

Bluebikes Usage in Boston: Study

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Preprocessing - Why MongoDB?

Bluebikes ride data refreshed monthly (CSV)

Active stations file upheld (CSV)

Historical station data available, but with inconsistent data architecture – would not work with SQL JOINS

No other “relational” fields

15 million records

mongoDB works with inconsistent schema architecture & enables quick aggregation

Membership and Ridership

More than 23 million trips have been taken by Bluebikes riders since the 2011 launch (as of 12/2023)

YEAR	ANNUAL MEMBERS	CASUAL PASSES (24-HR & Single Trip)	TOTAL TRIPS
2019	21,261	462,646	2,520,418
2020	22,906	493,035	2,065,292
2021	23,345	697,656	2,954,624
2022	26,194	800,487	3,781,611
2023	26,883	979,404	3,686,979



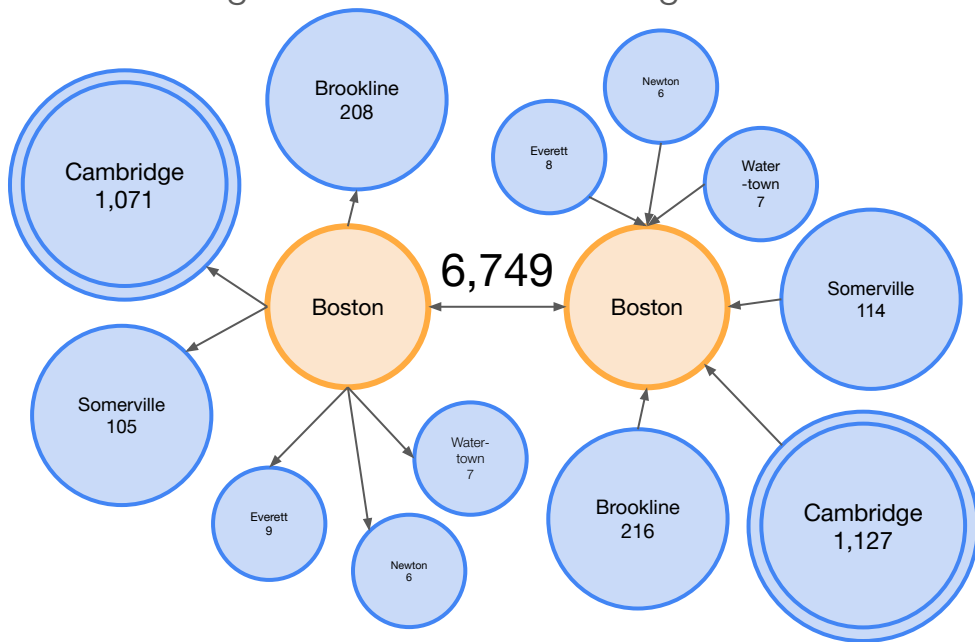
Blue Bikes Usage in Boston 2019 – Present

Are Bluebikes an effective mode of public transit? Our analysis covers all ride from Jan 2019 to Mar. 2024 (15 million rides) to understand the use cases

Rides Between Municipalities (In Thousands)

Starting in Boston

Ending in Boston



Station municipality only exists for currently active stations

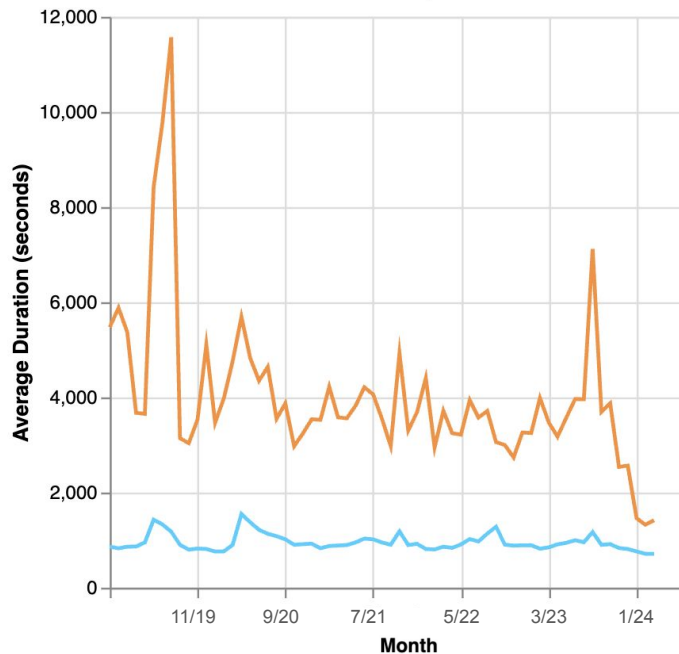
Top 10 Routes (1% of Total Rides)

Start	End
MIT at Mass Ave / Amherst St	Beacon St at Massachusetts Ave
MIT at Mass Ave / Amherst St	Central Square at Mass Ave / Essex St
MIT at Mass Ave / Amherst St	MIT Vassar St
Beacon St at Massachusetts Ave	MIT at Mass Ave / Amherst St
Central Square at Mass Ave / Essex St	MIT Pacific St at Purrington St
MIT Pacific St at Purrington St	MIT Stata Center at Vassar St / Main St
MIT Vassar St	MIT at Mass Ave / Amherst St
MIT Stata Center at Vassar St / Main St	MIT Pacific St at Purrington St
MIT Vassar St	MIT Stata Center at Vassar St / Main St
MIT Pacific St at Purrington St	Ames St at Main St

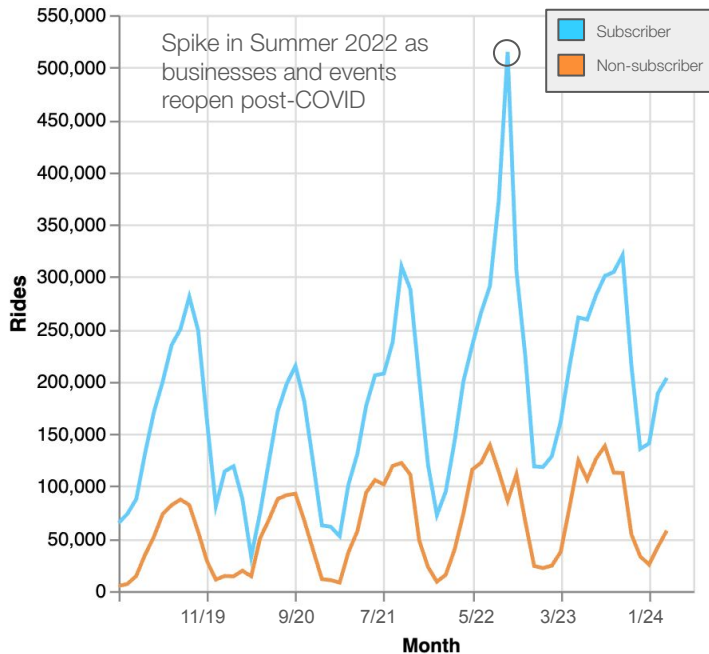
Analyzing Subscribed vs. Non-Subscribed Usage

Subscribers make up the majority of rides—however, the rides are shorter, implying that non-subbed rides are for non-recurring commutes (e.g. going out to eat)

Ride Durations per Month



Rider Subscription Status per Month

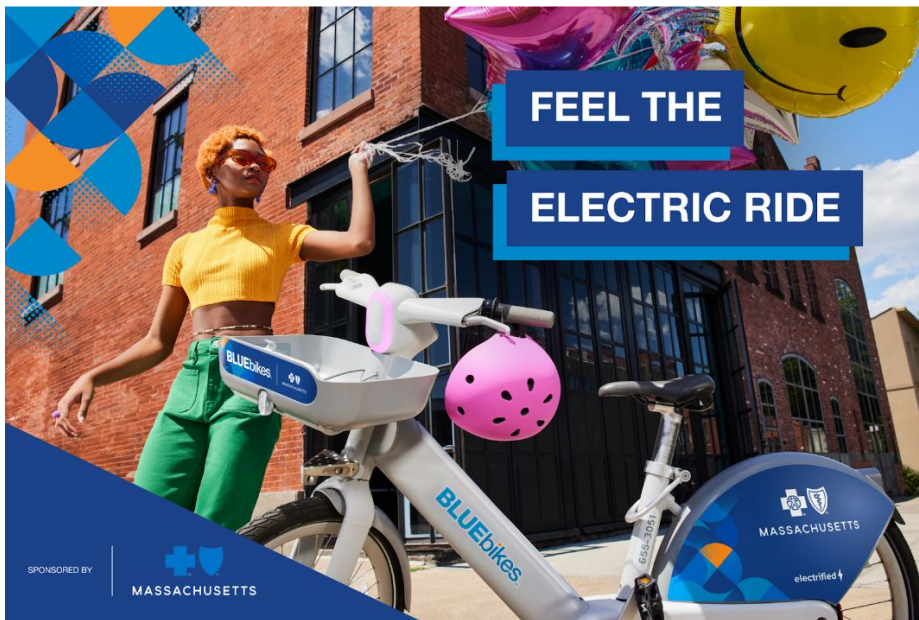


For users who expect to take more than 3 trips a month it is more economical to get an annual subscription

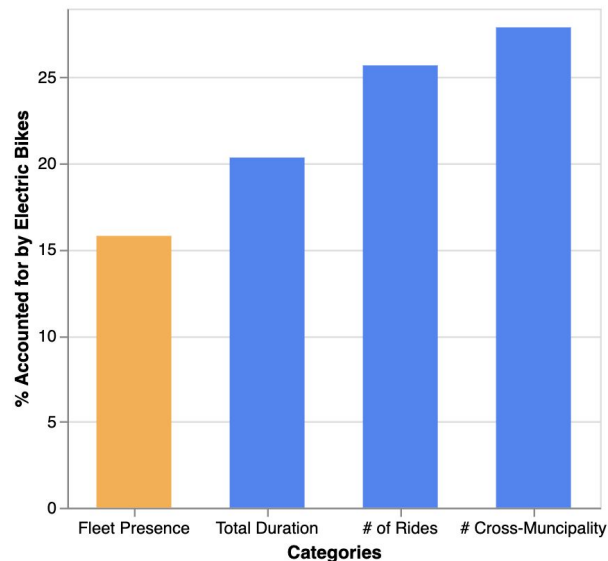
Rides per Month	Single Ride Cost	Subscribed Ride Cost
2	\$3.00	\$5.40
4	\$3.00	\$2.69
6	\$3.00	\$1.79
Annually:	$\$3.00 * n$	\$129.00

December 2023: Introduction of Electric Bikes

Blue Bikes introduced 750 electric bikes to their existing fleet of 4,000 bikes. These bikes can go up to 18 mph and could be a solution for people who need to go farther than inter-municipality trips.



Electric Bikes Outperforming Fleet Presence
12/2023 - 03/2024



Pricing for members: \$0.10 per min for subscribers and \$0.25 per min for non-subscribers

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