



**Loughborough
University**

School of Architecture, Building
& Civil Engineering

How did micromobility usage change in response to COVID-19?
Haitao He – Lecture in Urban Mobility and Intelligent Transport

Agenda

A digital tool to monitor temporal and spatial patterns of shared micromobility using vehicle availability data

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Shared micromobility promotes sustainable mobility but also causes urban problems

Obstructed Sidewalks



Usage largely driven by unpredictable factors:

- volatile investment environment
- disruptive business models
- changing policies
- COVID-19

Accidents



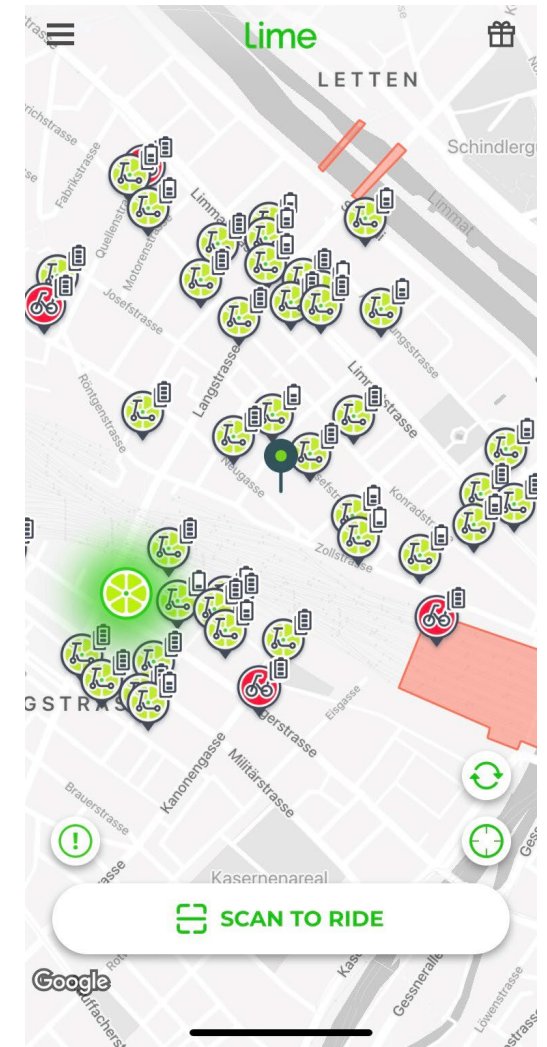
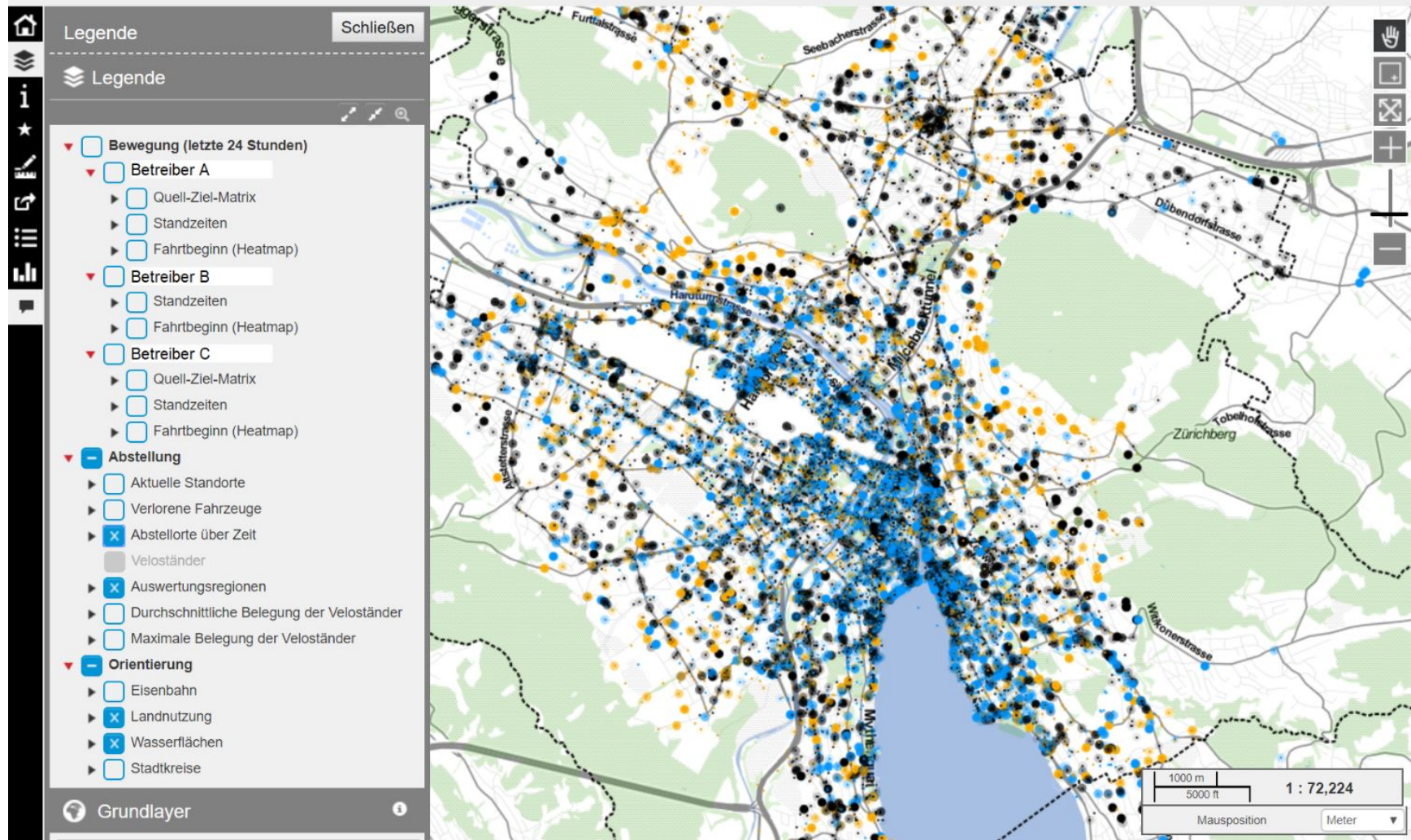
Clutter



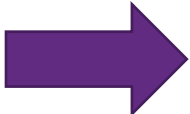
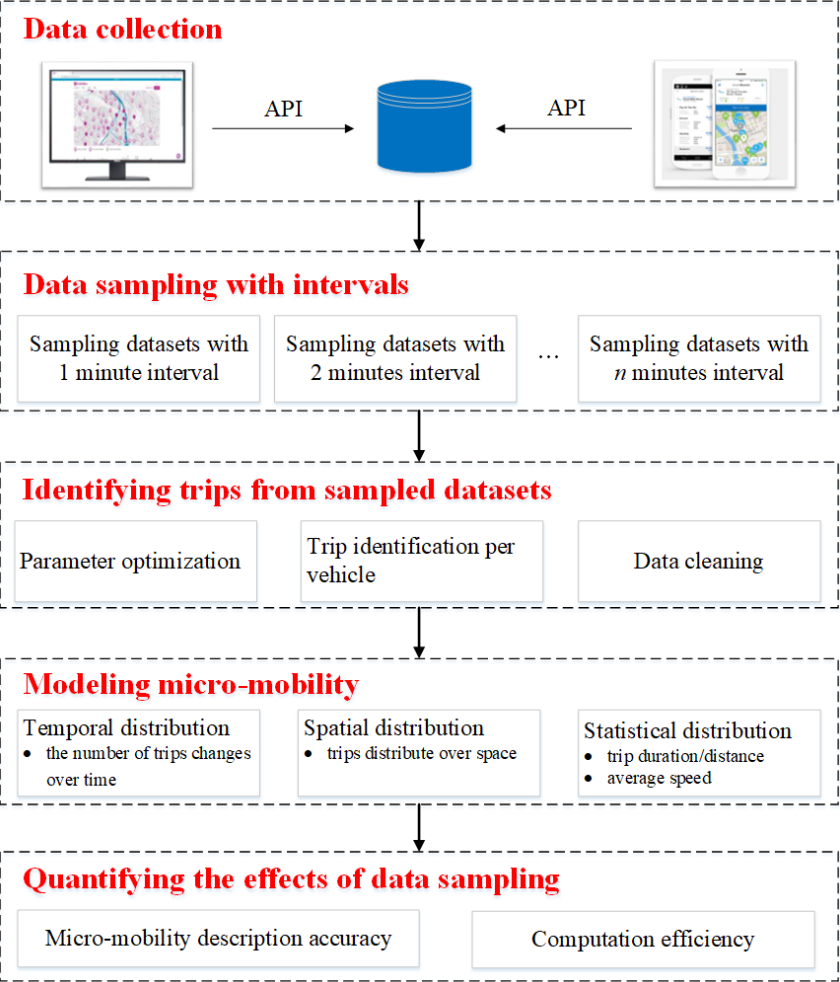
Vandalism



A tool for the regular monitoring and on-going understanding of micromobility usage

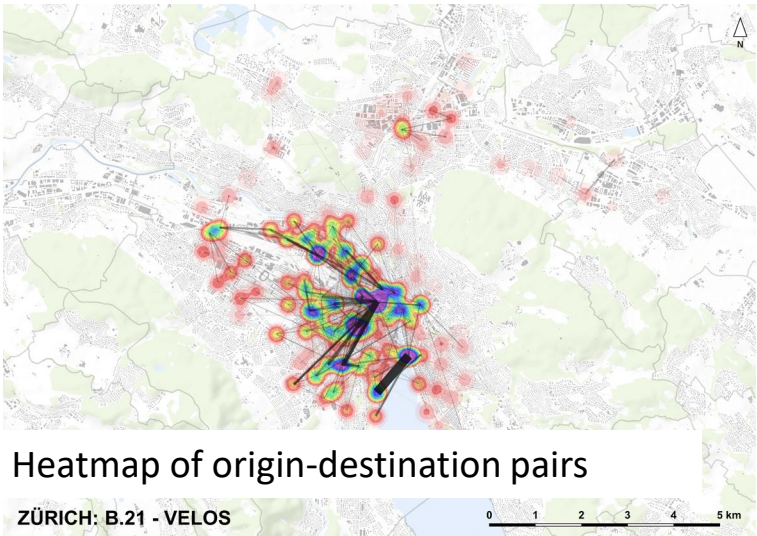


Extract high-resolution disaggregate trip information from all service providers



Result:

Accurate high-resolution disaggregate trip information from all service providers



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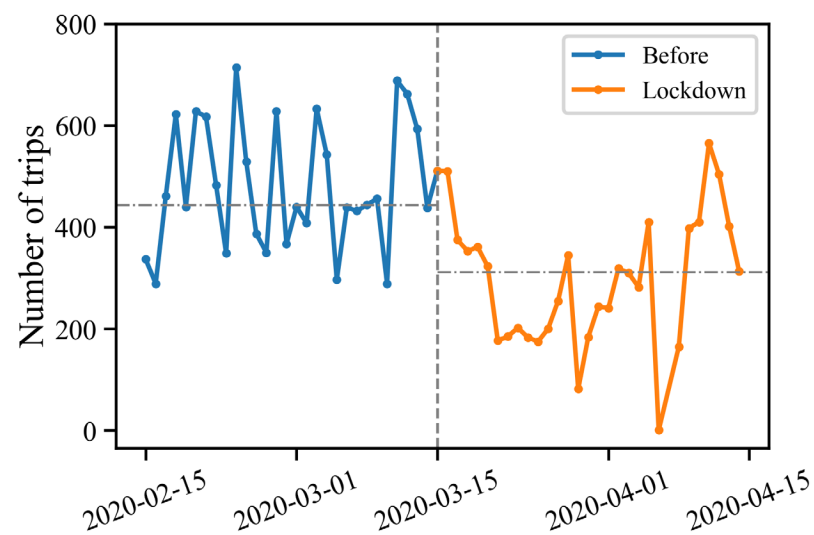


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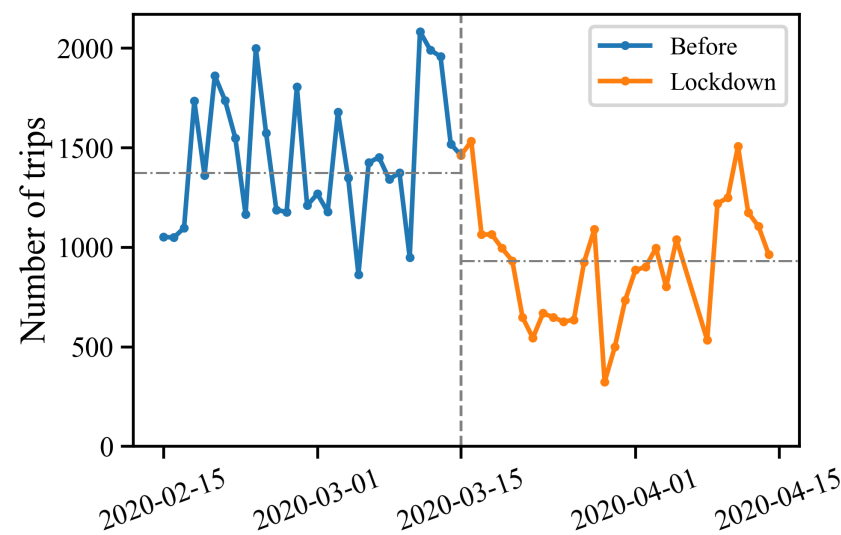
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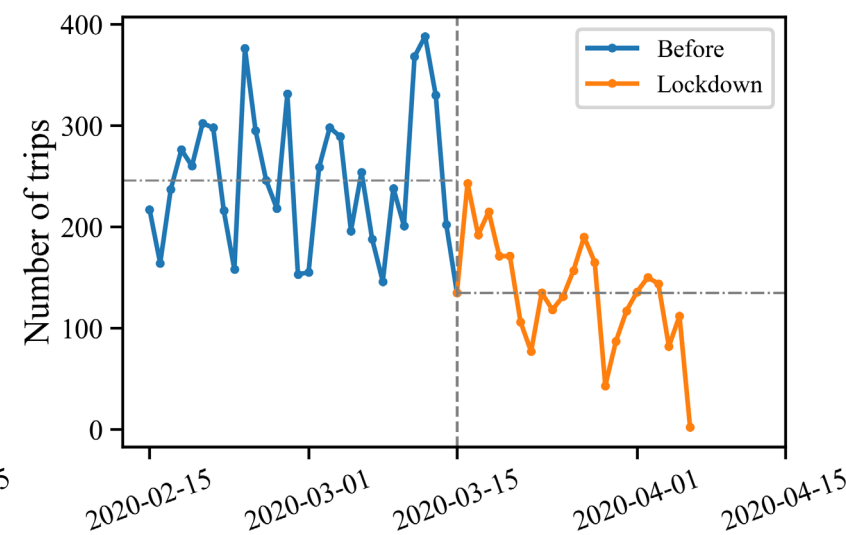
Number of trips per day



Docked bikes

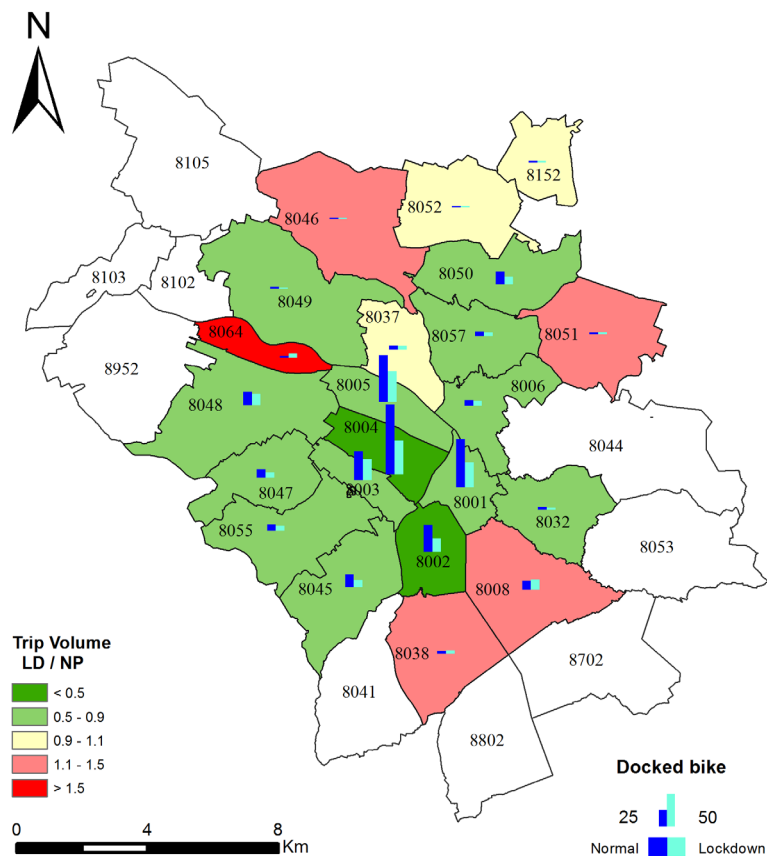


Docked e-bikes

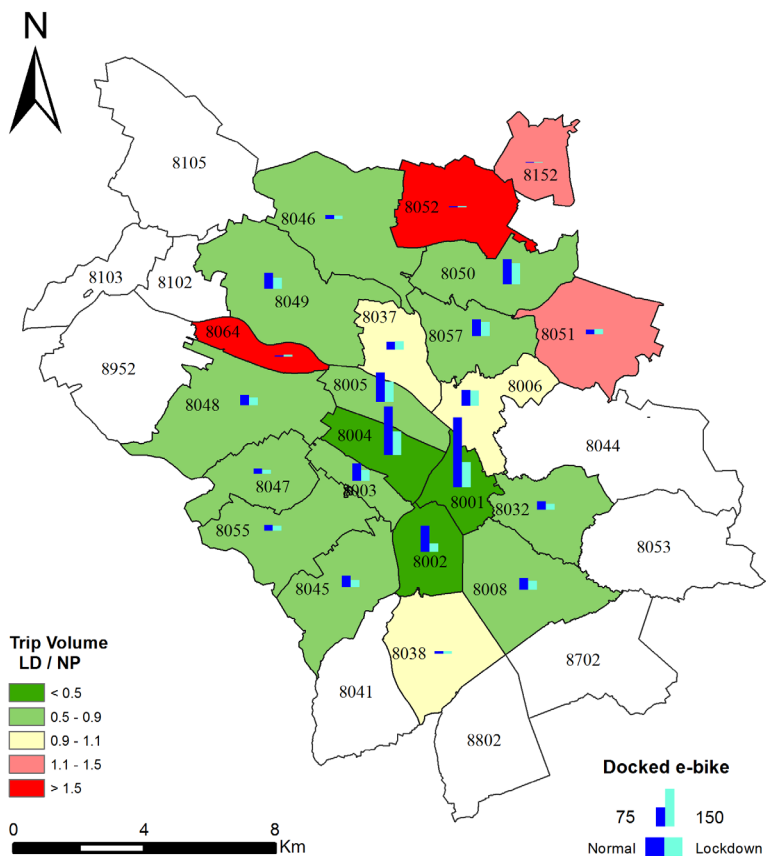


Dockless e-bikes

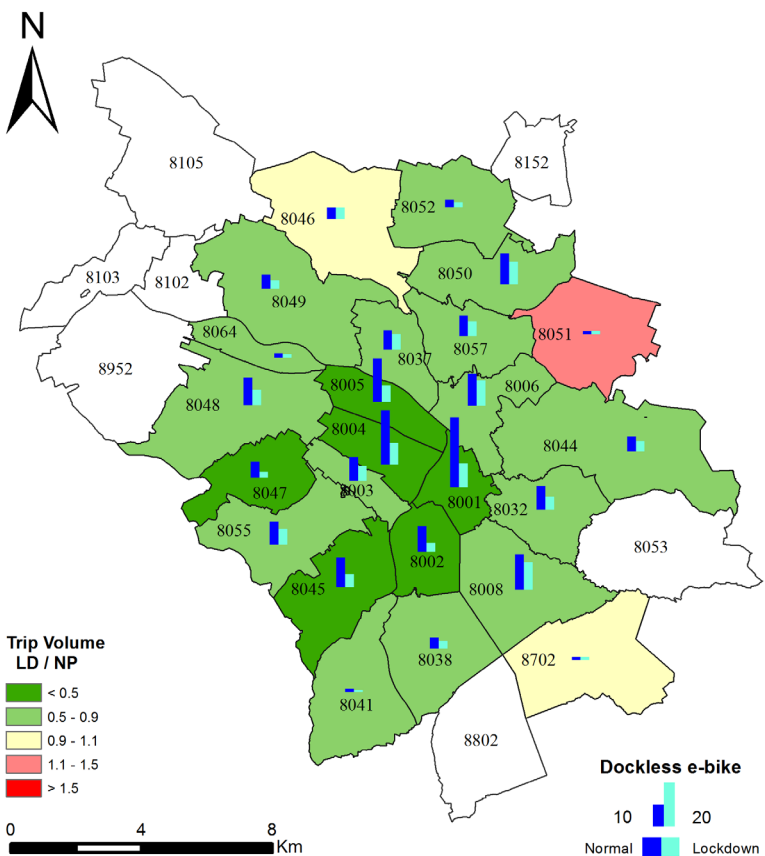
Spatial distribution of trips



Docked bikes

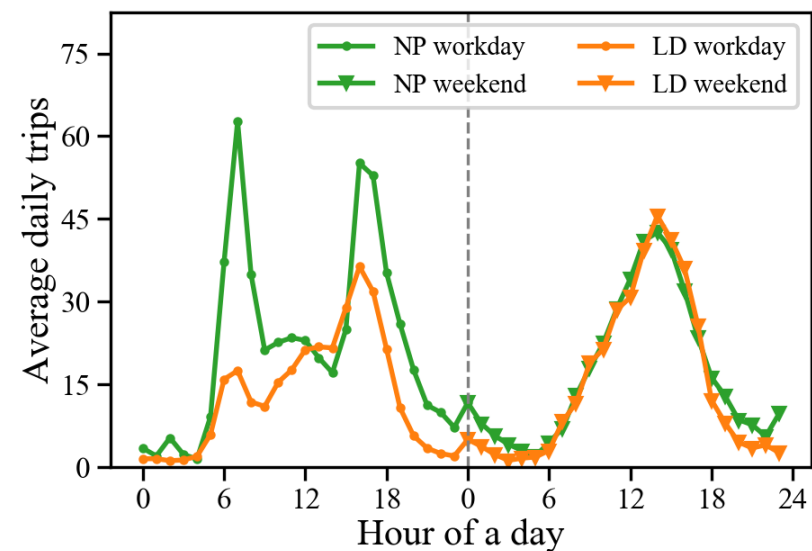


Docked e-bikes

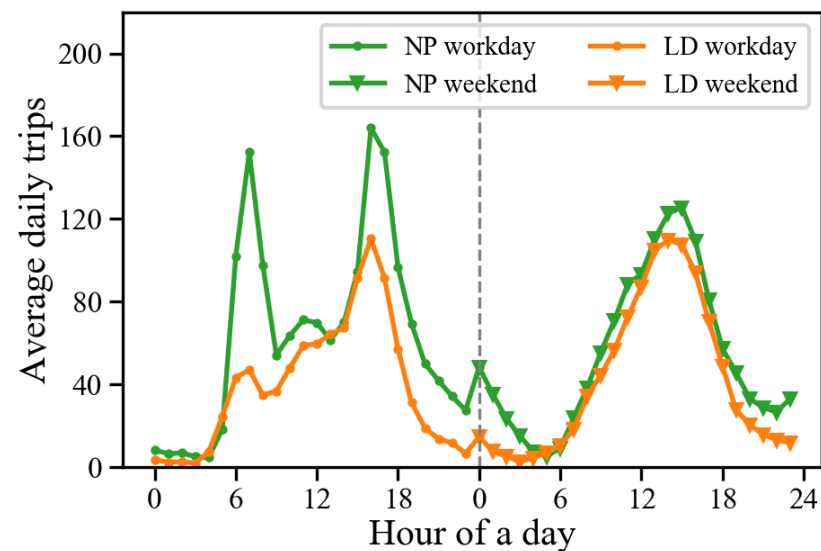


Dockless e-bikes

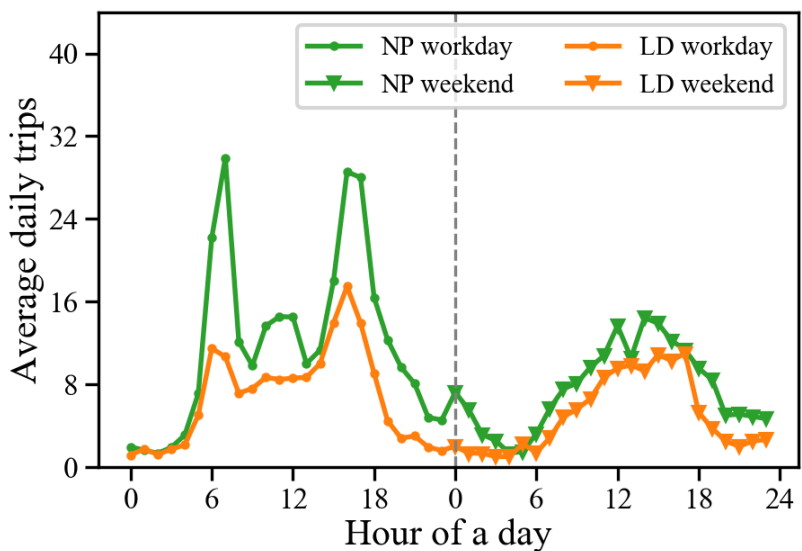
Temporal distribution of trips



Docked bikes

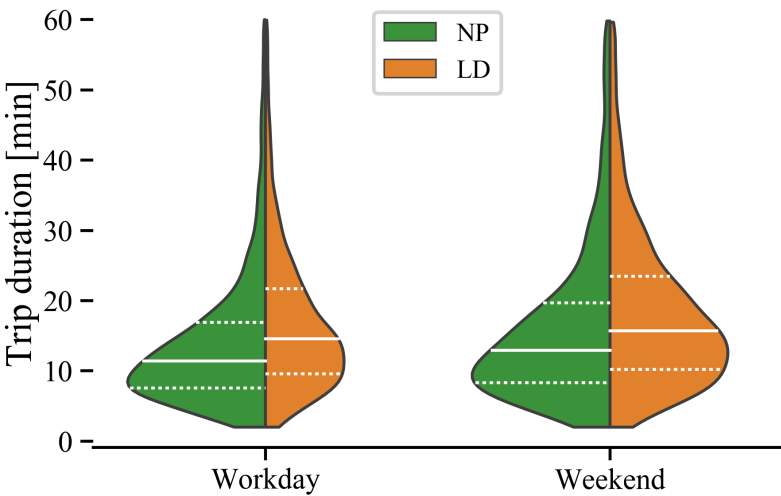


Docked e-bikes

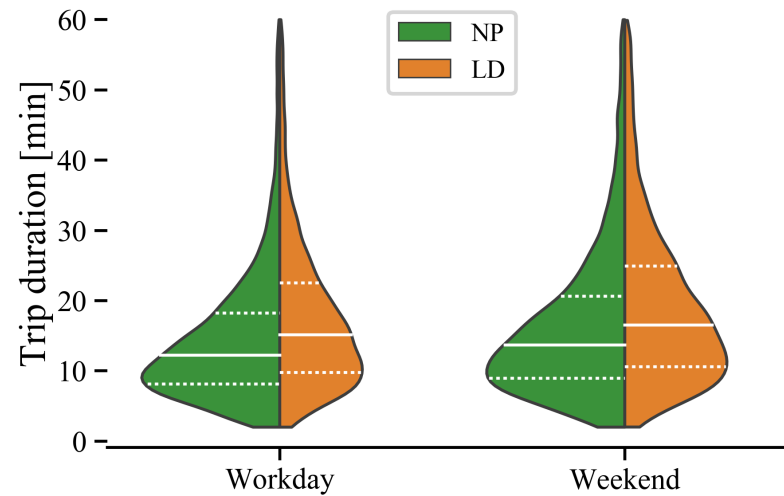


Dockless e-bikes

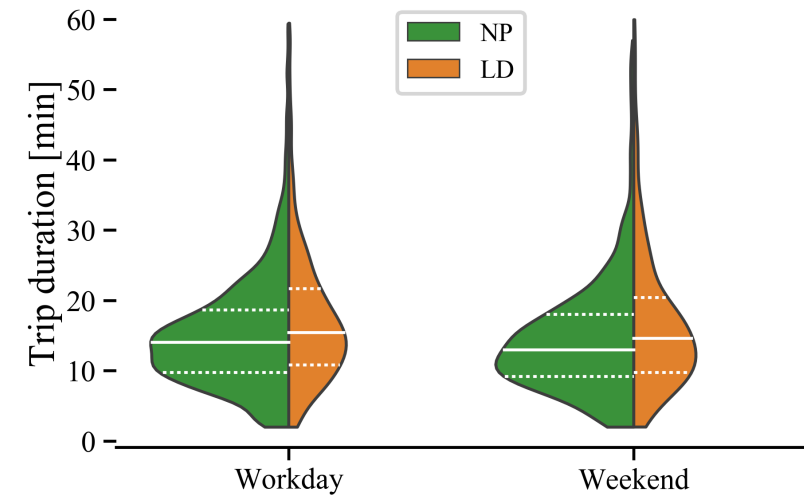
The distribution of trip duration



Docked bikes



Docked e-bikes



Dockless e-bikes

Changes in trip purposes

	Docked bike (%)			Docked e-bike (%)			Dockless e-bike (%)		
	NP	LD	Ratio	NP	LD	Ratio	NP	LD	Ratio
	Origin Activity								
Leisure	20.53	17.83	-13.15	17.20	14.79	-14.02	15.52	12.16	-21.67
Work	19.93	16.66	-16.43	18.61	16.37	-12.05	19.58	16.94	-13.47
Transport	19.53	20.40	4.41	22.04	19.91	-9.66	10.94	10.83	-1.03
Home	17.70	19.77	11.73	18.97	22.94	20.93	35.12	41.87	19.20
Shopping	9.28	8.56	-7.80	8.67	7.73	-10.83	7.64	7.02	-8.08
Grocery	7.58	9.22	21.66	8.21	10.01	21.98	6.71	6.90	2.80
Park	3.17	4.71	48.54	3.17	4.93	55.51	1.76	1.85	5.50
Education	2.27	2.85	25.59	3.14	3.32	5.98	2.74	2.44	-10.95
	Destination Activity								
Home	23.66	21.85	-7.65	23.10	25.06	8.46	40.20	43.62	8.50
Transport	21.99	21.13	-3.92	24.45	21.44	-12.29	16.59	15.82	-4.61
Leisure	18.34	16.07	-12.39	15.14	13.06	-13.75	13.48	10.68	-20.79
Work	14.94	16.48	10.31	15.10	15.98	5.80	11.11	10.86	-2.33
Shopping	8.14	8.20	0.65	7.49	7.15	-4.47	6.17	5.60	-9.30
Grocery	6.91	8.92	29.06	7.70	9.41	22.19	6.32	7.04	11.34
Park	3.33	4.21	26.32	3.58	4.35	21.74	2.57	3.03	18.14
Education	2.69	3.16	17.27	3.44	3.54	2.96	3.56	3.35	-5.65





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Thank You

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