

# BIKE SHARE TORONTO RIDERSHIP GROWTH OPTIMIZATION



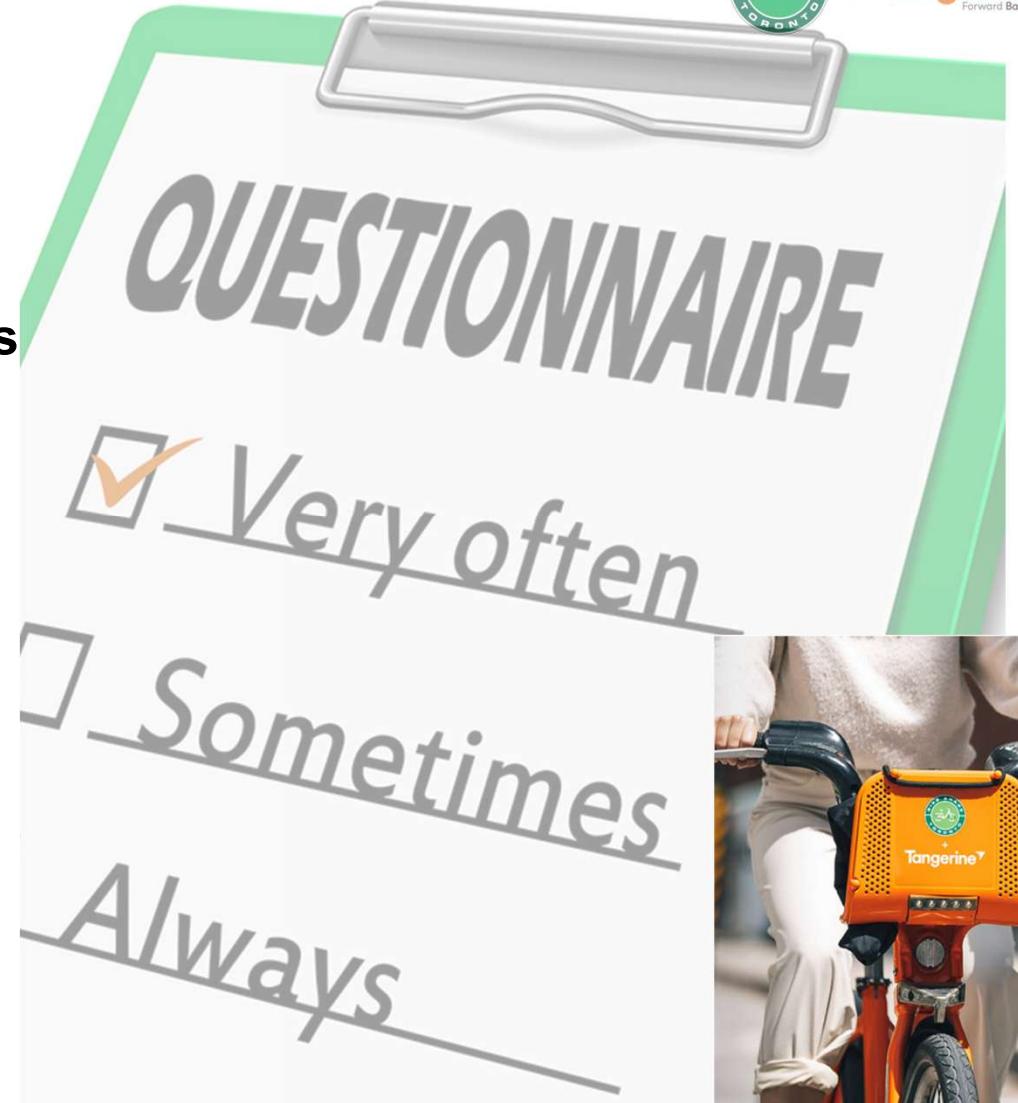
+ Tangerine  
Forward Banking

InsightOps



# Content

1. Introduction
2. Problems statement and objectives
3. Data Introduction
4. Timeline
5. Methodology
6. Insights
7. Recommendations
8. Challenges



# Introduction



## Rapid Growth

Over 9,000 bikes, 8,00+ stations



## Mission

Provide convenience, eco-friendly short trips



## Development Highlight

4.6 million rides in 2023  
80% increase since 2020





# Problem Statement

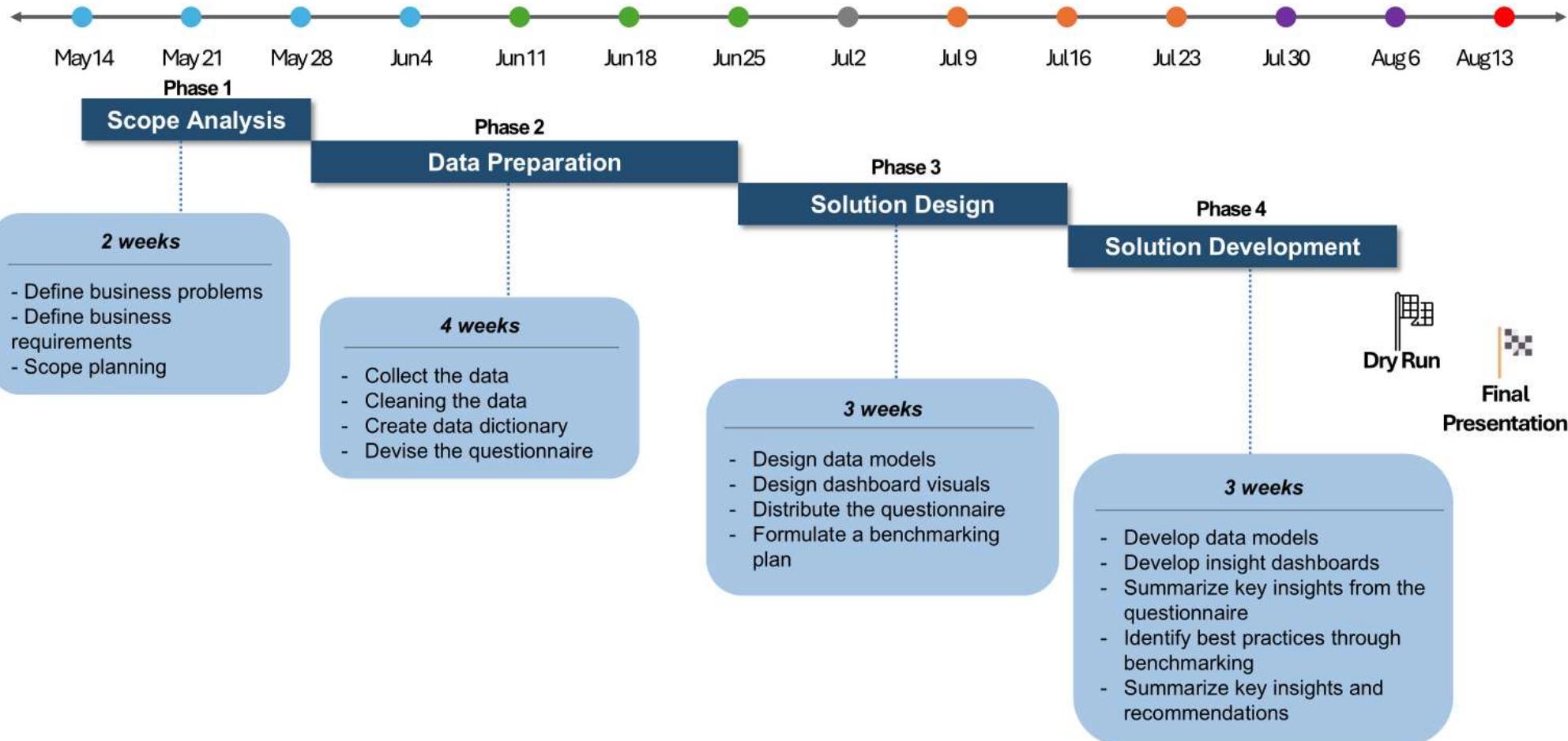
- Limited user behavior insights (commuting vs. leisure)
- Geospatial mapping & infrastructure correlation challenges
- No global benchmarking framework (Paris, New York)

# Objectives

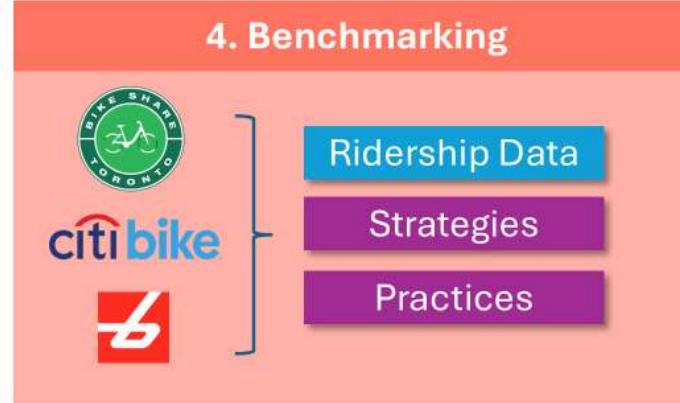
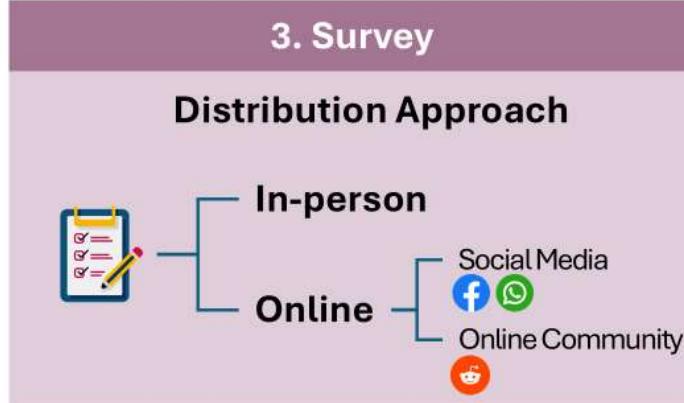
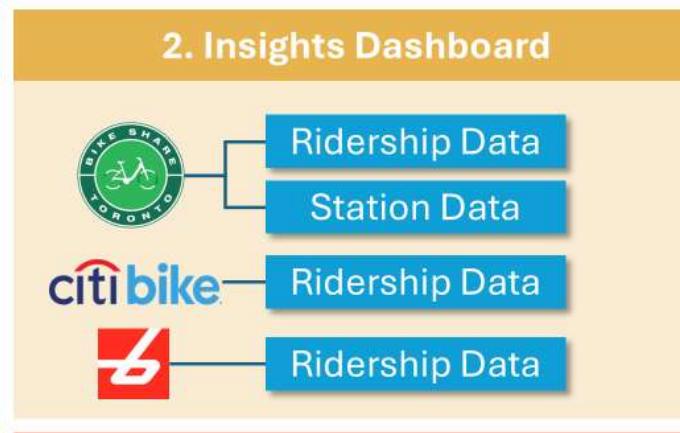
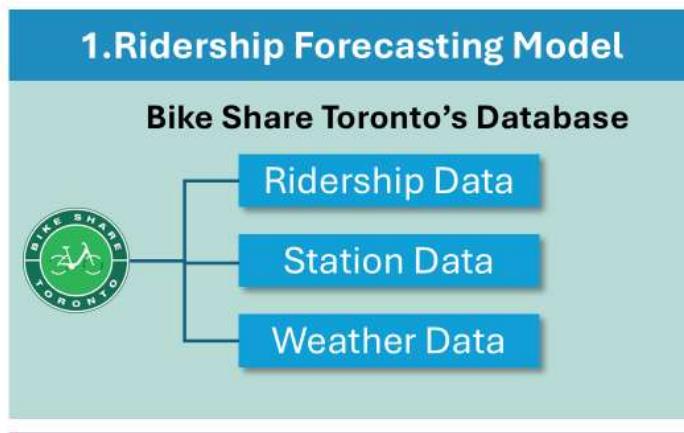
- Visualize trends & demand hotspots
- Assess service equity
- Optimize station placement, pricing, marketing
- Support urban expansion planning



# Timeline



# Data Introduction



## Data Characteristics

### 1 Data Period

- Cover 2019-2024
- To enable comparisons between
  - Pre-COVID period (2019)
  - COVID period (2020-2023)
  - Post-COVID period (2024)

### 2 Data Types

- X : Raw data from database
- y : Research-based insights

### 3 Data from counterparts

citibike (NYC, USA)  
bixi (MTL, CA)



# Bike Share Toronto

**Total Trips**

24.58M

**Trip by Casual**

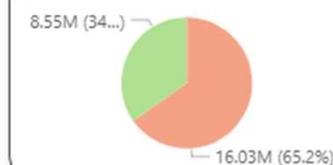
16.03M

**Annual Users**

8.55M

**Average-Trip**

17.38

**Total Trips by User Type****Total Trips by location**

Year

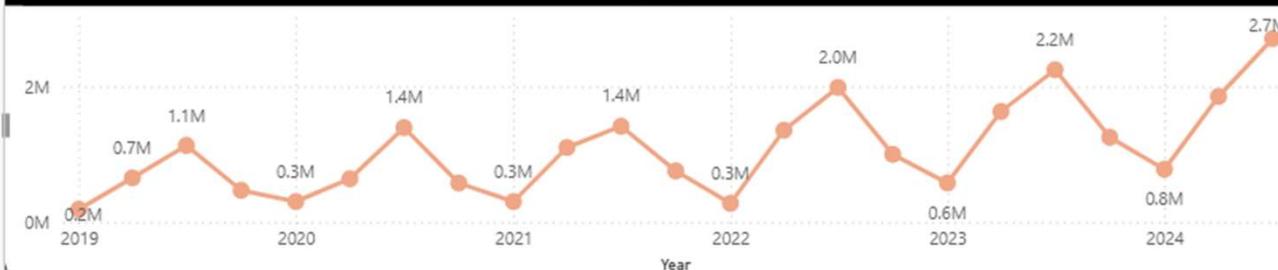
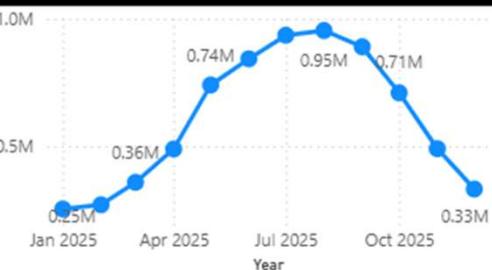
All

Days

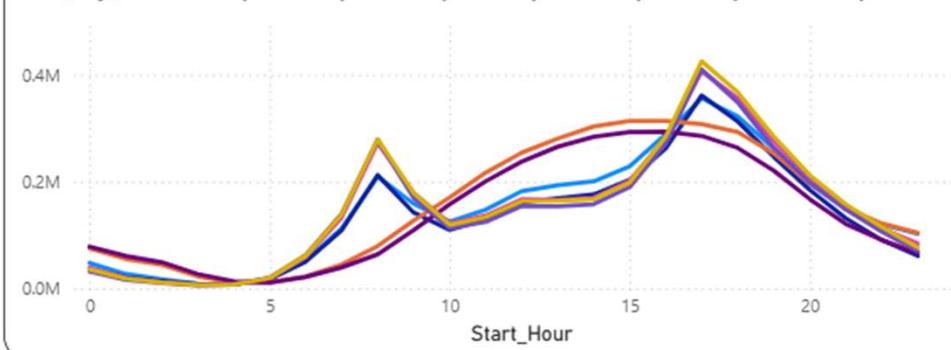
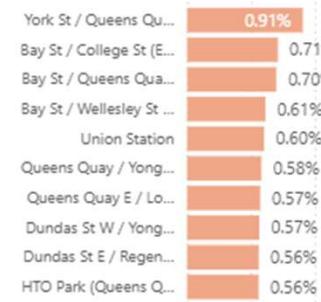
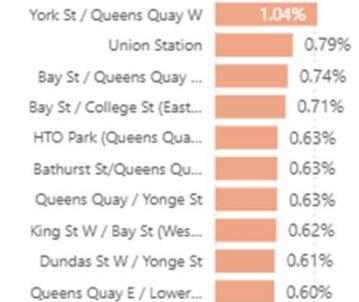
All

User ...

All

**Total Trips by Quarter****2025 Prediction****Total Trips by Hours and day of week**

Start\_Day\_Name ● Friday ● Monday ● Saturday ● Sunday ● Thursday ● Tuesday ● Wednesday

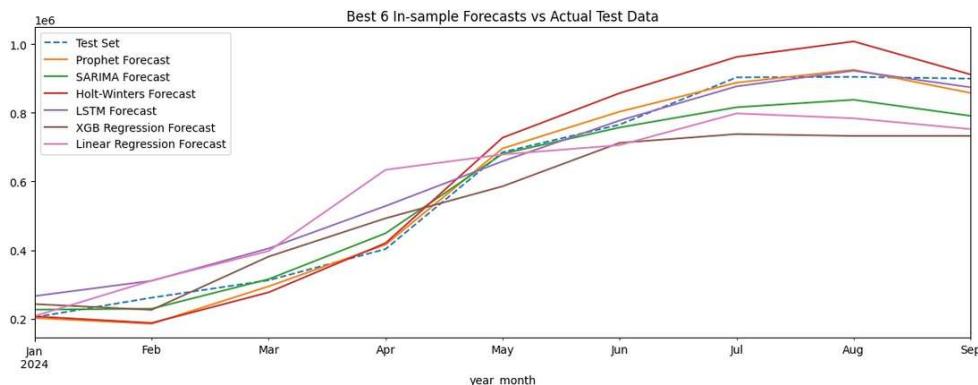
**Trips by Start Station****Trip by End station**

# RIDERSHIP OPTIMIZATION

## Ridership Data

- Total Trips: 24.50 million trips, 953 locations
- User type: 65% casual, 35% annual
- Station Utilization: Centralized Activity
- Location: Downtown area

## Riders Forecasting



## Insight

### User Demographics

- Dominance of Casual Users** → Users are tourists or those who use the service infrequently, rather than daily commuters

### Trip Trends Over Time

- Growth Trajectory: **an upward trend**, strong growth with a **notable boost during the COVID-19 period**, and Rides peak in the summer months of June to August..
- Seasonal Fluctuations:** peaks in the summer months (Q3) and drops significantly during the winter months (Q1)

### Daily & Hourly Usage Patterns

- Commuting Patterns: 8-9 AM in the morning and 4-6 PM in the late afternoon/early evening.
- Weekend Usage (Sat and Sun) is different → weekend trips are more for leisure and recreation rather than commuting

### Most Popular Stations

- Centralized Activity: The majority of bike share activity is heavily concentrated in the downtown core of Toronto



# SURVEY IMPLEMENTATION

## Questionnaire

### Demographics

- What is your age group?
- What is your gender?
- What is your occupation?

### User Experience & Preferences

- In the last three months, how often do you use the bike share service from BST?
- What is your overall sentiment regarding the safety, pricing and payment options for BST?

### Suggestion & Feedback

- Do you have any recommendations for new equipment?
- Do you have any other suggestions or feedback to help us improve the BST?

## Insight

### Demographics

- Mostly men (53.3%), young adults aged 25–34 (48%), and full-time workers (52.5%), indicating strong commuting potential

### User Experience

- 23% have never used the service; only 6.2% ride daily. Most use it occasionally or a few times a week.

### Customer Perception

- 85% find it convenient; 73% are satisfied. Neutral/dissatisfied users (25%) present an improvement opportunity

### Improvements

- Top requests: baskets/storage (33.8%), helmets (26.3%), lighting (22.2%). Most-wanted new offerings: scooters/e-bikes (38.9%) and more stations (29.3%).

→ **Target non-users, upgrade equipment to boost retention, and diversify offerings to attract more frequent riders.**



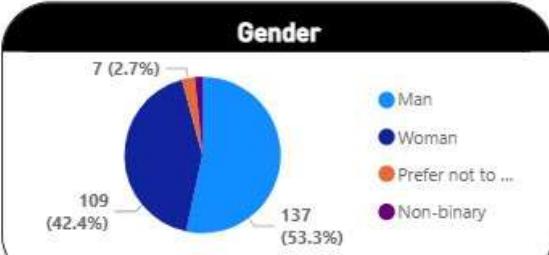


Survey Responses

257

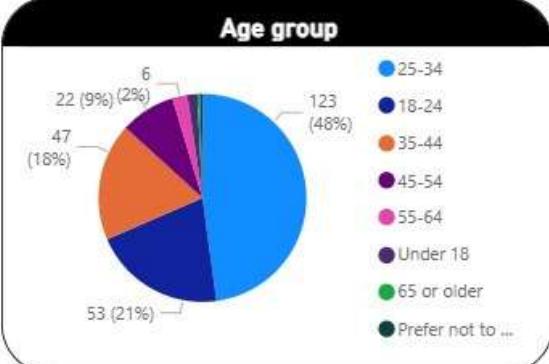
**Gender**

All



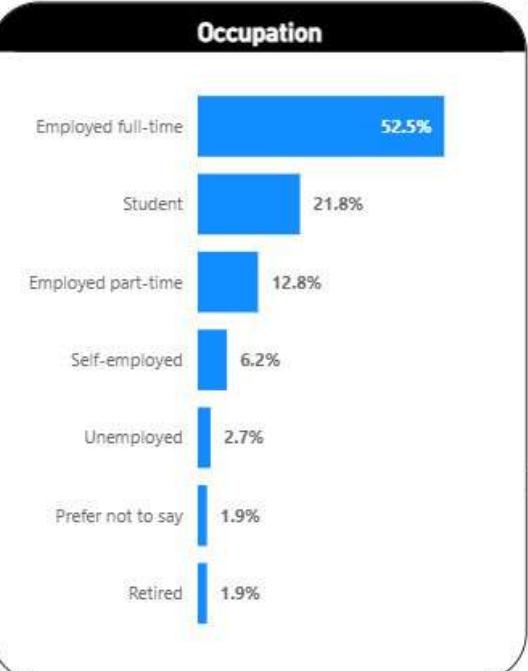
**Age group**

All



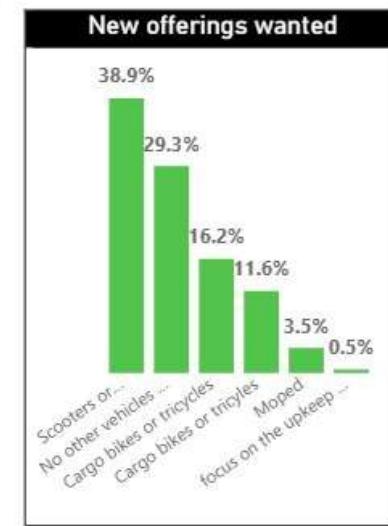
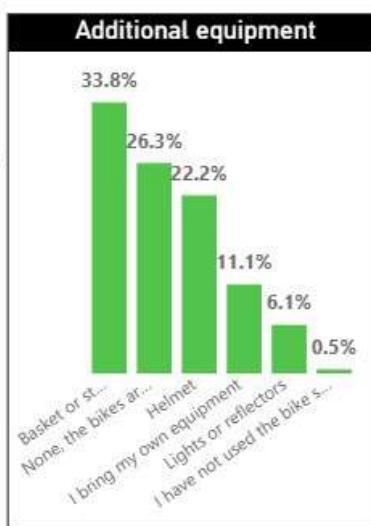
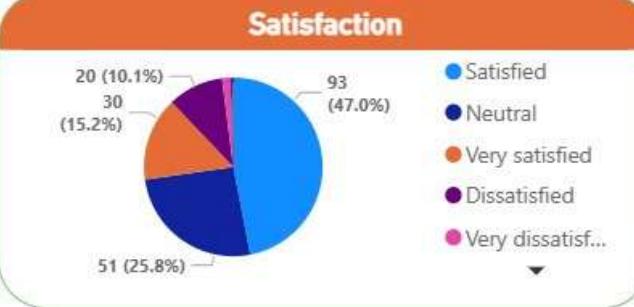
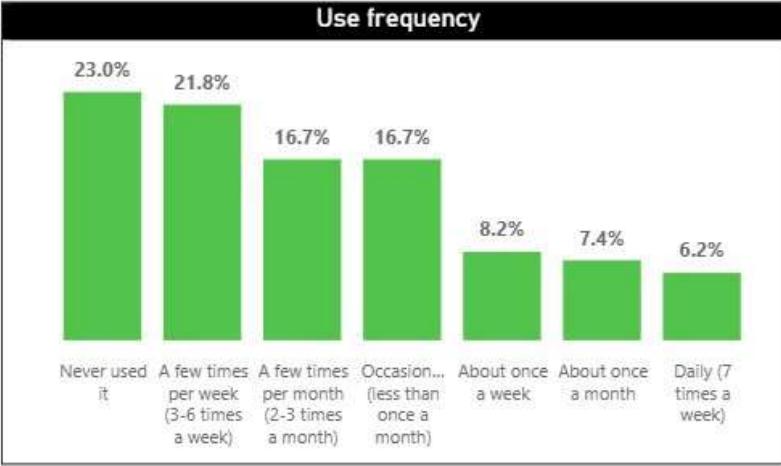
**Occupation**

All



**Postal code**

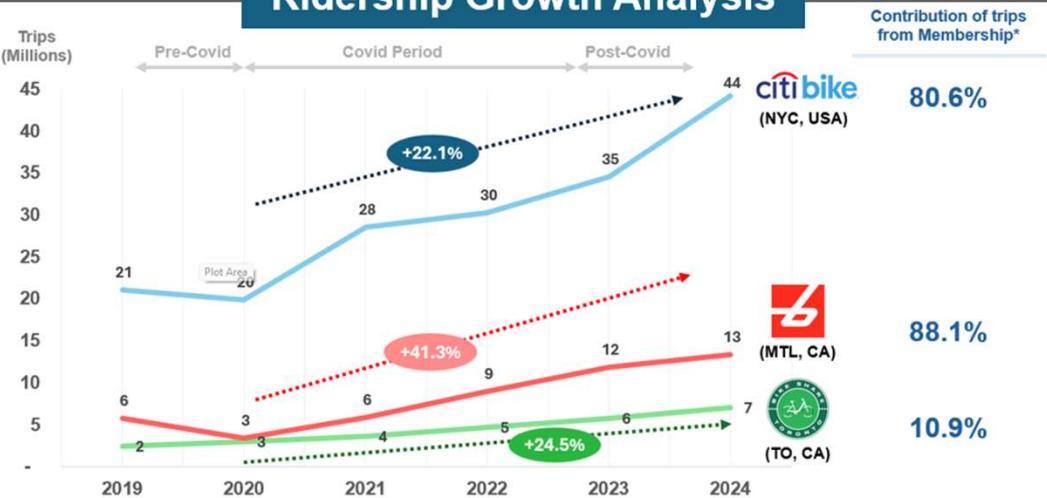
All



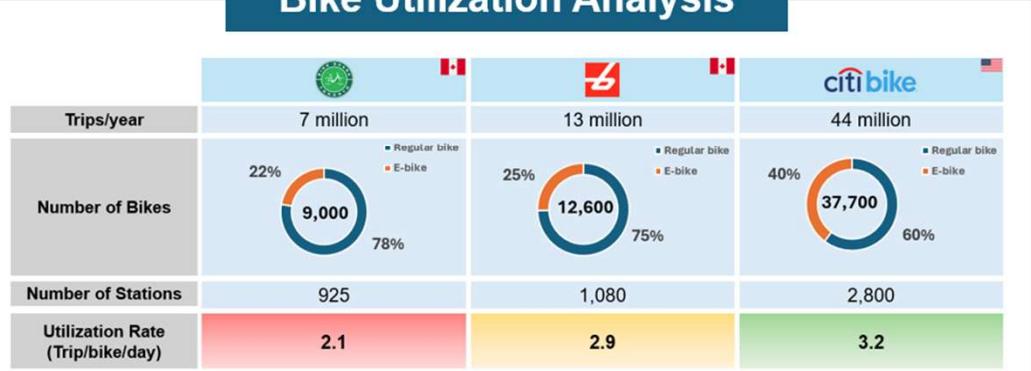
# Solution: Benchmarking



## Ridership Growth Analysis



## Bike Utilization Analysis



## Insights

### Ridership Growth

- BIXI showed the highest percentage growth in ridership during and after COVID periods.

### Membership Contribution

- BIXI and CitiBike demonstrate strong member engagement, with over 80% of rides taken by registered members.

### Bike Utilization Rate

- CitiBike shows the strongest utilization at 3.2 trips/bike/day.

### Pricing Plan

- BIXI and CitiBike offer monthly plans that help users save on costs.

### Equipment

- BIXI offers a seasonal membership program, available from April 15 to November 15, aligning with Montreal's bike-friendly weather conditions.

### Bike

- BIXI offers bike trailers for commuters to rent, making it easier to carry their belongings.

- BIXI has also modified its bikes for winter use by adding features such as studded tires to improve safety and performance in winter conditions.



# “WeBike2Gether” Campaign Plan



## 🔧 Issues tackled

- Low User Acquisition & Engagement
- Limited Awareness & Brand Visibility
- Moderate Satisfaction & Unmet Feature Expectations

## 🕒 Duration: 3 Months

## 🎯 Campaign Goals

- **100.000 trips** made during the campaign
- **30% → 60%** users using a bike at least 2-3 times a week
- **11% → 40%** contribution to trips from the memberships
- **45% → 80%** users feel Bikeshare services are very satisfying and convenient
- **6.000 → 20.000** Followers in social media platforms.

# “WeBike2Gether” Campaign Plan



## 📣 Key Campaign Components

### 1. Referral Program

- \$20 Gift Card for Both Sides – Reward both referrer and referee to ride bike together.
- Milestone Rewards – Bonus ride credits or free month memberships when a user reaches 3, 5, or 10 referrals.

### 2. Influencer Partnerships

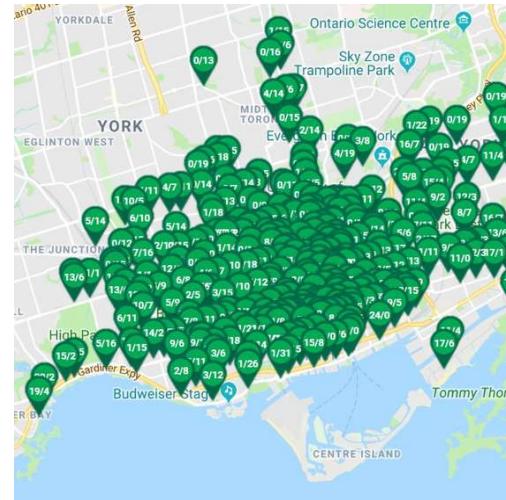
- 200 sustainability, health, lifestyle influencers (5K-200K followers) with reels, ride-alongs, hashtag campaigns
- Influencers share exclusive codes linked to the referral program to track conversions.

### 3. Social Engagement

- User-Generated Content Contests – Best ride photo or scenic route wins a free membership month.
- Quick Polls & Stories – Ask users about favorite routes, most used stations, or desired features.
- Share posts with hashtags: #WeBike2gether#BikeShareTO

### 4. Community Pop-Ups

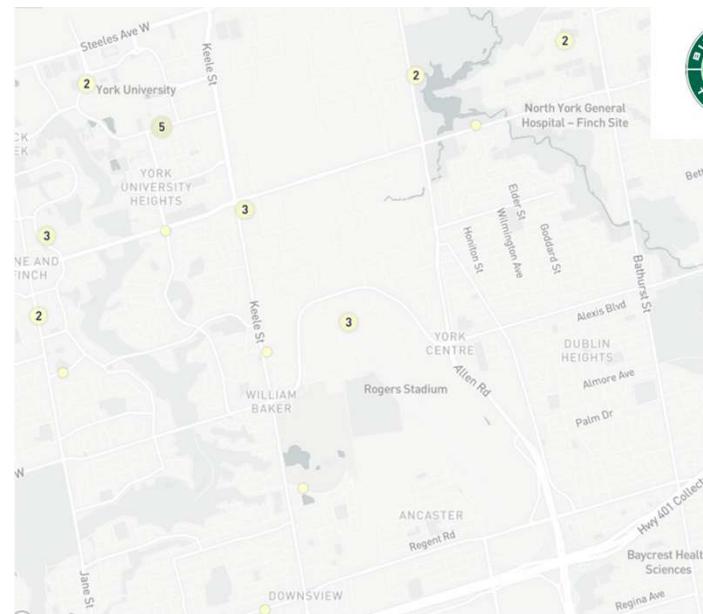
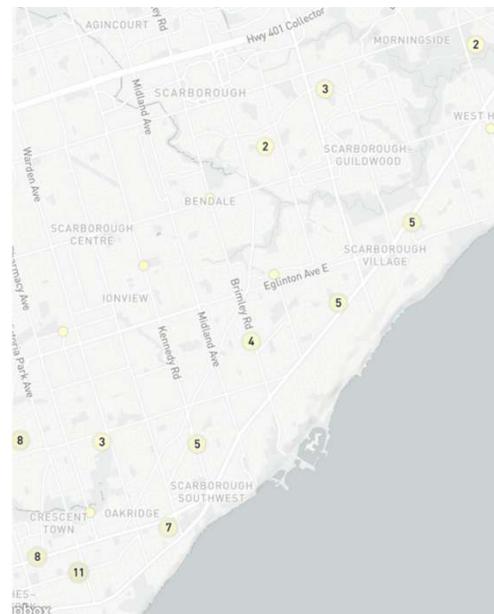
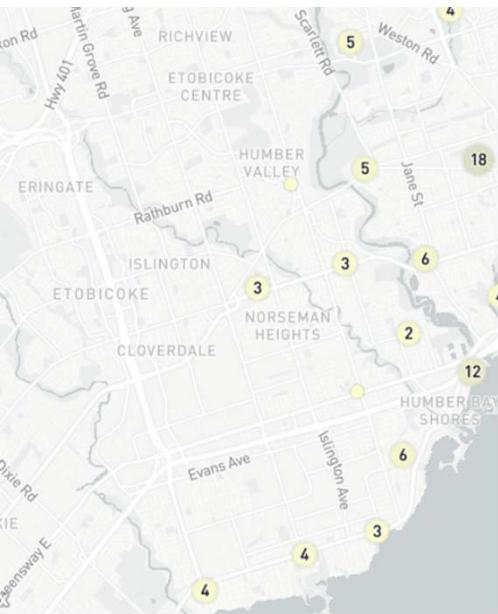
- Weekend events in high-traffic areas like Nathan Phillips Square, Eaton Center, UofT downtown campus
- Free trials, live demos, safety tips
- Local vendor partnerships, local biking communities



+ Tangerine  
Forward Banking

# BIKE REDISTRIBUTION

- Users are frustrated by bike unavailability and full stations, especially outside the downtown core.
- Bike Share's rebalancing efforts are too concentrated in the downtown area and in peak hours.
- Use data to expand redistribution efforts to underserved areas, particularly near transit hubs.
- Create a user-incentive program, like NYC's Bike Angels, to reward riders for helping rebalance the network.



+ Tangerine  
Forward Banking

# MORE BIKES, MORE STATIONS

- User feedback shows a strong demand for more bikes and stations in Etobicoke and North York.
- Key areas for expansion include transit hubs (Line 2, York U, the upcoming Line 5 and 6 LRT), major parks, and hospitals.
- Adding stations near schools, libraries, and grocery stores can reduce car dependence for short, local trips.



# Our Challenges & Lessons Learned

## ■ **Integrating External Datasets**

Matching Bike Share data with external sources like bike lane maps, weather, and demographics posed technical difficulties

## ■ **Benchmarking with Other Cities**

Lack of standard metrics across different cities made global comparison and benchmarking

## ■ **Multidisciplinary Thinking is Key**

Combining data science, urban planning, and sustainability insights made the project more comprehensive and impactful



# Project Credits & Team Acknowledgement

**Student Name**

Chawin Hongsanukulsant  
Christian Joshua Nalundasan  
Dai Vinh Quach  
Krishna Prasad Tanneeru  
Tenzin Yangzom  
Tianyu Ge  
Thi Thu Hien Nguyen  
Wenrui Shan

**Student Number**

N01649077  
N01578871  
N01607919  
N01650146  
N01667419  
N01666518  
N01604562  
N01064064

**Faculty Lead:** Professor Mounir Marhaba **Project Title:** Bike Share Toronto Ridership Growth Optimization

**Legal Disclaimer:** This project involves the use of third-party confidential information and was conducted under a formal Non-Disclosure Agreement (Effective May 6, 2025). This presentation is intended for educational purposes and public academic review.

# THANK YOU

