
Total CVs	62,116 (70%)	12,503 (14%)	14,871 (16%)
Lowest Vol	120	454	820
Average Vol	1,635	1,134	1632
Maximum Vol	5,317	2,486	2,708

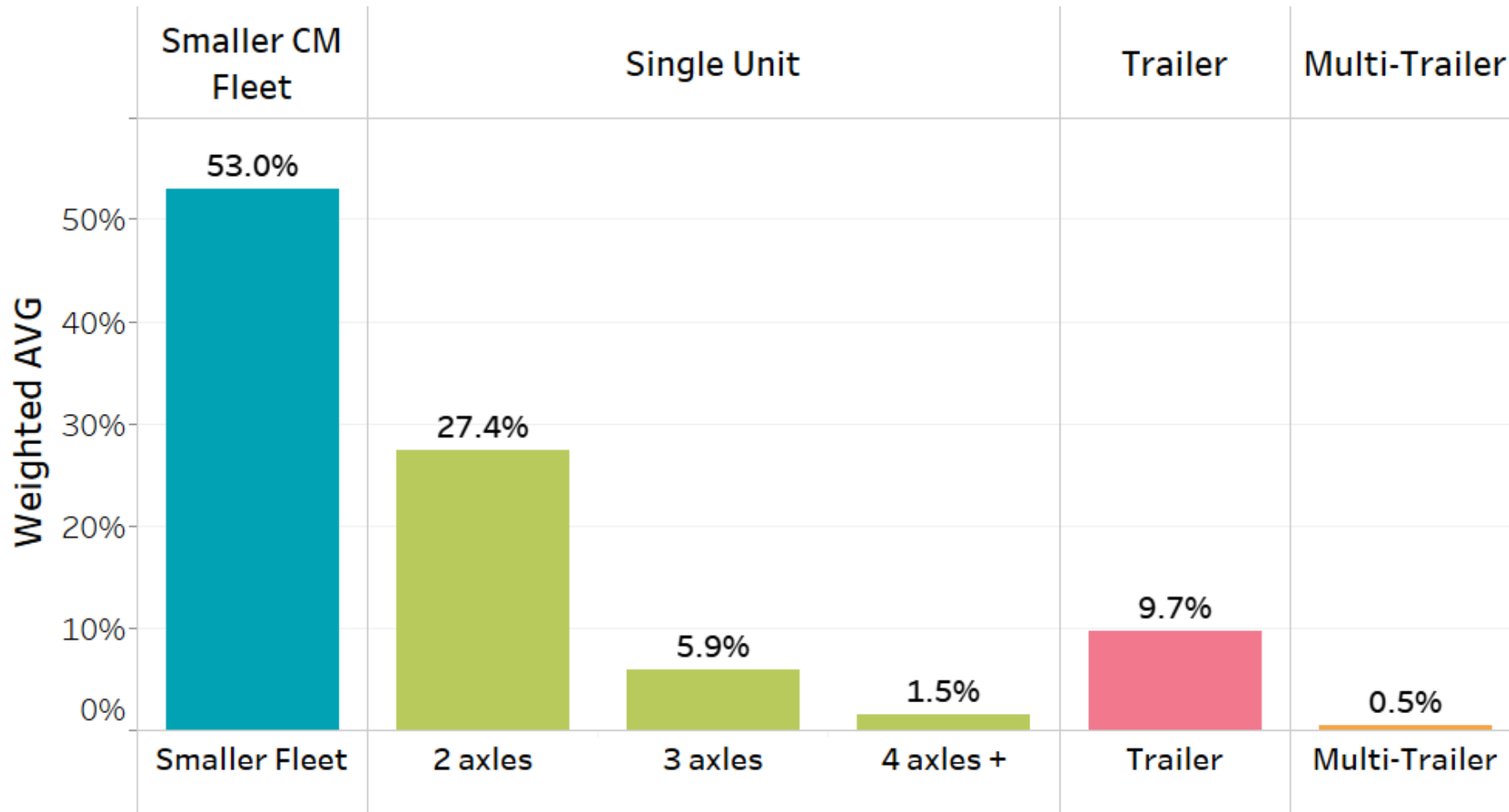
CVs traffic was on average **8%** of the total daily traffic.

Cordon Study Findings

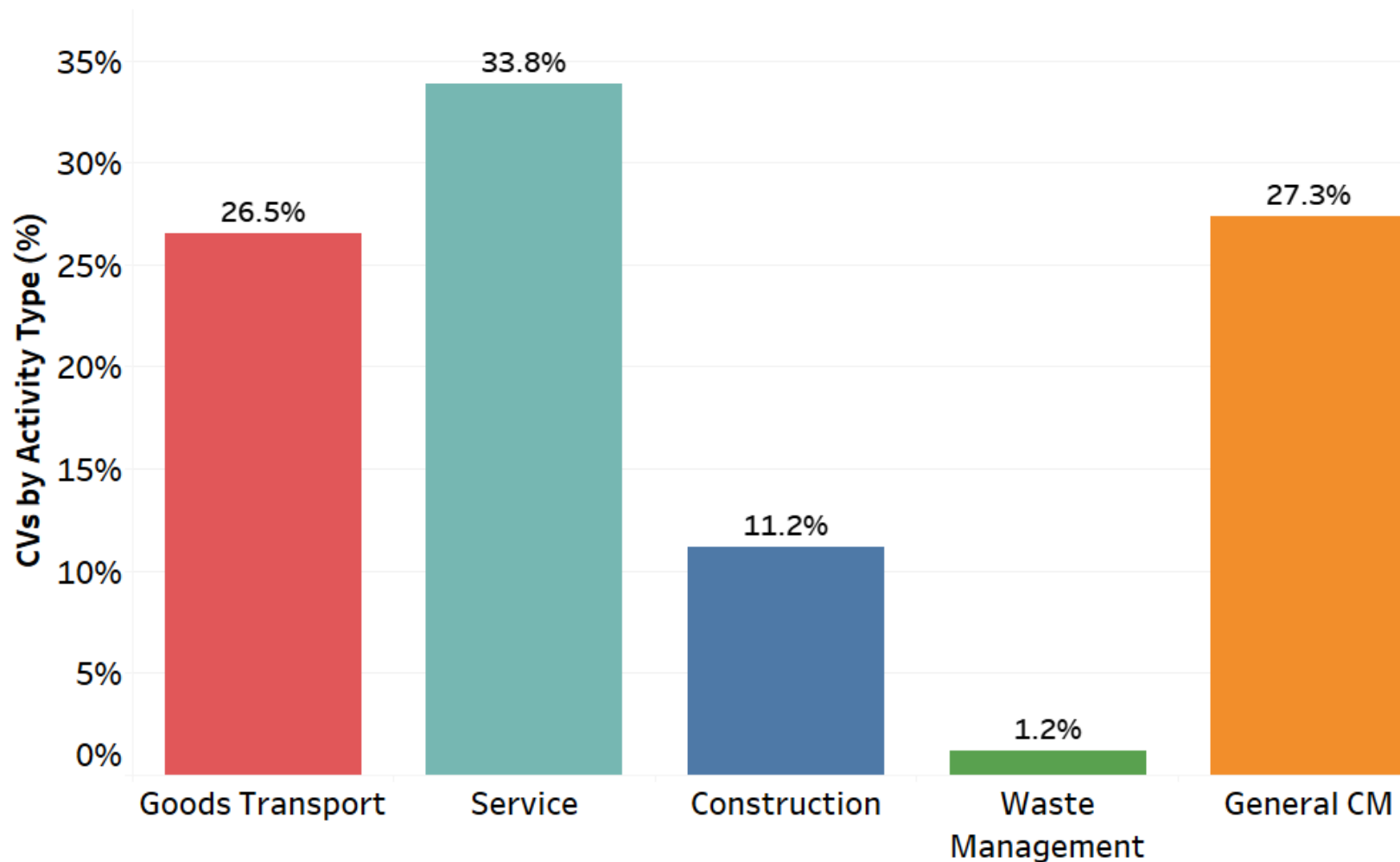
There is no significant difference in CV volumes by day of week.



About one half of all CVs were smaller vehicles

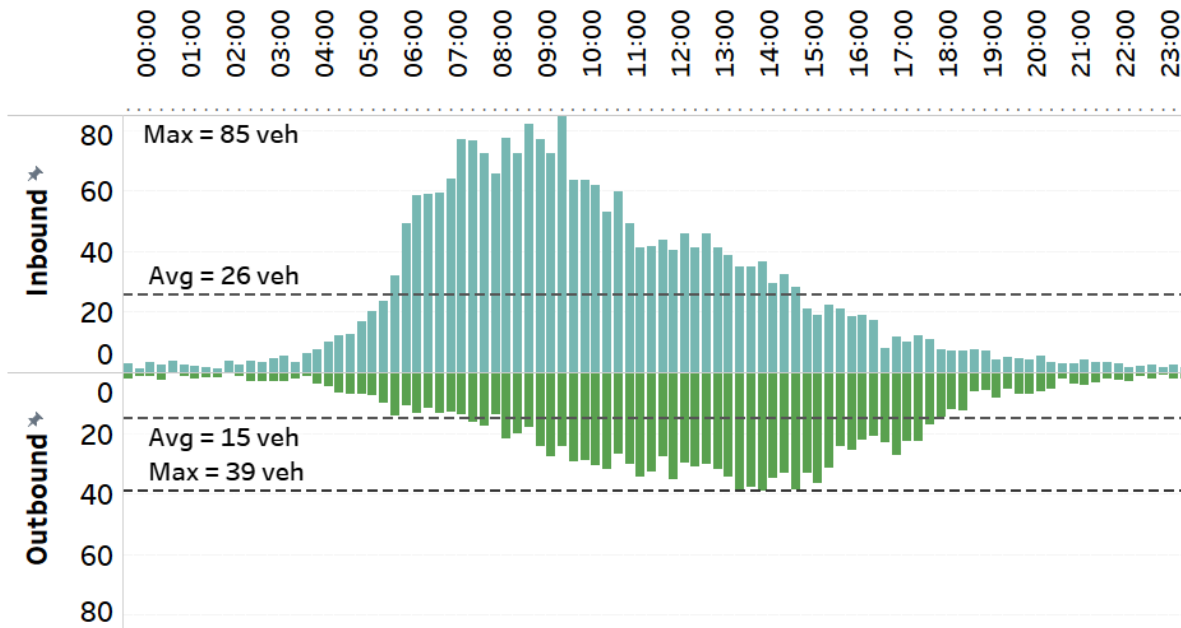


The largest share of CVs were service vehicles

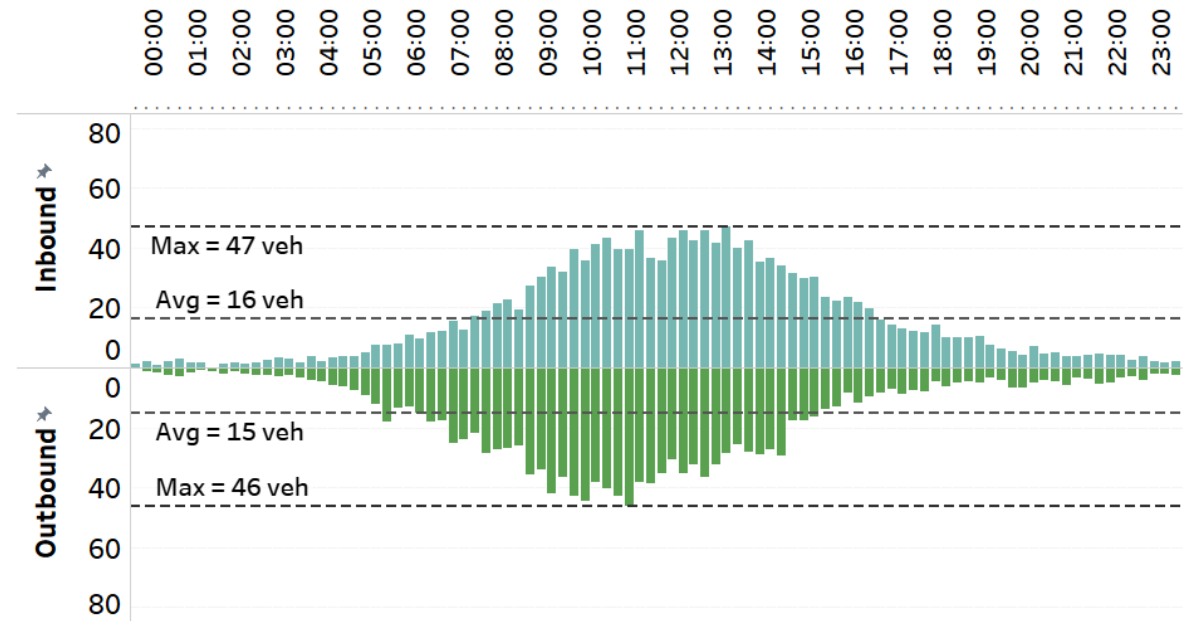


There are traffic pattern variations between Gateways

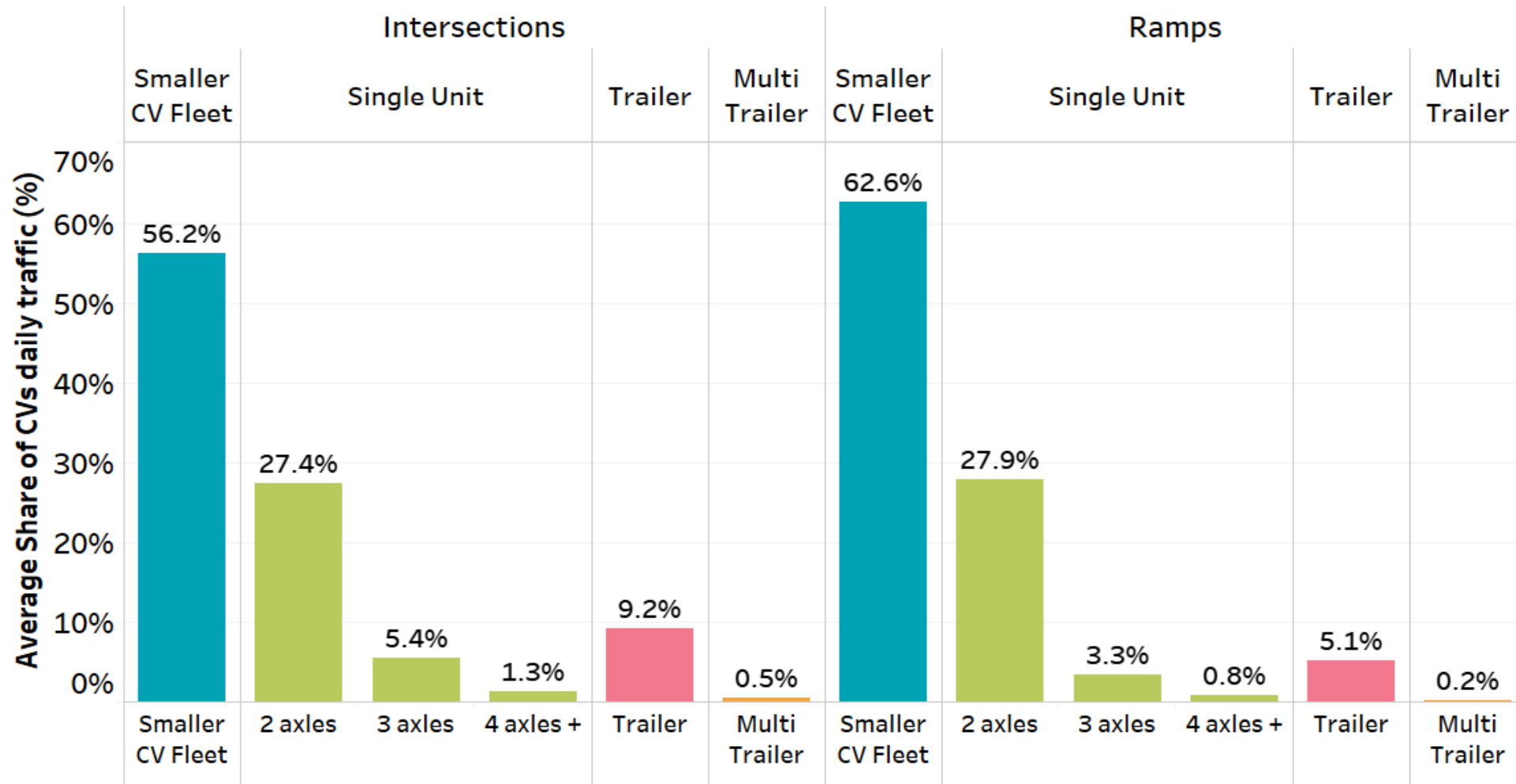
4th Ave S & S Holgate St



Elliot Ave W and W Mercer Pl



There are traffic pattern variations between Gateways



Findings Summary

- There is no significant difference in CV volumes by day of week.
- About 50% of all CVs entering/exiting the Greater Downtown area were smaller 2 axles fleet (i.e., vans, pick-ups), and 80% are 2 axles vehicles. This is consistent across the locations.
- The largest percentage (one third) of CVs entering/leaving the Greater Downtown Seattle city were service vehicles.
- There are traffic pattern variations between Gateways.

Greater Downtown Seattle Cordon Count Applications

- Provide a baseline count for 41 gateways in Seattle's Greater Downtown area.
- Enable the first ever estimation of the entire traffic flow entering and exiting the downtown core.
- Allow the evaluation of different freight planning and traffic management strategies; such as the implementation of new technologies, infrastructure planning, assessment of current major trucks streets classification, and congestion pricing.
- Establish a method to collect cordon count data in the future to capture trends.

Questions? Please contact:

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