North Shore E-Bike Share Pilot Program

TECHNICAL REPORT | Fall 2023

city of north vancouver

DISTRICT OF NORTH VANCOUVER

west vancouver

ACKNOWLEDGEMENTS

The North Shore E-bike share pilot program would not have been possible without the commitment to shared mobility demonstrated by municipal staff and Councils, nor without support from senior orders of government including TransLink and BC Ministry of Transportation and Infrastructure, vendors, and community interest-holders. Delivering shared mobility in the Metro Vancouver region, and indeed in the North Shore subregion, is rooted in partnership and a vision for a bright transportation future.

EXECUTIVE SUMMARY

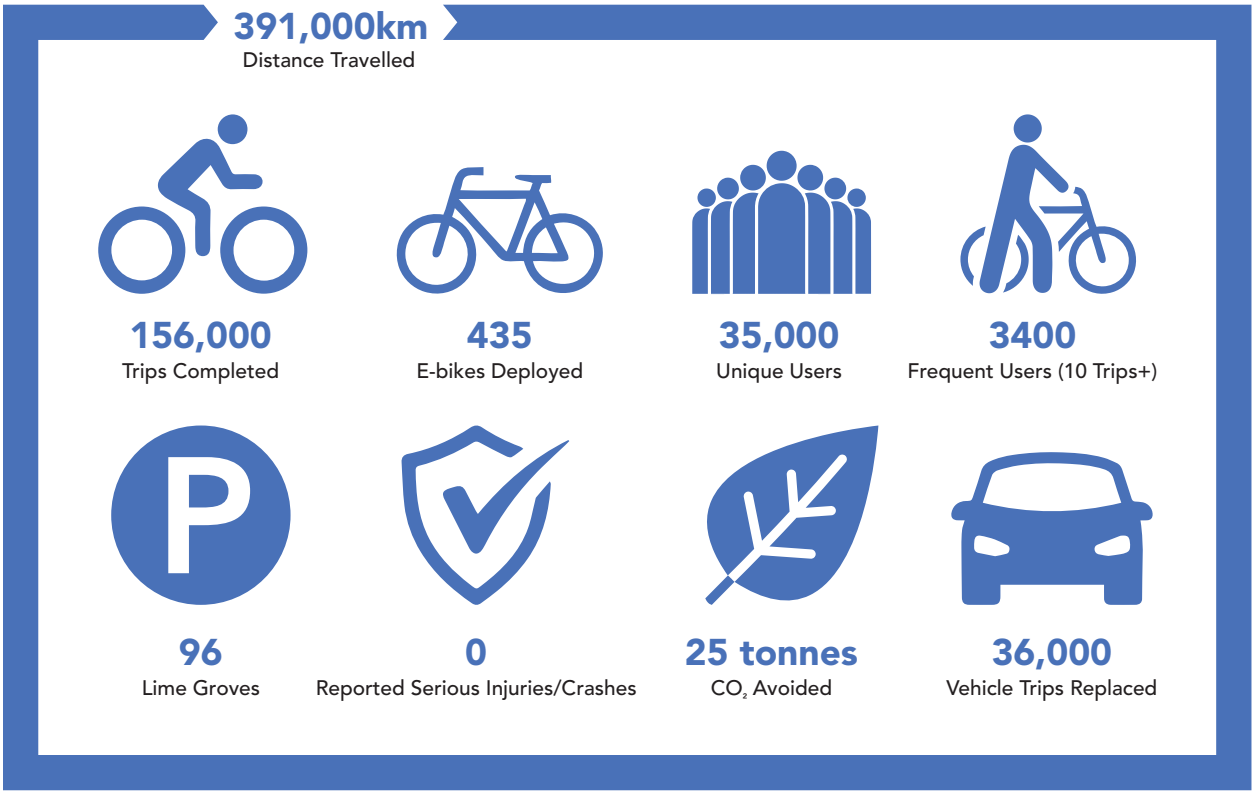
Overview

Firmly supported in Council-approved policies, and in alignment with social, environmental, economic, and mobility goals, the collaborative efforts of the three North Shore municipalities (District of West Vancouver, District of North Vancouver, and City of North Vancouver) converged to successfully establish the North Shore E-bike share pilot program in 2021 and jointly selected Lime as the service provider.

After 2.5 years of successful operation and gathering insights, staff recommended the completion of the pilot program, shifting to a permanently operating E-bike share across the North Shore. This report summarizes pilot operations, insights from qualitative and quantitative data, and overall evaluation of the pilot program against initial program objectives to inform recommendations regarding the future of E-bike share on the North Shore.

Program Evaluation

By all accounts, the E-bike share pilot program has been a resounding success. The pilot program enriched the number of mobility options on the North Shore, firmly placing North Shore municipalities as micromobility leaders in the region. Key outcomes from the E-bike share pilot program (July 2021-Aug 2023) are summarized below.



- **Public Outreach:** The operator attended events and used social media and push messaging in their app to promote familiarity with the program and enhance rider education on safe travel behaviour, proper parking and helmet compliance. 73% of surveyed users expressed that they were satisfied with the E-bike share program.
- **Financial Considerations:** Regional partnerships enable effective resource sharing, with a shared coordinator overseeing the pilot program for the North Shore. The current permit and licensing framework ensures that the E-bike share pilot program is self-sustaining, with permit fees structured based on bike deployments to cover staff and program costs.
- **Social Equity and Accessibility:** Equity programs were not fully implemented on the North Shore during the pilot phase. There is insufficient data for staff to assess the social impact effectively.

Looking ahead

In consideration of these insights, transitioning from pilot operations to more permanent operation of E-bike share affords an opportunity to improve aspects of operation, increase ridership, and enhance positive impacts of shared mobility on the North Shore. Looking ahead, key considerations include:

- **From Pilot to Standard Operations:** Ascertaining Councils' commitments to operating E-bike share on the North Shore and resourcing a more permanent program accordingly.
- **Procurement and Governance:** Lime operates the pilot program per Street Use Permits of the City of North Vancouver (CNV) and District of West Vancouver (DWV), and Highway Use Permit of the District of North Vancouver (DNV) for up to 12 months. This extension will allow staff to:
    - Gather insights from other shared micromobility programs in the region.
    - Deepen partnerships with local and regional stakeholders, businesses, employers, TransLink, BC Ministry of Transportation and Infrastructure (MoTI), and neighbouring First Nations governments to further explore shared mobility opportunities.
    - Refine the operator evaluation criteria and consider the potential inclusion of additional or alternative vendors.
- **Social Equity and Accessibility:** A more permanent program could offer targeted partnerships, education and awareness, and removal of barriers to increase equitable access to E-bike share.

Future Considerations:

- **Parking Management:** Introduce initiatives to refine parking management, improving experiences for the user and managing impacts on the wider community. This may include exploring benefits and trade-offs of docked systems.
- **Fleet and Service Expansion:** Evaluate potential service area expansion while also increasing the fleet size to cater to a broader geographic area and user base, building on established user trust and convenience.
- **Social Equity and Accessibility:** Amplify efforts to promote social equity, liaising with local organizations to reduce mobility barriers for marginalized and underserved communities.
- **Rider Education and Awareness:** Regularly update users on protocols through regular communications and targeted events in areas with high traffic to raise safety awareness and promote compliance with speed, parking, and other protocols.

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DEFINITIONS AND ACRONYMS

(In alphabetical order)

App – The mobile application used by customers to access the North Shore E-bike share pilot program.

CNV – The municipal corporation of the City of North Vancouver.

DNV – The municipal corporation of the District of North Vancouver.

DWV – The municipal corporation of the District of West Vancouver.

E-Bike – An electric bicycle, also known as a Motor Assisted Cycle as defined by the B.C. Motor Vehicle Act, approved by the City/District for use in a fleet.

Fleet – E-bikes publicly available in the North Shore E-bike share pilot program.

Geo-fence – A virtual boundary around a geographic area defined by the Global Positioning System.

INSTPP – The Integrated North Shore Transportation Planning Project.

Licence – The business licence issued by the City/District to the operator of the program.

Lime – Neutron Holdings, Inc. that offers E-bike share service.

Lime Grove – Designated E-bike share parking for Lime-E-bikes.

Micromobility – travel using small, lightweight devices such as e-bikes or e-scooters that can be powered by people or through electric-assist.

MOTI – BC Ministry of Transportation and Infrastructure.

North Shore municipalities – The City of North Vancouver, the District of North Vancouver, and the District of West Vancouver.

Operator – Refers to Lime, the operator of the North Shore E-bike share pilot program.

Permit – An operational permit that grants the Operator the right and responsibility to provide E-bike share services. The Street-Use Permit was issued by the City of North Vancouver and District of West Vancouver, and the Highway Use Permit was issued by the District of North Vancouver.

Shared mobility – Transportation services and resources that are shared among users.

TransLink– Metro Vancouver's regional transportation authority.

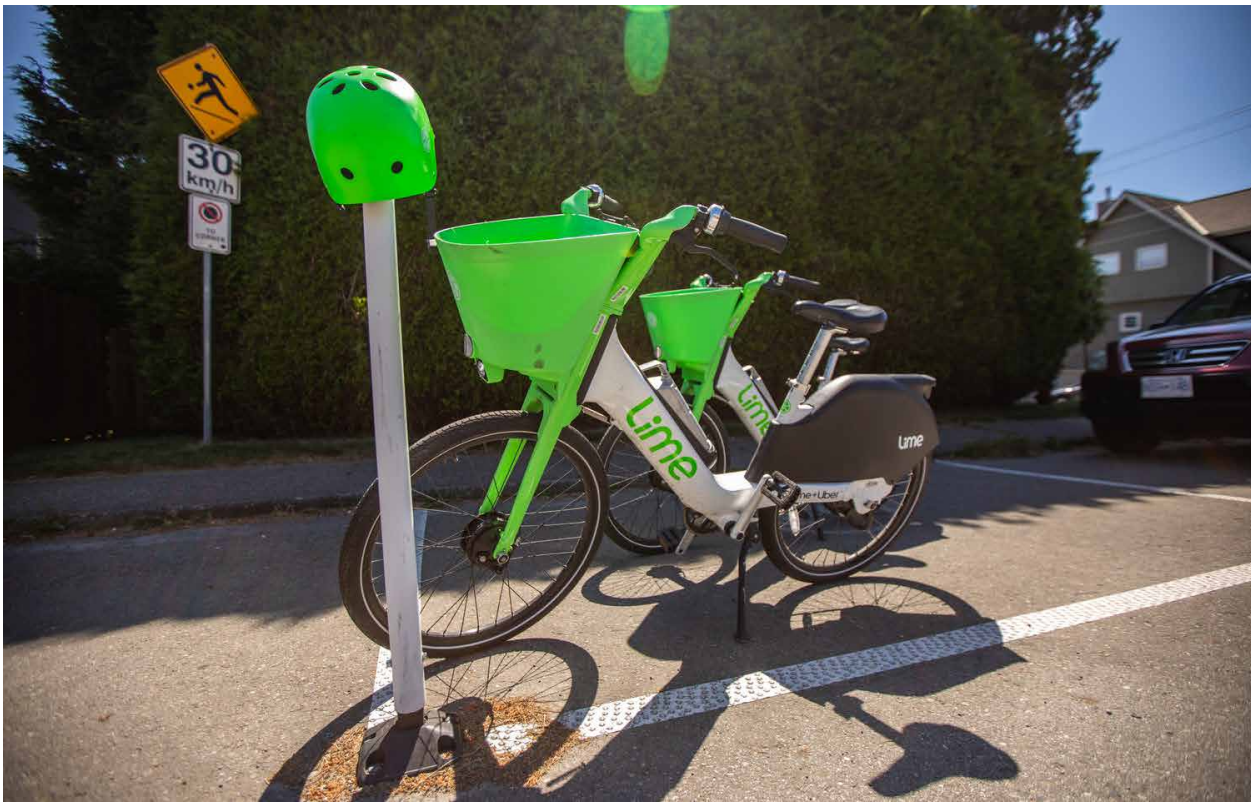
Trip – A one-way journey by E-bike share.

BACKGROUND & CONTEXT

Firmly supported in Council-approved policies, and in alignment with social, environmental, economic, and mobility goals, the collaborative efforts of the three North Shore municipalities converged to successfully establish the North Shore E-bike share pilot program in 2021.

After 2.5 years of successful operation and gathering insights, staff recommend completion of the pilot program and a shift to more permanently operating E-bike share across the North Shore. This report summarizes pilot operations, insights from qualitative and quantitative data, and overall evaluation of the pilot program against initial program objectives to inform recommendations regarding the future of E-bike share on the North Shore. Specifically, this report details:

- Strategic and policy context underpinning shared micromobility.
- Operational insights from the E-bike share pilot.
- Ridership statistics for E-bike share services within the North Shore region.
- Feedback and experiences of both users and non-users of E-bike share services.
- Review of parking policy and operations.
- Analysis of the environmental, social, equity, and safety implications associated with E-bike share usage.
- Assessment of the risks, costs, and resource implications of the current operations.
- Considerations and strategies for future development of the E-bike share program.



Vision & Goals

The North Shore faces significant transportation challenges, as highlighted in the 2018 INSTPP report (Integrated North Shore Transportation Planning Project), which notes the prevalent car-oriented land use and road use capacity exceedance at peak times, all underscoring the critical need for more diverse and sustainable transit options.

Together, the North Shore municipalities developed an **E-bike share policy (Appendix A)** as part of a subregional approach to providing more transportation options on the North Shore. It represents common goals expressed in official community plans, transportation strategies, and Council visions. The E-bike share policy outlines the following goals, which form the basis of monitoring and program evaluation:

1. **Increasing Freedom of Mobility**

   E-bike share is intended to grow the number of travel options available on the North Shore, which can promote equity in our transportation system by making active transportation an attractive and affordable option, helping to shift more local trips to active modes.

2. **Supporting and Supplementing Transit Usage**

   E-bike share can play a vital role in connecting the first- and last-mile gap between transit and local destinations. The North Shore Municipalities will ensure E-bikes are distributed across the community to complement the transit network and help increase transit ridership.

3. **Promoting Sustainable Transportation**

   E-bike share can reduce community greenhouse gas emissions linked to transportation and improve health outcomes through cleaner air and increased physical activity.

4. **Providing a Safe Mode of Travel**

   E-bike share should be a safe mode of travel for riders and other road users. The North Shore Municipalities will work with partners to monitor incident reports and respond to risks if they appear.

5. **Maintaining a High-Quality Public Realm**

   E-bikes must be safely stored to maintain accessibility and should complement the public spaces they share with other road users.

6. **Making Efficient Use of Resources**

   E-bike share operations should rely on existing infrastructure and planned investments and impacts to municipal resources must be monitored closely.

7. **Ensuring a Great Mobility Experience**

   E-bike share is a key part of growing the North Shore transportation network and reducing barriers to moving around. Understanding the community's experience will help improving E-bike share services as they evolve.

Alignment With Policies & Strategies

Given the interconnected nature of the North Shore communities, the E-bike share program has been piloted to align with existing policies and strategies. This collaborative approach allows for shared resources and collective efforts, thereby streamlining the launch and ongoing management of the program. In future, it may be possible to expand this partnership to include First Nations governments of Squamish and Tsleil-Waututh, as these governments are also exploring shared micromobility.

Overall, advancing shared micromobility aligns with provincial, regional, and local goals as summarized in this section.

PROVINCE OF BRITISH COLUMBIA

Clean Transportation Action Plan (CTAP) - Emission Reduction Strategies

- Clean Vehicle Incentives – Shift travel to efficient and alternative fuel vehicles
- Improve Non-auto Modes – Improve walking bicycle, public transit and telework.
  - Improve active travel (walking and bicycling) networks.
  - Support car-and bike sharing services.

B.C.'s Active Transportation Strategy - Move Commute Connect

- Inspiring British Columbians to choose active transportation: active transportation should be a safe, easy and convenient way for people to get around.
- Connecting you where you need to go: British Columbia should have an integrated, safe and accessible active transportation system that works for everyone.
- Working together and planning for the future: Policy and planning should support integrated, comprehensive active transportation network.

METRO VANCOUVER REGION

TransLink Transport 2050

- Expanding shared mobility options across the region so that no matter who you are, where you are, or where you need to go, you'll have access to a shared bike, e-scooter, or car when you want one.
- Changing our vehicles and how we fuel them: we'll support the move to zero-emission vehicles with more charging options and make it easier to use electric bikes and other micromobility devices. Managing the safe and equitable introduction of automated, connected, electrified, and shared vehicles so that they work in support of our region's goals.

NORTH SHORE

Integrated North Shore Transportation Planning Project (INSTPP)

- At the INSTPP Council workshop in February 2019, it was recommended to develop a bike share program to improve how people and goods move around the North Shore.
- Through INSTPP (now the North Shore Connects partnership), North Shore governments commit to collaborative action on land use and transportation planning that promotes access and mobility without increasing demand for driving, aligning with regional plans and creating conditions that can support growth in transit use toward higher capacity transit investments.

This commitment is likewise articulated in various municipal plans, strategies, and policies, as summarized in this section.

CITY OF NORTH VANCOUVER

Official Community Plan (2014)

- Prioritize the use of non-automobile modes of travel (Objective 2.1).
- Encourage technological innovation to overcome transportation barriers (Objective 2.3.7).
- Encourage low-emission transportation options (Objective 2.3.8).
- Collaborate with neighbouring municipalities to improve the connectivity of the transportation system (Objective 2.3.10).

2022-2026 Council Strategic Plan priorities

- A Resilient City - Continue to use the implementation of the Mobility Strategy to reduce emissions attributed to transportation.
- A Connected City - Increase the proportion of residents with safe and convenient access to transit and active transportation infrastructure.
- A Prosperous City
  - Increase visibility of the City as a tourism destination.
  - Continue to explore opportunities to support local businesses.

Mobility Strategy (2022)

- Making walking and rolling the easiest choice for more of our shorter distance trips (Strategy 1).
- Encouraging people to make sustainable travel choices (Strategy 4).
- Supporting sustainable mobility (Strategy 8).

The City is also advancing its draft **Climate & Environment Strategy**, its **Economic Strategy**, and its **Community Wellbeing Strategy**, which articulate goals that are enhanced or enabled by shared micromobility.

DISTRICT OF NORTH VANCOUVER

Official Community Plan (2021)

- Provide a safe, efficient and accessible network of pedestrian, bike and roadways and enable viable alternatives to the car through effective and coordinated land use and transportation planning (Goal 5).
- Develop an energy-efficient community that reduces its greenhouse gas emissions and dependency on non-renewable fuels while adapting to climate change (Goal 7).

Transportation Plan (2012)

- A goal defined under the Transportation Demand Management section is to implement strategic and practical measures to make walking, cycling and transit viable options to driving.

Community Energy and Emissions Plan (2019)

- Recommends implementing bike share as a measure for achieving long-term emissions reductions.

DISTRICT OF WEST VANCOUVER

Official Community Plan (2018)

- Collaborate with TransLink, the Province government, First Nations, neighbouring municipalities, schools, Vancouver Coastal Health, and community groups (including but not limited to seniors and people with disabilities) to improve transportation safety and network to facilitate the movement of people and goods in the District and the North Shore (Policy 2.4.20).
- Prioritize sustainable transportation options (e.g., walk, bike, and transit) and transportation demand management strategies (Policy 2.4.21).

Transportation goals outlined in the OCP

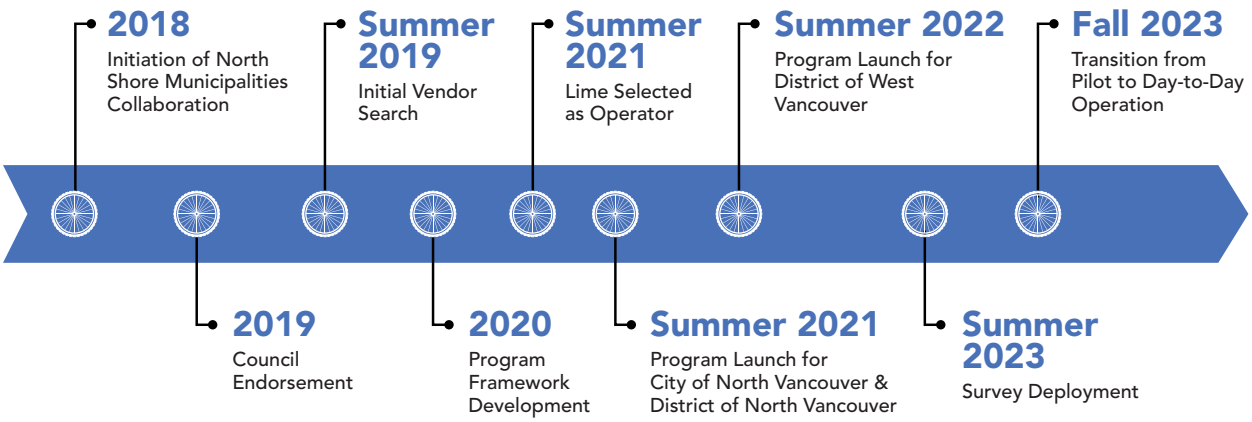
- Encouraging and prioritizing walking and cycling through expanding key new connections, improving safety and integrating these systems with transit.
- Supporting and prioritizing transit mobility and regional connections to improve infrastructure and services, and advance connectivity for all travel modes.
- Promoting sustainability and transportation innovation.

Council's Strategic Objectives (2024-2025)

- Improve mobility and reduce congestion for people and goods.

Program Timeline

The success of the North Shore E-bike share program is a result of the collaborative approach between the three North Shore Municipalities. The planning phase of this project took just over two years to complete. Following implementation, the program operated successfully for a further two years, with the operational permit ending December 31st, 2023. Below is a detailed breakdown of the program timeline and more in-depth information about the different phases of the program.



Program Development

Beginning in fall 2019, staff from all three North Shore municipalities developed a permitting and licensing framework to enable supportive conditions for third party E-bike share operators. A permitting framework provides staff with flexibility in negotiating with operators during the application process and setting permit conditions for operations. This regulatory model is common in many jurisdictions in North America, including Kelowna, Calgary, and Montréal and is also favoured by industry when there are similar administrative processes across jurisdictions.

The key elements of the E-bike share permitting and licensing framework are:

1. **E-bike share Policy:** This policy outlines the goals and expectations of E-bike share services that staff will use to assess applications and performance evaluation.
2. **Permit Guidelines:** This guideline outlines the application process and the third-party operators' permit conditions staff expect operators to meet regarding operations, insurance, liability, safety, and enforcement.
3. **Bylaw amendments:** These amendments enable the creation of the permit and business license and establish enforcement mechanisms, including the Street and Traffic Bylaw, the Fees and Charges Bylaw, the Business Licence Bylaw, and the Bylaw Notice Enforcement Bylaw.

Permitting and Licensing Framework

Policy	Permit Guidelines	Bylaws Amendments
• Goals and Expectations	• Operational Conditions	• Street and Traffic Bylaw (all) • Fees and Charges Bylaw (DNV,DWV) • Bylaw Notice Enforcement Bylaw (all) • Business License Bylaw (for future consideration)

PILOT PROGRAM OPERATIONS

The E-bike share permit framework was initially implemented as a pilot program for a single program operator. When introducing this new mobility option, our aim was to ensure that the relationship we would maintain with the operator remained manageable from a resourcing perspective during the two-year pilot period.

In 2020, Lime was jointly selected by the North Shore municipalities. Lime obtained the necessary municipal Street Use Permits, Highway Use Permit, and business licenses to operate E-bike share services on the North Shore. Lime first launched the program in DNV and CNV in July 2021, followed by the involvement of DWV in July 2022.

Municipalities Staff

Throughout the pilot period, North Shore staff have:

- Managed the operator as a vendor to streamline and continuously improve operations based on use, observations, and on feedback from interest-holders and the public;
- Provided continuous guidance for the program development;
- Gathered public feedback through surveys and other forms of engagement, and coordinated promotional and educational events across the participating municipalities;
- Liaised with other governments to share learnings and insights;
- Monitored service performance and tracked its progression;
- Managed risks; and
- Managed operating costs and revenues.

Operator

The operator is responsible for all operations and program administration related to the E-bike share service, which includes:

- Supplying and maintaining the E-bike fleet;
- Administering user memberships and overseeing the pricing structure;
- Establishing designated parking zones and ensuring adherence to parking regulations;
- Rebalancing E-bikes throughout the service area;
- Providing customer support;
- Advocating for and educating users on best practices in rider safety through staffing / supporting promotional and educational events; and
- Liaising with municipal staff on an ongoing basis to enable pilot operations.

Additional operator requirements are detailed in the Street-Use Permit issued by the City of North Vancouver and District of West Vancouver, and the Highway Use Permit issued by the District of North Vancouver.

E-Bike Share Users

Outlined in Lime's User Agreement, E-bike share users must:

- Be at least 18 years of age;
- Wear a helmet while riding; and
- Follow all provincial and North Shore municipal rules, regulations, and bylaws.

Fleet

E-bikes, defined by the B.C. Motor Vehicle Act as motor assisted cycles, were approved by the North Shore municipalities for use in a fleet for pilot operations. Given the topography on the North Shore, it was critical to obtain E-bikes that offered a sufficient level of electric assist to overcome the North Shore's steep grades. Different E-bikes across the region offer different levels of electric assist, and not all are likely to be suitable for North Shore conditions.

In August 2021, The North Shore E-bike share program was launched using Lime's "Jump" model E-bike (Figure 1). The operator began the transition to the newer "Gen 4" E-Bike (Figure 2) in June 2022, and this transition was completed by August 2022. The "Jump" model E-bikes have been repurposed for use in Santiago, Chile as part of another E-bike sharing program.

Animal print E-bikes were introduced in collaboration with the World Wide Fund for Nature (WWF) in fall 2022. This initiative was part of a promotional campaign where proceeds from the rides on these uniquely designed bikes were donated to WWF.

Figure 1. "Jump" E-bikes used in 2021

Figure 2. "Gen 4" E-Bike in 2023

Figure 3. E-bikes with Animal Print Decals

Both models perform similarly with respect to GHG emissions. The main upgrades on Gen 4 E-bikes are:

- Enhanced **geofence** layer enforcement.
- Upgraded compatibility with Lime's latest firmware.
- Refined integration with other modules, e.g., **helmet brackets**.

Figure 4. "Gen 4" E-Bike Features

Service Area

The pilot program includes the jurisdictions of CNV, DNV and DWV, with **50 km sq** of service area, allowing E-bike share users to travel in geofenced service areas depicted in Figure 5. E-bikes' electric assist does not operate outside of these geofenced areas, meaning that attempts to ride devices across the Lions Gate or Ironworkers Memorial bridges, or beyond the indicated service areas, are challenging given the weight of the bikes when not powered.

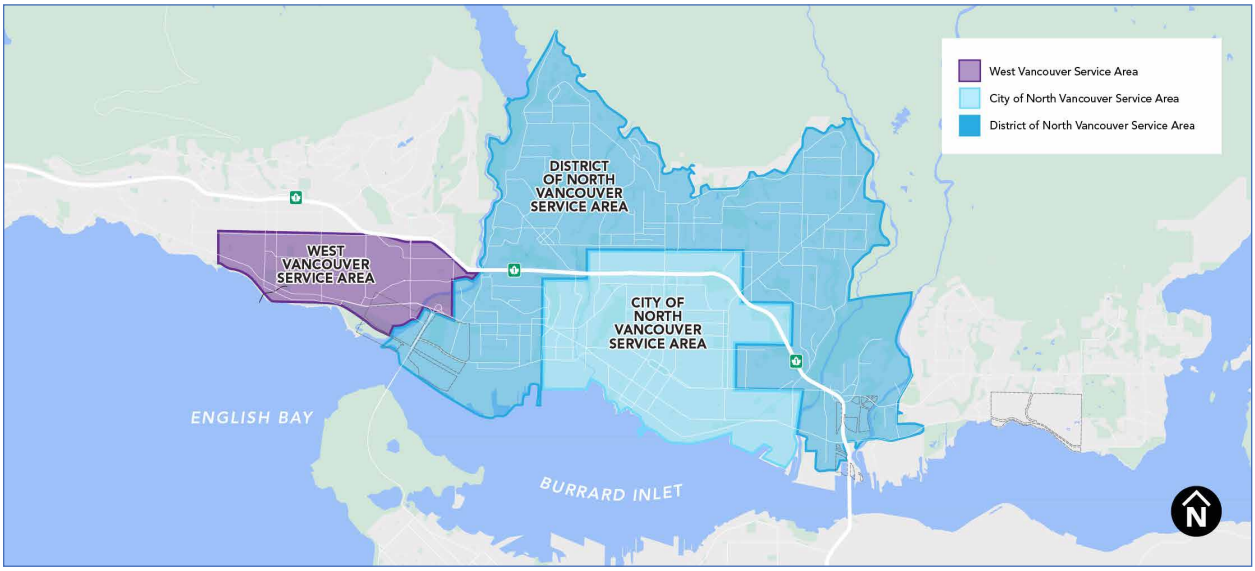


Figure 5. Map of Service Area

Designated Parking

Designated parking spots for shared E-bikes, referred to as **Lime Groves**, are physically demarcated using road tape, paint, and delineators where necessary in on-street (Figure 6) and off street (Figure 7) locations. Their installations were deployed in phases during the pilot program. Municipal staff and the operator have identified new Groves to enhance E-bike fleet access in high traffic areas. The operator is responsible for installation of the Groves and their costs in accordance with the stipulated guidelines provided by the North Shore municipalities.

Municipal staff regularly review demand data, user feedback and parking trends to determine the reallocation and placement of new parking locations.

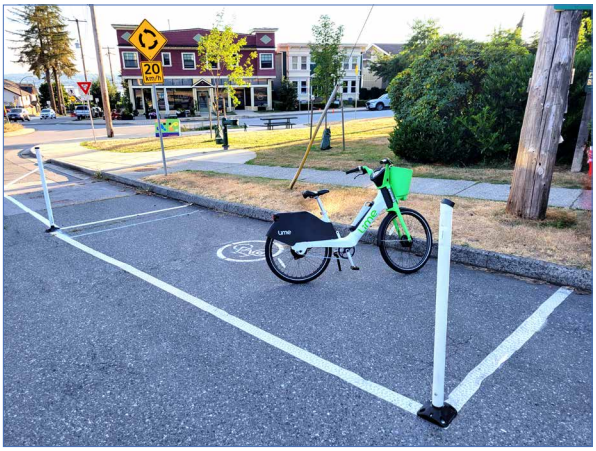


Figure 6. On-street Lime Grove

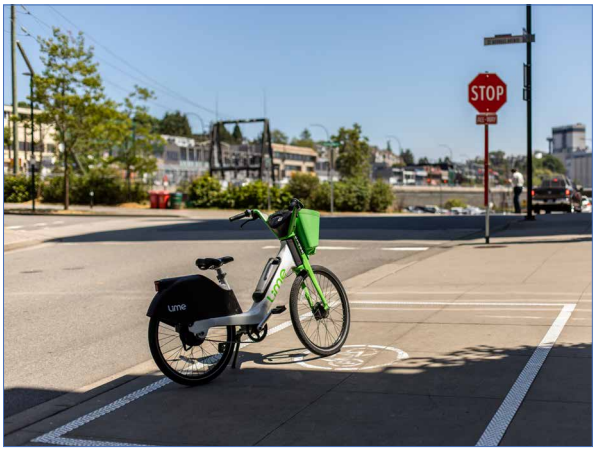


Figure 7. Off-street Lime Grove

PARKING POLICY

Users are required to park their bikes at the Lime Groves within CNV and DWV jurisdictions, or are subject to fines. In-app prompts require photo documentation of proper parking before a trip (and associated payment) can be completed.

Within the DNV, a free-floating model allows users to have the flexibility to park at Lime Groves or in designated areas, such as the furniture zone of the sidewalk, residential unrestricted on-street parking lanes and other areas that don't obstruct sidewalks, travel lanes, doorways, driveways, bike lanes, etc.

Lime App

Users can start a bike share trip with the Lime App. They can also:

- Find, reserve and unlock available E-bikes.
- Check battery levels, estimated range and helmet availability.
- Identify Lime Grove locations.
- Access pricing details.
- Receive safety prompts and guidelines directly within the app.
- Contact Lime Customer Service.
- Process payment with credit cards

Note that users are able to access alternative payment methods under the **Lime Access Program**.

Riders are also able to view specific geofenced zones on the app. Lime and municipal staff work together to review and create specific zones that govern rider behavior.

- **Service Zone:** defines the area where Lime operates on the North Shore, ensuring rides don't conclude outside the authorized regions.
- **No Parking Zone (Red Zone):** Riders are prohibited from ending their ride (North Shore examples include Princess Park, Capilano Mall)
- **Slow Zone (Yellow Zone):** Zones with speed restrictions for enhanced safety (North Shore examples include Mosquito Creek Park)
- **Mandatory Parking Zone (Blue Zone):** In CNV and DWV jurisdiction, riders must park their vehicles at the designated parking spot, or the ride will not end.
- **Parking Spot (Light blue 'P'):** designated parking spots in CNV and DWV jurisdictions.
- **Preferred Parking spot (Dark blue 'P'):** designated parking spots within DNV jurisdiction where riders are particularly encouraged to park.

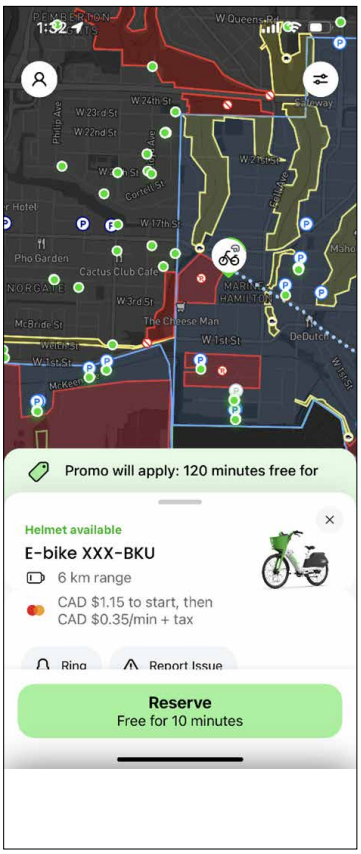


Figure 8. Lime App Interface

Pricing

Lime is responsible for the pricing structure, which is determined by region and is influenced by several factors including:

- **Operating Devices:** Whether it involves E-bikes only, E-scooters only, or a combination of both.
- **Operational costs:** Encompassing operating wages, warehouse rents, utility costs, and other overheads.
- **Competitive Landscape:** Considers the cost of alternative transportation options and the degree of competition in the market.

North Shore riders pay on demand, with $1.15 to unlock and $0.35 per minute, aligning with the pricing strategy in other parts of the Lower Mainland. Specifically, they are equal to the rates in Coquitlam and slightly lower than those in Richmond, where the charge is $0.36 per minute. The price remained consistent throughout the duration of the pilot program.

PILOT PROGRAM SUMMARY: DATE – AUGUST 2023

Pilot Highlights

391,000km
Distance Travelled

156,000
Trips Completed

435
E-bikes Deployed

35,000
Unique Users

3400
Frequent Users (10 Trips+)

96
Lime Groves

0
Reported Serious Injuries/Crashes

25 tonnes
CO_2 Avoided

36,000
Vehicle Trips Replaced

Key Findings In Summary

- **Ridership:** The E-bike share pilot program has continued to experience year-over-year growth in ridership and is becoming a widely accepted mode of transportation on the North Shore.
- **Fleet Size and Availability:** The fleet size and ridership have steadily grown, with 435 bikes available on the North Shore in Fall 2023.
- **Parking and Compliance:** The allocation of designated parking spots – Lime Groves - has expanded across the North Shore. Through targeted measures, parking compliance has steadily improved.
- **Environmental Impact:** The E-bike share initiative contributed to GHG reduction targets, reducing vehicle usage and supporting walking and public transit use.
- **Operations and Safety:** The program operates safely per municipal and provincial laws and regulations, and per industry best practice.
- **Public Outreach:** The operator has taken proactive steps to enhance rider education and build awareness on safe travel behaviour, proper parking and helmet compliance. 73% of surveyed users expressed that they were satisfied with the E-bike share program.
- **Social Equity and Accessibility:** Public outreach and education efforts have promoted the pilot program across demographics, and a more permanent program could offer targeted partnerships, education and awareness, and removal of barriers to increase equitable access to E-bike share.
- **Financial Considerations:** The current permit and licensing framework ensures the pilot E-bike share program is self-sustaining, and strategic alignment with policies across North Shore municipalities indicates ongoing support and resourcing for advancing shared mobility and micromobility.

North Shore Transporation Facts

The North Shore Transportation Survey in 2021[1] provides valuable insights into the evolving travel behaviors of North Shore residents amidst the ongoing impact of the COVID-19 pandemic. Key findings from the survey include:

- **Active travel remained relatively stable.:** Despite the challenges posed by the pandemic, the active mode share, which measures the proportion of people walking and cycling compared to other modes of transportation, remained relatively stable between 2019 and 2021, with a marginal decrease of 0.8% across the North Shore.
- **Ownership of Bicycles:** North Shore residents collectively own an estimated 118,000 bicycles, showcasing a strong affinity for cycling within the community. Notably, within this figure, approximately 8.5% - equivalent to 10,000 bicycles - are e-bikes, reflecting a growing trend towards electric-assist bicycles.
- **Bike Share Membership:** The survey reveals that approximately 5% of North Shore residents are members of bike share programs. This membership distribution varies across different municipalities, with 5% in DNV, 8% in CNV, and 1.4% in DWV, indicating varying levels of adoption and interest in bike share initiatives.
- **Potential for Mode Shift:** A significant opportunity exists to transition auto trips to active modes of transportation. Analysis of trip distances indicates that nearly 40% of current auto trips are within a bikeable distance of 4.6 km, while an additional 14% are walkable distances of 1.6 km. This highlights the potential for encouraging active transportation choices and reducing reliance on private vehicles.

[1] North Shore Transportation Survey-2021

Ridership Statistics

The following data was collected from July 2021 to August 2023. More information on data sources and methodology is summarized in **Reporting Methodology**.

Total Trips Completed

156,000 Trips
have been completed since the launch across North Shore

2021: The North Shore had a total of **21,000** trips, with 90% of these trips taking place in CNV.

2022: The North Shore saw a significant increase with a total of **70,000** trips. CNV remained dominant with 75% trips, but DNV and DWV also saw growth with 12% of the total trips respectively.

2023: 65,000 trips were recorded on the North Shore between January and August. The CNV has the majority with 57% of trips, followed by DNV at 28%, which notably surged to 18,000 trips.

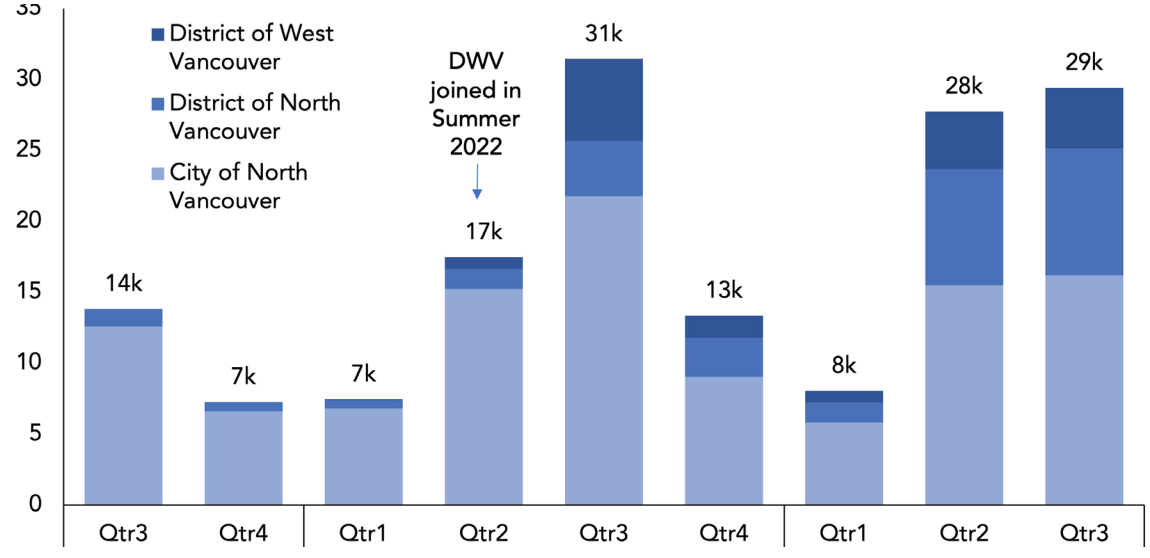
Trip Breakdown by Municipality

DNV: Demonstrated remarkable growth, increasing eightfold from 2,000 trips in 2021 to **7,200** trips in 2023, indicating increased E-bike adoption.

DWV: Experienced modest growth, maintaining **8,000** trips in both 2022 and 2023.

CNV: Showed consistent growth, with trips rising by approximately 176% from 2021 to 2022 and remaining consistently high in 2023, peaking at **21,000** trips in the third quarter.

Total trips completed in thousands arcoss North Shore since program launched



Data Source: Ride Report

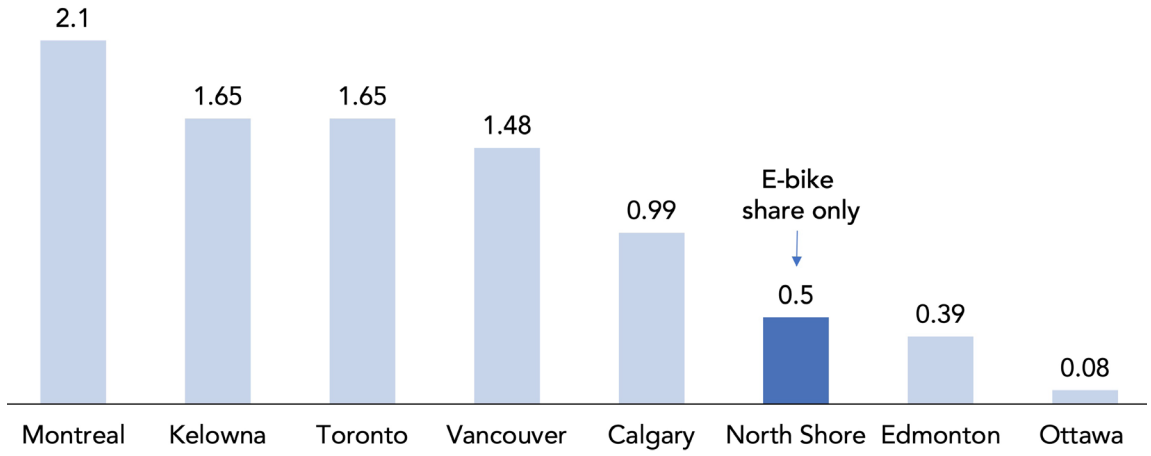
PER CAPITA RIDERSHIP

Per capita ridership provides insight into the level of usage and adoption of shared micromobility (E-bike and E-scooter), taking into account the size of the population in the area. In 2022, the North Shore recorded a per capita ridership of 0.5, meaning each resident on the North Shore took 0.5 rides on the shared E-bikes.

This is lower compared to cities with both bike and scooter share services. Given that the North Shore only offers bike share and lacks scooter share options, this limited availability of micromobility choices might explain the lower adoption rate observed in the region.

Per Capita Ridership in 2022

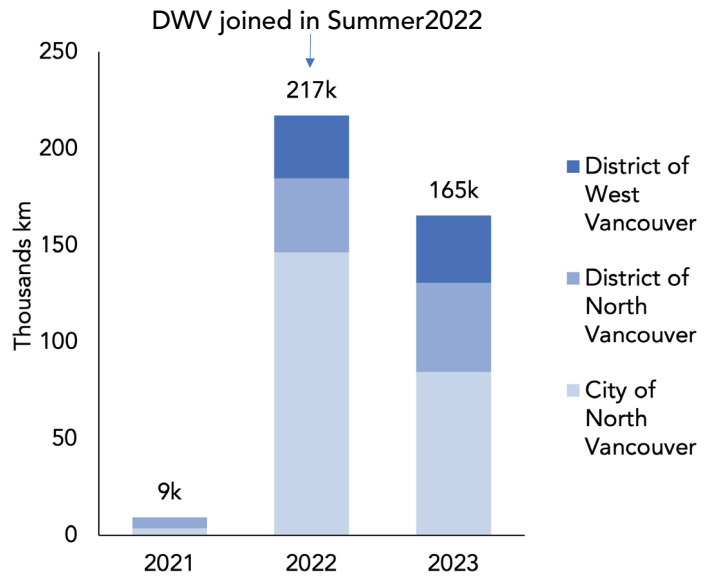
Annual rides on shared micromobility per capita in 2022, based on municipal population



TOTAL DISTANCE TRAVELLED

- E-bike share users have ridden over **391,000 km**, which is equivalent to cycling nearly 10 trips around the Earth.
- Fun fact: One of the longest serving E-bikes on the North Shore has been continuously maintained and ridden **over 1,530 km** since last summer.

Total distance travelled in thousands km across North Shore since program launched



Data Source: Ride Report – 2021 data from July to December, 2023 data from January to August

E-BIKE SHARE USERS

Unique Users

The total number of **unique users** capture all riders who have taken at least one ride on the North Shore since the program launched.

The program has grown to a total of **34,842 unique users** as of August 2023 across the North Shore.

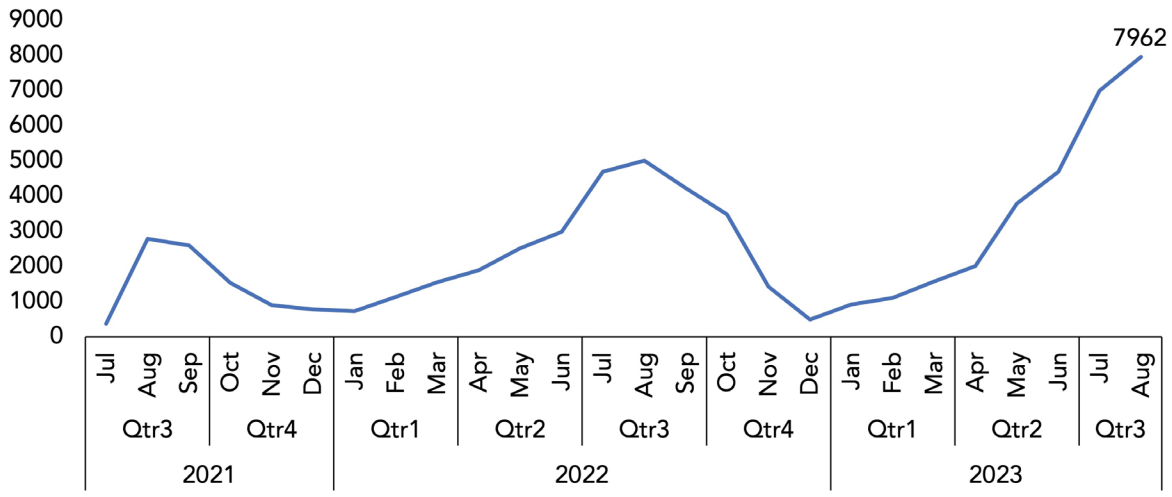
Active Users

Active Users are defined as riders who take at least one ride in the specified month, representing engagement with the E-bike share system since the pilot program launched.

The E-bike share pilot program has demonstrated substantial growth in active users since its launch in July 2021, indicating enhanced user retention within the system as the pilot progressed.

The graph also reveals a potential seasonal trend, consistently showcasing a peak in user activity during the summer months, particularly in July and August. A comparison of active users in August across three consecutive years highlights this increasing trend from **2,800** users in 2021 to **5,000** in 2022, marking a **79%** increase, and a further rise to 8,000 in 2023, representing a **60%** increase from the previous year.

Total active users arcoss North Shore since launched



Data Source: Lime Frequent User Report

TRIPS FREQUENCY BY UNIQUE USERS

The total unique users are segmented based on distribution of trip frequencies.

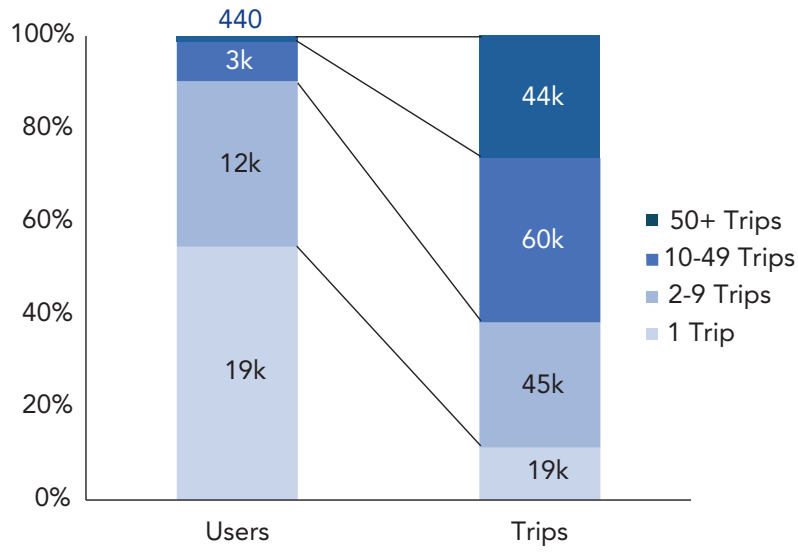
Single-Trip Users: Constituting **19,000 (55%)** of the user base, single-trip users form the largest segment, suggesting that more than half of the users have tried the service only once. This substantial segment suggests that a significant proportion of users could be visitors or tourists.

Regular Users (2-9 Trips): With **36%** of the users falling in this segment, this group represents a substantial portion of the user base, contributing to 27% of the total trips. This indicates a consistent level of engagement from users who use the service more than once but not extensively, potentially representing casual or occasional riders.

Frequent Users (10-49 Trips): A relatively small subset, consisting of **3,000** users (10%), have contributed to 35% of the total trips. This segment, which has taken 10 or more trips throughout the pilot period, denotes a strong presence of a local riding population actively engaging with the service.

High-Frequency Users (50+ Trips): The data reveals that there are over **400** users who have undertaken more than 50 trips with Lime E-bike share. This group, although smaller in size, represents a dedicated and loyal user base.

Trips frequency by unique users

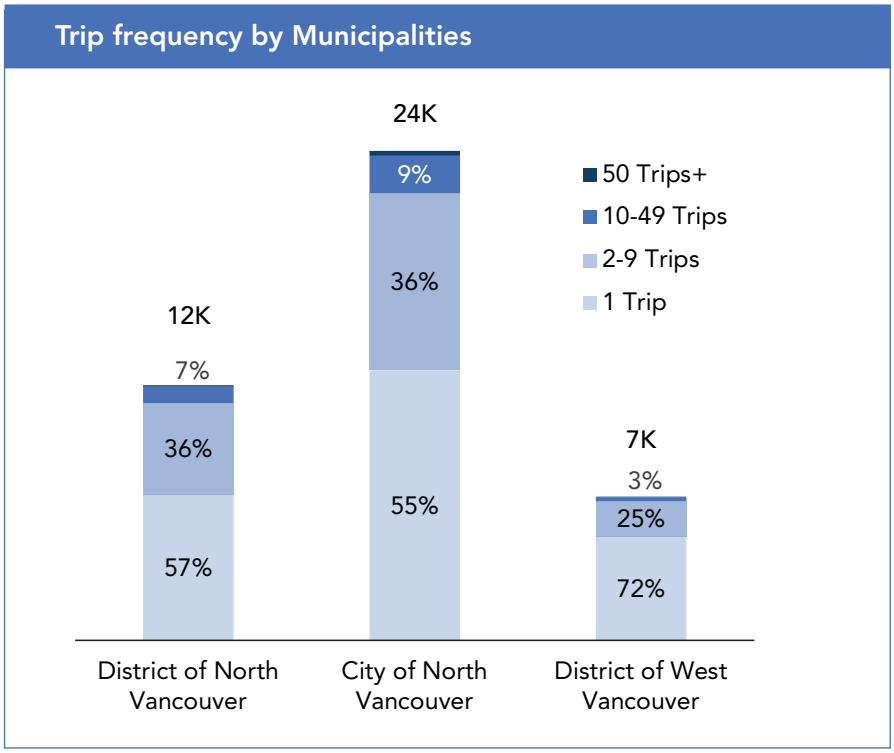


Data Source: Lime Frequent user Report

FREQUENT USERS BY MUNICIPALITIES

The graph shows the ride assigned to a municipality based on its origin. Note that the figures here are not mutually exclusive, that the same rider may be counted in multiple municipalities if they took trips originating in different areas.

- Across all municipalities, there is a high initial interest in the e-bike service, with the majority of users trying it at least once.
- CNV shows the highest percentage in frequent riders and overall ridership.
- DNV and DWV have opportunities to enhance user engagement to convert single-trip users into more frequent riders



Data Source: Lime Frequent user Report

TRAVEL PATTERNS

E-bike share is attractive for **short-distance** trips.
The median trip distance was 2 km long and lasted for 12 minutes.

About 1/3 of trips occur on weekends and 2/3 of the trips occur on weekdays. The E-bike share program is commonly used for leisure or non-work activities on weekends.

FLEET SIZE & AVAILABILITY

Consistent increase in the average E-Bike availability year-over-year.

Reached its peak in August 2023, with a total of **435 E-bikes** deployed across the North Shore.

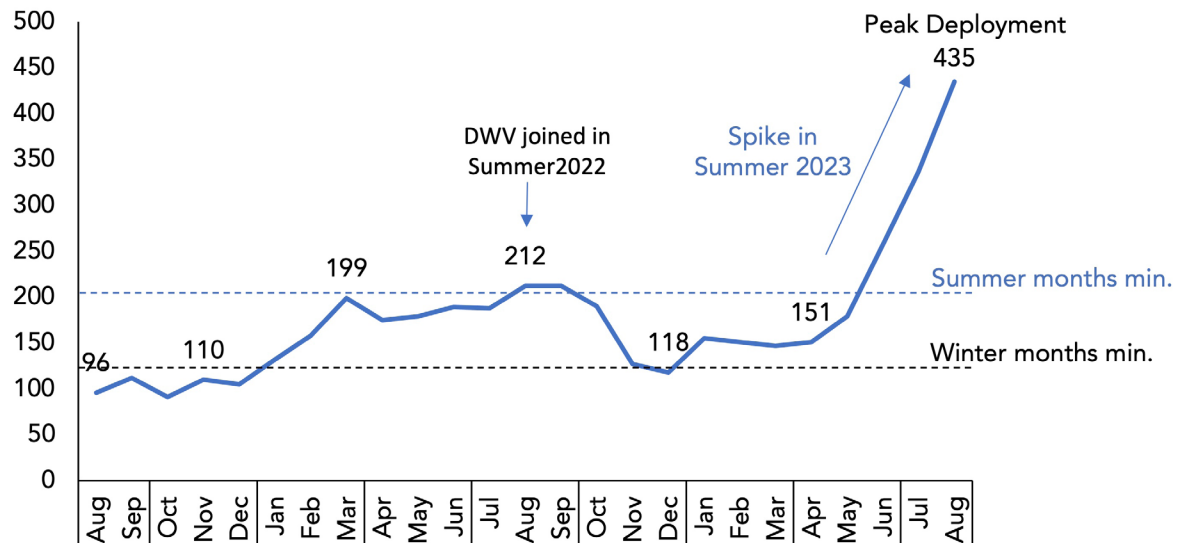
The Municipal operating permit stipulates a minimum fleet size of 200 E-bikes during the peak summer months of May to August, dropping to a minimum of 120 E-bikes in the fall and winter. This fleet size stipulation is consistent across all three North Shore municipalities. To ensure availability and efficient distribution, the operator utilizes a geo-coding system for fleet rebalancing. This system helps prevent overcrowding in particular areas and enables the operator to redistribute the e-bikes to less dense areas as needed.

2021: Following the program launch, the operator encountered trouble meeting this fleet size prerequisite. This was due to COVID-19's supply chain impacts.

2022: There was an improvement in compliance, with the operator meeting the minimum fleet size of 200 E-bikes during the peak summer months. The numbers began to decline as winter approached as expected.

2023: The program not only met but also consistently exceeded the minimum fleet size. There's a noticeable uptrend with the numbers going well above the minimum requirement, reaching **435** operational vehicles in August. This shows a significant commitment and potential spike in demand for the program during the summer of 2023.

Monthly average of daily operational e-bikes arcoss North Shore since launched



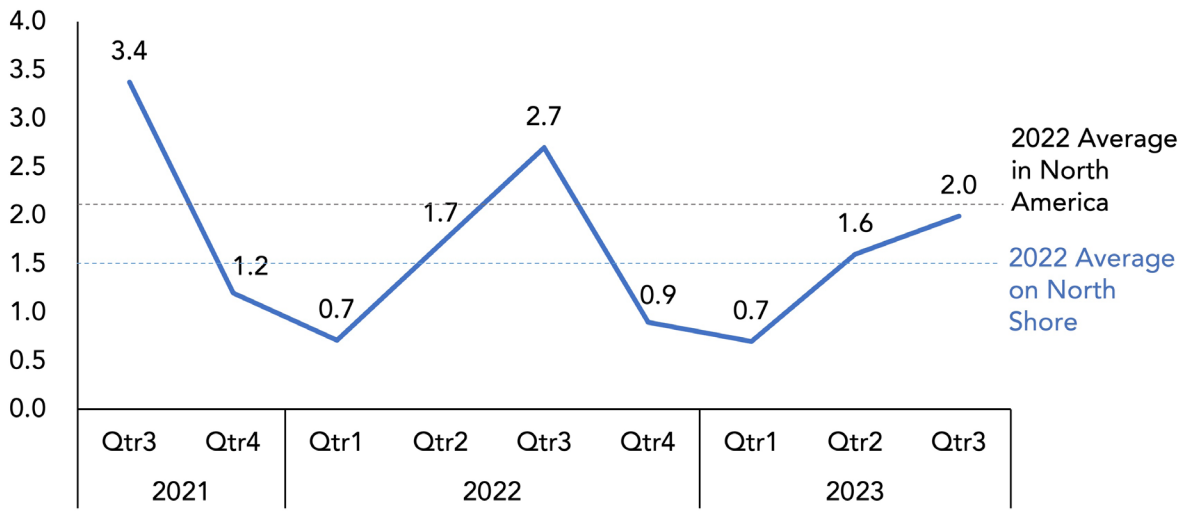
Data Source: Ride Report

FLEET ACCESSIBILITY & UTILIZATION

- 41% of users surveyed indicated that they can find an E-bike **always** available when needed.[2]
- **90%** of users surveyed can access a bike **within 10 minutes**.[3]
- The **majority** (94%) of users surveyed **walk** to pick up an E-bike.[4]
- E-bikes averaged a utilization of **1.58 trips** per day since the program launch.

According to a 2022 State of the Industry report on Shared Micromobility,[5] the average bike share in North America experienced a utilization rate of **2.1** trips per vehicle per service day. In comparison, the North Shore E-bike share program experienced an average utilization of approximately **1.58** trips per E-Bike per day since the program launch. Despite this number being slightly below average, the program had a robust beginning, closely aligning with industry averages during the summer months. Notably, in the summer of 2022, the program managed to surpass the North American average, reaching **2.7** trips per E-bike per day.

Average number of trips per e-bike per day across North Shore since launched



North Shore E-bike share Pilot Program-Technical Report

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[2] Data source: Survey Q7, includes 232 user respondents.

[3] Data source: Survey Q9, includes 232 user respondents.

[4] Data source: Survey Q8, includes 232 user respondents.

[5] 2022 Shared Micromobility State of the industry Report by North America Bikeshare and Scooter share Association (NABSA)

User Experience

The analysis of user experiences was primarily derived from the surveys conducted with both users and non-users during the summer of 2023.

USER DEMOGRAPHICS

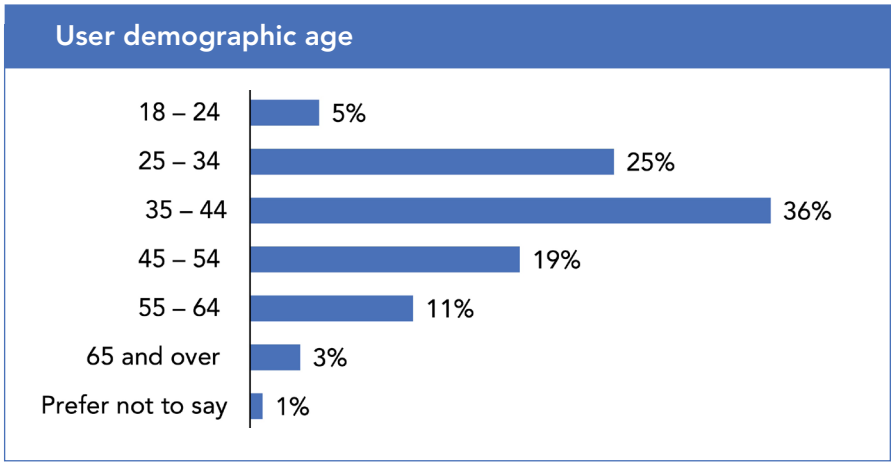
The insights provided are drawn from opt-in user survey data. While the sample's representativeness is not entirely certain, it broadly reflects the demographics of North Shore. Furthermore, beyond the pilot operation, there exists an opportunity to expand membership diversity.

Age: The E-bike share service is most used among adults, particularly those between 35-44 years of age, constituting 36% of users.

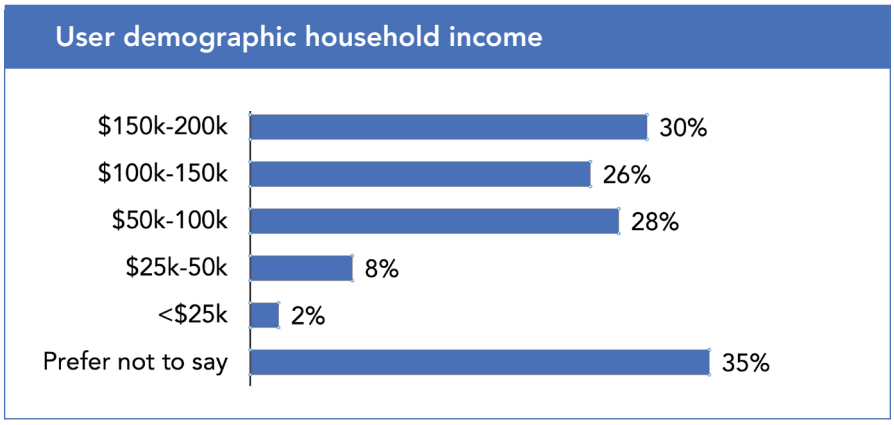
Gender: Men represent the majority of users.[6]

Ethnic Origin: A predominant 79% of users identify as individuals of European descent.[7]

Household Income: The service seems to be popular across a range of income levels. 35% of the users belong to the higher income bracket (> $200k).



Data Source: Survey Q28, includes 380 respondents



Data Source: Survey Q32, includes 380 respondents

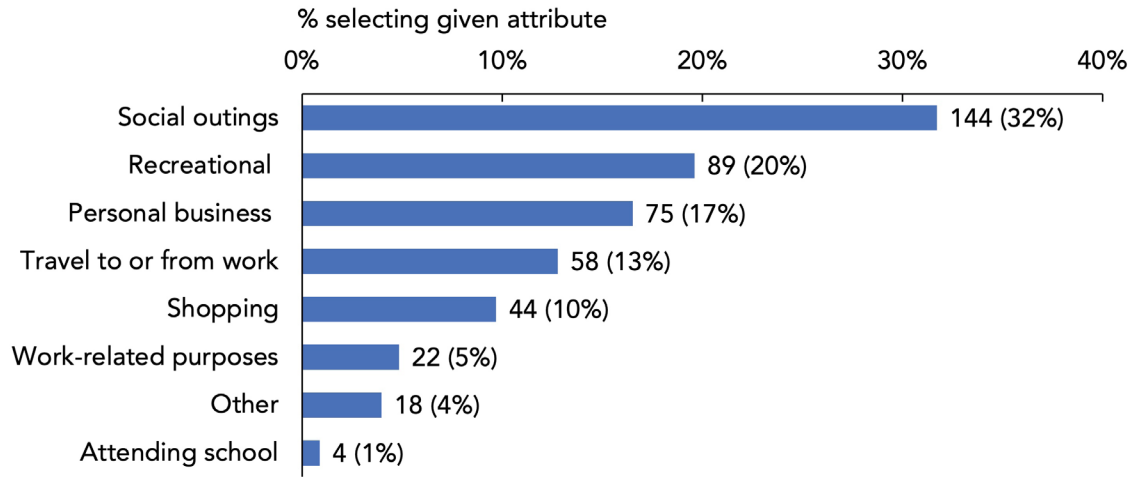
[6] Representation from non-binary, two-spirit, and unsure groups constitute less than 1%. 4% preferred not to disclose their gender.

[7] Other ethnic groups, such as Black, West Asian, Indigenous, Middle Eastern / North African, and South Asian, have very low representation, each constituting less than 5%. Around 10% either don't know their ethnic background or preferred not to say.

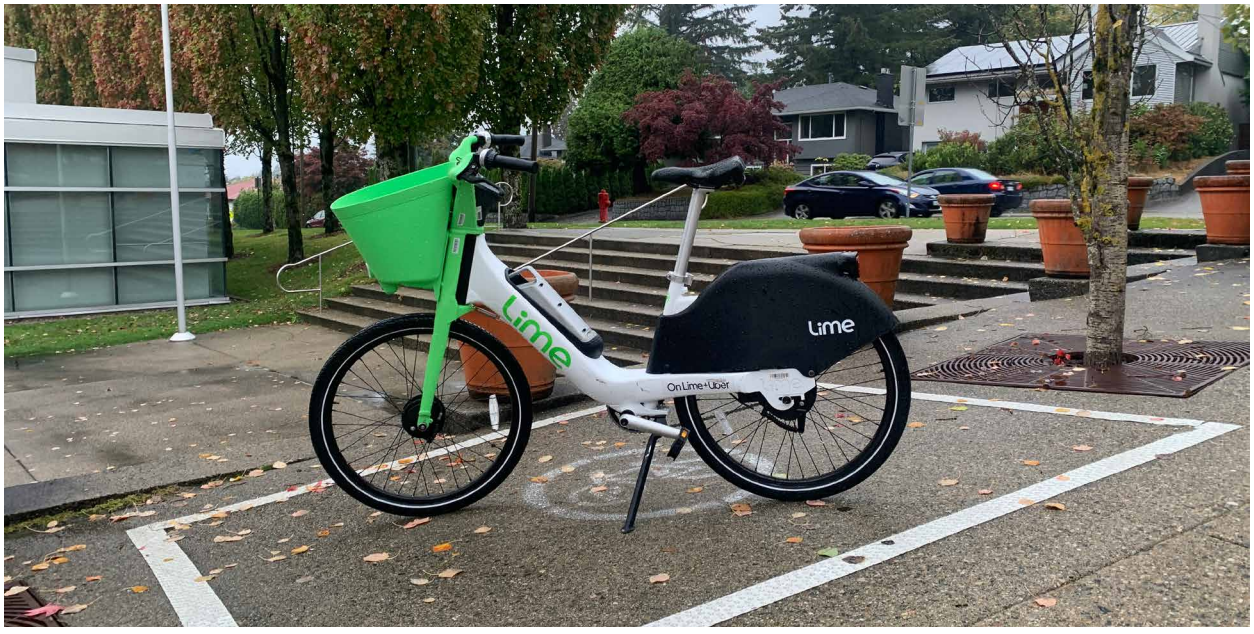
TRAVEL PURPOSE

The majority of survey respondents indicated that **social outings** were the primary reason for using the E-bike share service, with **32% (or 144 users)** choosing this option.

Trip Purpose



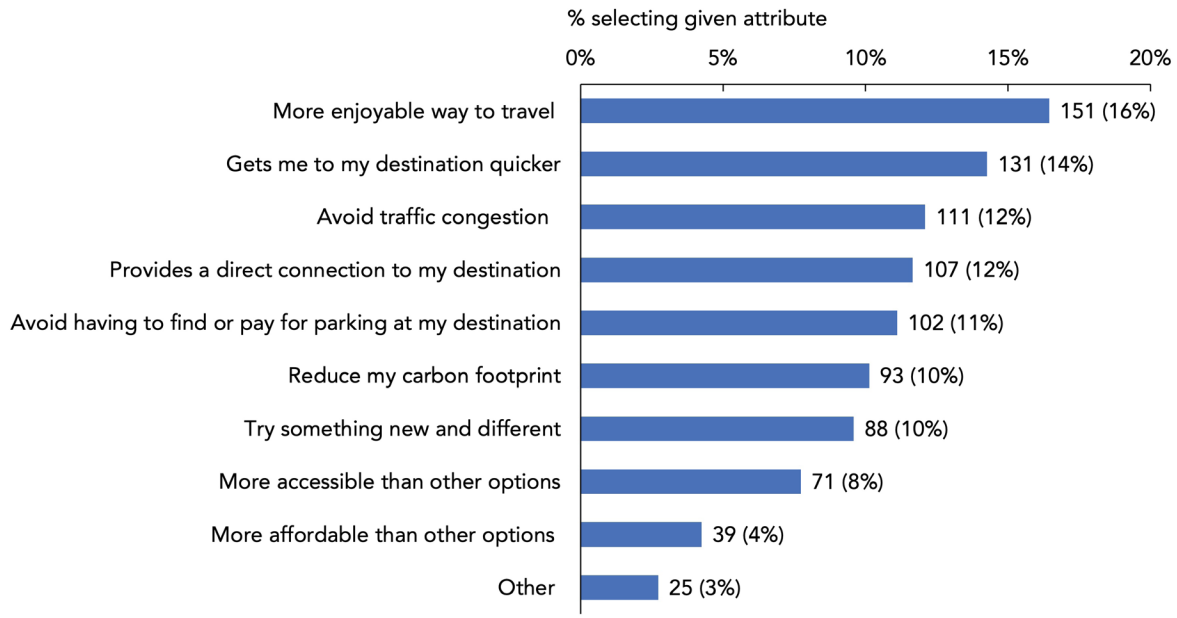
Data source: User Survey Q3, includes 232 user respondents.



MAIN TRIP REASONS

- **Enjoyment:** The most prevalent reason users chose E-bike share was that it is a more enjoyable way to travel, with 16% (or 151 users) selecting this option.
- **Efficiency and direct connections:** 14% of users indicated that the E-bike share program is gets them to their destination quicker, and an additional 12% (or 107 users) appreciated that it provides a direct connection to their destination.
- **Traffic and parking concerns:** Avoiding traffic congestion and parking issues were other notable factors, each chosen by around 12% of respondents (111 and 102 users respectively).

Top reasons to use E-bike share

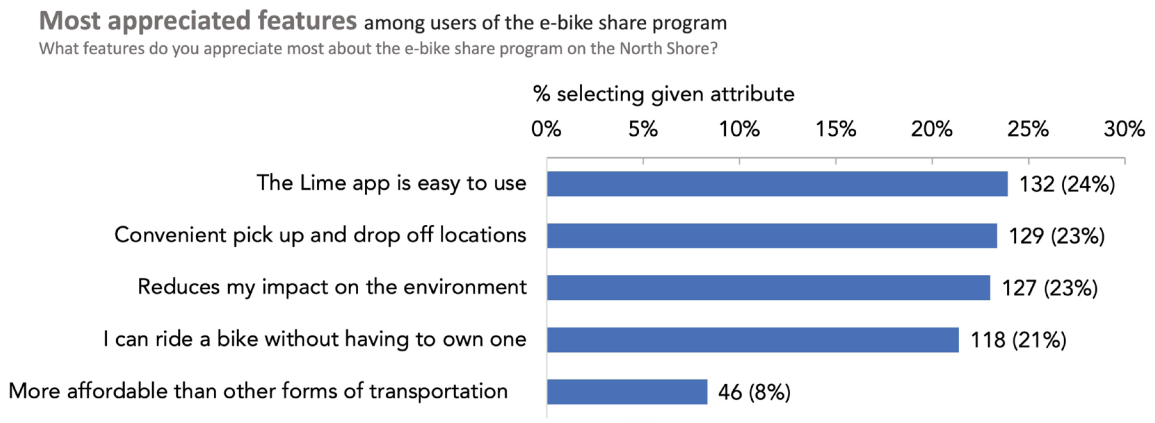


Data source: User Survey Q5, includes 232 user respondents.

PROGRAM SATISFACTION

- Most (73%) survey respondents expressed that they were very satisfied and somewhat satisfied with the E-bike share program.[8]
- The most appreciated features of the E-bike share program include the user-friendly app (24%), environmental benefits (23%), and convenience (23%).

Most appreciated features among users of the E-bike share program



Data source: Survey Q18, includes 232 user respondents.[9]

[8] Data source: Survey Q17, includes 232 user respondents.

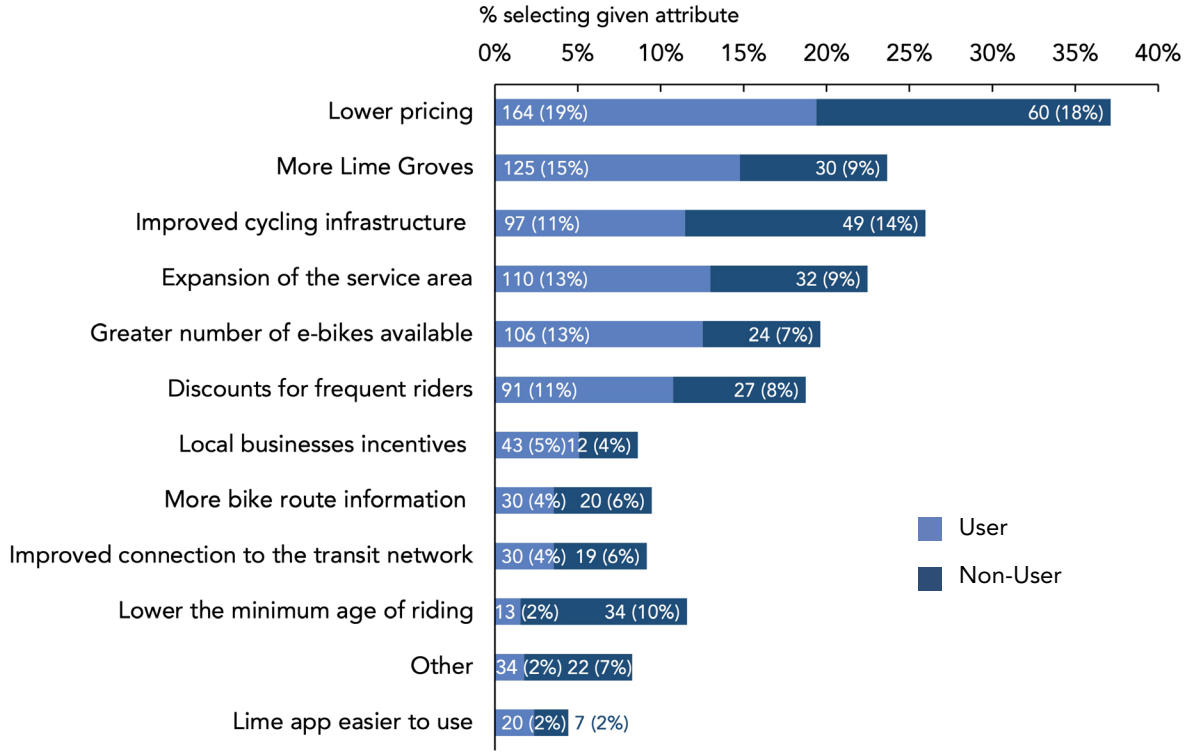
[9] Note that respondents were able to choose all options that apply. Prefer not to answer- 0%

MOTIVATORS

We conducted a survey among both E-bike users and non-users, gathering insights from a total of 224 respondents to explore the factors would motivate them to try or take more E-bike share trips.

- **Lower Pricing:** 19% of users and 18% of non-users indicated they'd be more motivated to use the E bike Share program if there was lower pricing.
- **Parking Availability:** More dedicated parking would be a motivating factor to use E bike Share for 15% of users and 9% of non-users.
- **Cycling Infrastructure:** Improved cycling infrastructure, including more protected bike lanes, would be a motivating factor for 14% of non-users and 11% of users.
- **Service Area Expansion:** Expanding the service area was named as a motivating factor for 13% of users and 9% of non-users.

Motivators to use E-bike share



Data source: Survey - Q20 for users, includes 232 respondents| Q25 for non-users, includes 149 respondents[10]

[10] Note that respondents were able to choose all options that apply. User- Prefer not to answer: 1% | Non-User- Prefer not to answer:0%

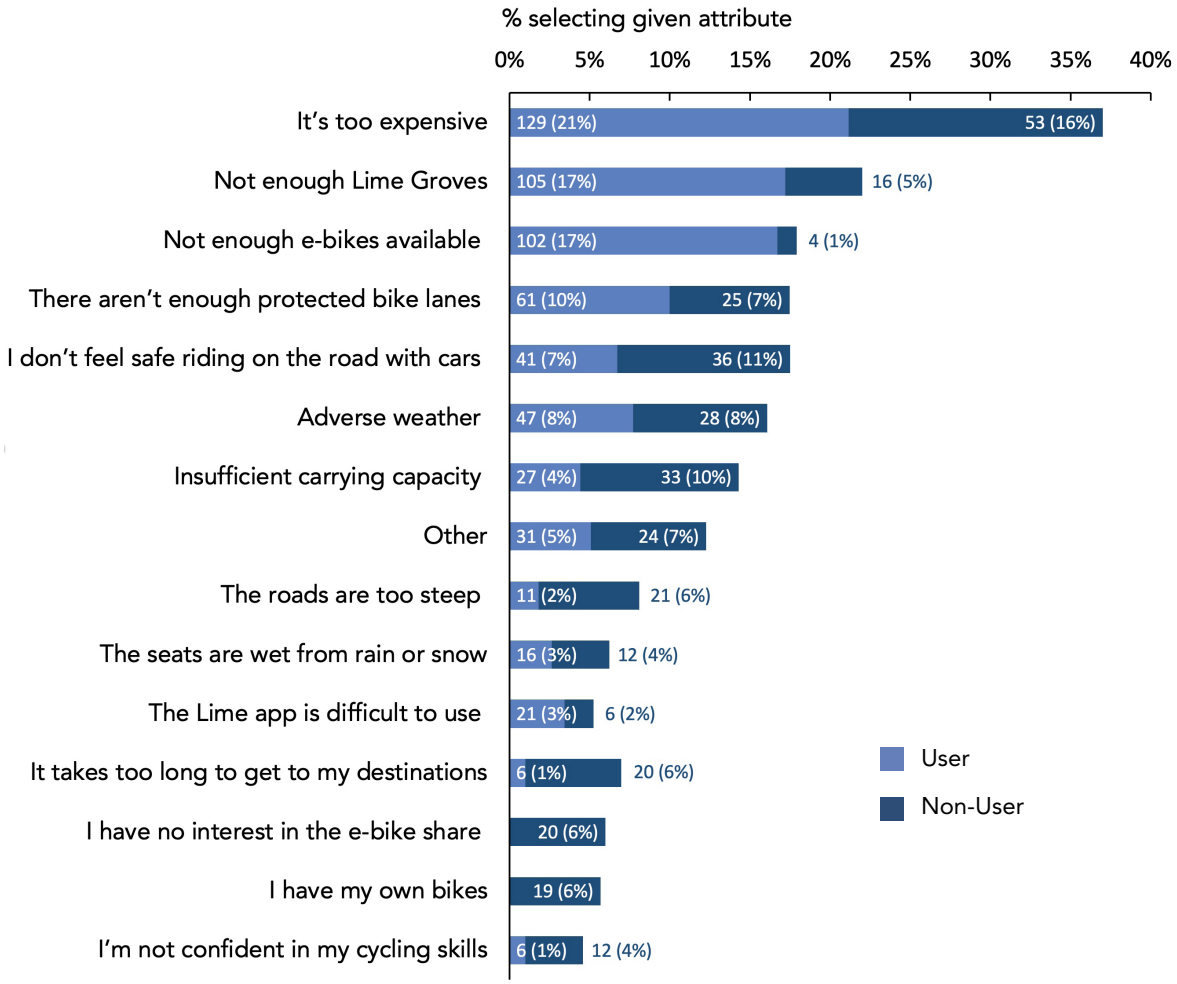
BARRIERS

We also asked the respondents to understand what factors would prevent users from using E-bike share program.

- **Too expensive:** The most significant barrier preventing more frequent use of the E-bike share program is the expense, with 21% of users and 16% of non-users indicating that they find the program too expensive.
- **Parking Availability:** Lack of Lime Groves near their destinations is another key barrier for 17% of users.
- **Device Availability:** Approximately 17% of users indicated the insufficient availability of E-bikes in their area as a barrier.
- **Safety Concerns:** Perceived E-bike share safety, particularly the lack of comfort riding alongside cars on the road (11%), was a major reason for non-users not using the E-bike share program.
- **Carrying Capacity:** Insufficient carrying capacity on the E-bikes was a concern for 10% of non-users.

Notably, **over half (51%)** of the survey respondents (user and non-user) indicated a **positive inclination** towards using E-cargo bikes if they were made available as part of the fleet.[11]

Barriers to use E-bike share



Data source: Survey - Q19 for users, includes 232 respondents| Q24 for non-users, includes 149 respondents.

[11] Data source: Survey - Q21 for users, includes 232 respondents| Q26 for non-users, includes 149 respondents.

Designated Parking Spots

As of Summer 2023, the number of Lime Groves on the North Shore had increased to 96.

Almost 100 Lime Groves, designated parking spots for E-bike share, have been installed across the North Shore. The parking policies are different across the North Shore municipalities:

CNV & DWV: Users ending their trip within CNV and DWV jurisdictions must park their E-bikes in a Lime Grove.

DNV: Users have the flexibility to park at Lime Groves or in suitable areas that do not obstruct pathways, such as greenspaces or unrestricted on-street parking lanes.

	DWV	DNV	CNV
Parking Policy	Lime Groves parking only	Primarily Lime Groves parking and support free floating	Lime Groves parking only
Total Lime Groves	14	27	55

Staff have strategically identified high-demand locations tosupport the adoption of the E-bike share program, reduce vehicle traffic, and manage parking congestion. Lime Groves have been installed at key locations such as the Shipyards District, Lynn Canyon Suspension Bridge, Capilano Suspension Bridge, and along the Spirit Trail.

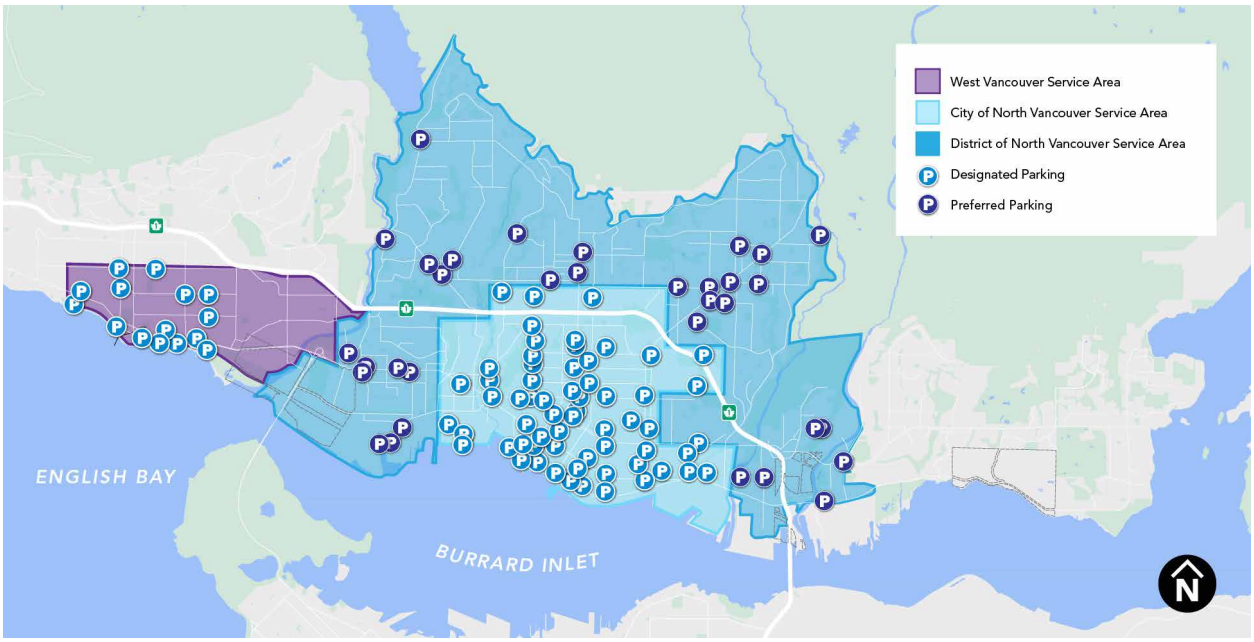


Figure 9. Current Lime Grove Location Map

THE MOST POPULAR LIME GROVES

With the aid of the heat maps features on Ride Report, more is understood about high demand areas across the North Shore, as summarized below.

Top 5 Groves

1. Lonsdale Quay - Chadwick Court (CNV)
2. Lonsdale Avenue & Carrie Cates Court (CNV)
3. Lonsdale Avenue & E 13th Street (CNV)
4. Marine Drive & Hanes Avenue (CNV)
5. Spirit Trail & Argyle Avenue (DWV)

Most Popular Areas to start a Lime E-bike trip

- The Shipyards Common (CNV)
- Lower Lonsdale (CNV)
- Central Lonsdale (CNV)
- Ambleside (DWV)
- Marine-Hamilton (CNV)
- Moodyville (CNV)

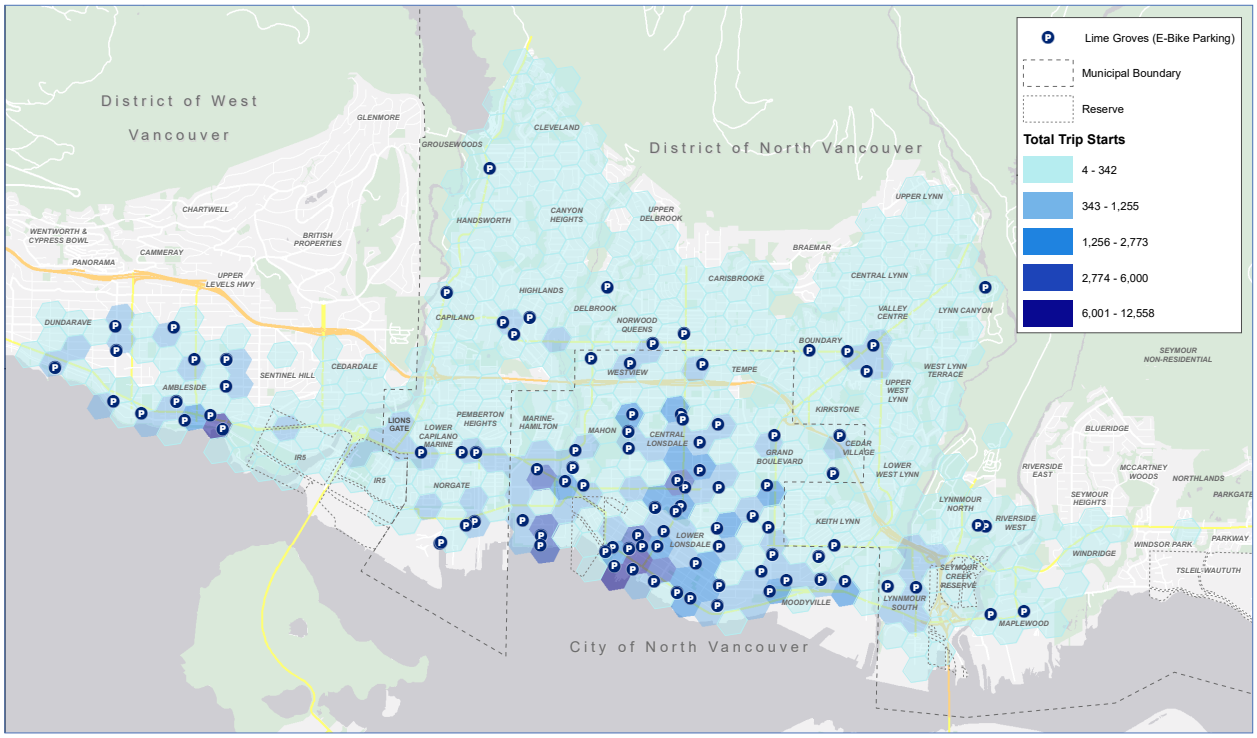


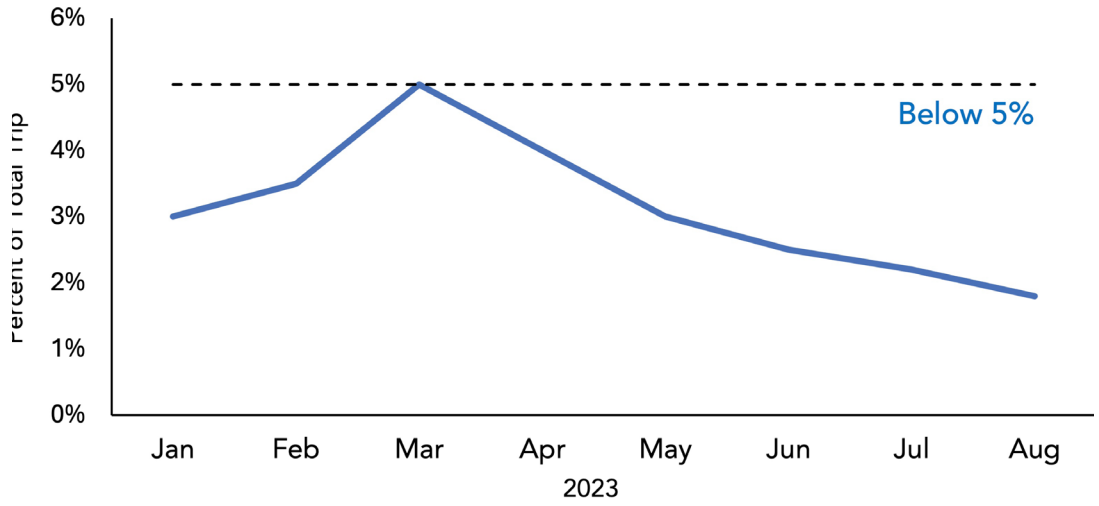
Figure 10. Total E-bike Trip Starts on North Shore

PARKING COMPLIANCE

In 2023, parking violations per total trips remained **below 5%, with a decreasing trend**.

Parking violations, particularly those causing pedestrian obstructions or safety concerns, are reported directly through the operator's customer service channels. In response, the operator acts promptly to address the issue by relocating any improperly parked E-bike.

Parking violation rate



Data Source: Lime Insight. Figures are month to date.

Municipal staff also receive information regarding inappropriately parked bikes through email, telephone, social media, or in-person interactions. Over the course of the pilot, staff have noted a decline in parking compliance concerns being raised. Staff continue to collaborate with the operator to address resident concerns and ensure E-bikes are relocated as necessary.

To support parking compliance, the operator has implemented the following measures:

- **End-Trip Photo:** Riders are required to take a photo of their parked vehicle, ensuring it is correctly placed within the designated Lime Groves and not blocking the right-of-way.
- **Parking Penalties:** Riders who repeatedly park improperly may receive warnings, incur fines, or face account suspension as penalties for their non-compliance.

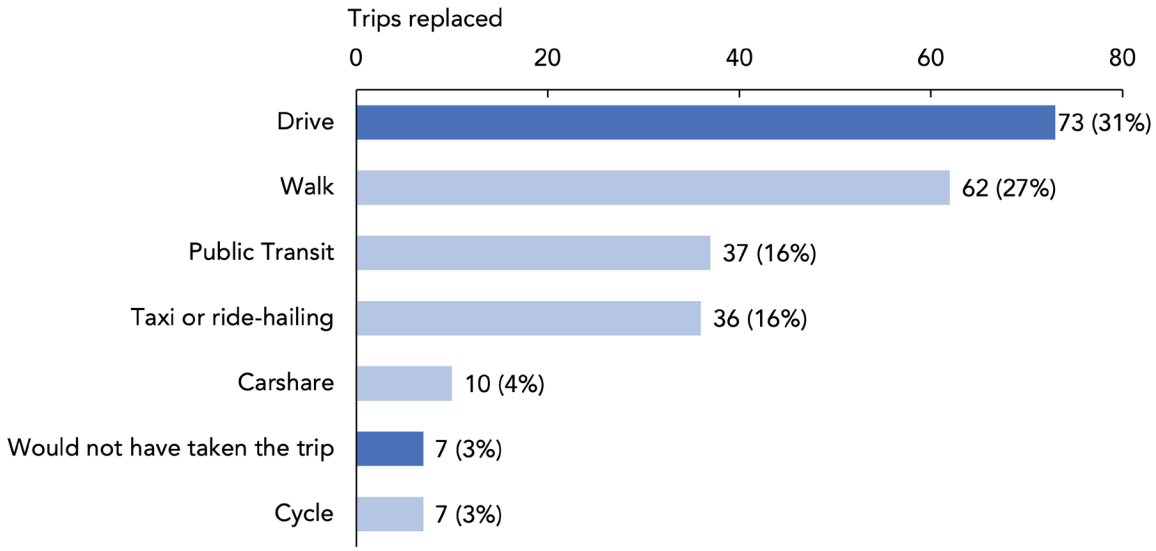
Environmental Impacts

MODE REPLACEMENT

To gain more insights on mode replacement, we asked the survey respondents how they would normally travel to their destination if the e-bike share program wasn't available.

- 31% of E-bike share trips **replaced a car trip.**
- 3% of trips are **new trips** that wouldn't have been taken otherwise.

Mode replacement

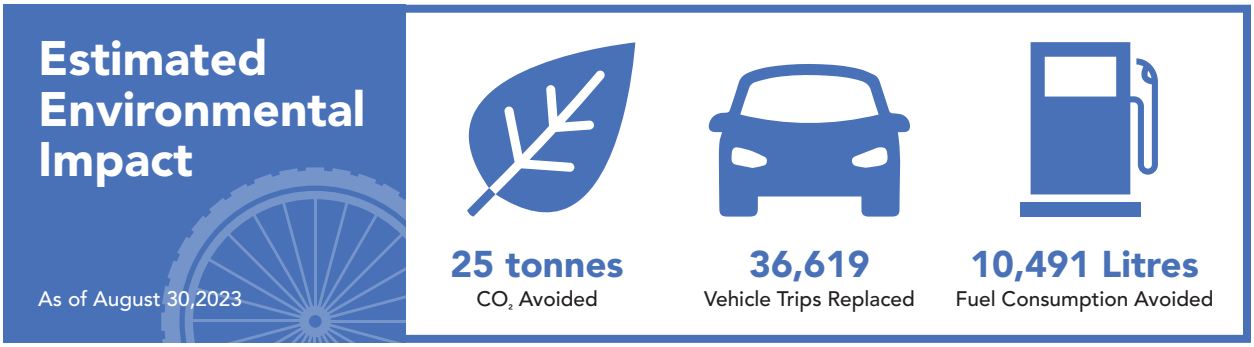


Data Source: Survey Q6, includes 232 user respondents.

- 63% of survey respondents use the E-bike share program to **connect to transit**.[12]
- 72% of survey respondents are more likely to **use public transit** when E-bike share is available.[13]
- **Over half** of respondents indicate they have **reduced their vehicle travel**.[14]
- Over half (53%) of the survey respondents have experienced a **noticeable reduction in vehicle usage**.[15]

GREENHOUSE GAS REDUCTION

The North Shore E-bike share pilot program has a primary commitment to provide sustainable and eco-friendly transportation options for North Shore residents and visitors. The operator has provided the North Shore municipalities a sustainability report with comprehensive data that summarizes the environmental impact of the pilot program.



Data Source: Lime Sustainability Report

The operator determines these figures based on their survey data from thousands of riders that indicates approximately 25% of E-bike or E-scooter trips in North America replace a vehicle trip. That figure is multiplied by the total number of trips, the average trip distance, and a carbon emissions factor for motor vehicles from the US EPA.[16]

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[12] Data source: Survey Q10, includes 232 user respondents.

[13] Data source: Survey Q11, includes 232 user respondents.

[14] Vehicle travel includes private vehicle, ride hailing, or carshare. Data source: Survey Q12, includes 232 user respondents.

[15] Data source: Survey Q13 (Conditional question to Q12), includes 129 user respondents.

[16] Please note this is a use-phase only calculation. It does not take into account the full life cycle carbon emissions of E-bikes nor the full life cycle carbon emissions of motor vehicles.

Operations & Safety

OPERATOR STAFFING

Local operations, government relations, and client management are managed by a team of six Lime staff. This team oversees the entirety of the E-bike share operations, from fleet deployment and maintenance to rider education and customer service.

CUSTOMER SERVICE

Both riders and community members can contact the operator through a designated North Shore email (help-vancouver@li.me), mobile app, phone, or the online help center. Most inquiries are addressed by the operators' local operations and customer service teams within six hours.

MAINTENANCE PLAN

Every E-bike is subject to regular maintenance service whenever it is returned to the warehouse, which occurs at least once every 45 days. Bikes are visually inspected during each battery exchange, which happens every few days. Riders also have the ability to report any maintenance issues via the app.

MAINTENANCE VEHICLES

Currently, the operator uses one non-electric vehicle for transporting E-bikes for fleet deployment, rebalancing and battery charging. The operator is transitioning to an all-electric vehicle fleet on the North Shore by the end of September 2023.

VANDALISM

Since the operation of the program in 2021, Lime has reported 60 instances including :

- Vandalism affecting critical components such as the rear wheel, motor, frame, or battery casing.
- Damages that can usually be rectified within a two-hour timeframe, such as issues with electronics, the seat, front wheel, basket, or bell.

Minor instances such as graffiti on E-bike components are not always formally recorded by the operator. However, these are resolved during routine maintenance checks.

INCIDENTS

Throughout pilot program operations a total of 28 incidents were reported to the operator. All of these incidents were minor in nature and involved mechanical issues. No major injuries have been reported to the operator or North Shore municipal staff. Vancouver Coastal Health did not receive any E-bike-specific incident reports.

HELMET USAGE

- A combined **46%** of survey respondents **either always or sometimes** wear helmets.
- About **1 in 3** survey respondents **never** wear a helmet.
- About **1 in 5** of survey respondents opt to use the **shared helmets**

The top reasons riders opt not to use the shared helmets include concerns about **hygiene (40%)** and the **unavailability of helmets (35%)** with the E-bikes.

EFFORT IN HELMET COMPLIANCE

- Lime has provided over **2,000 helmets** on the North Shore through promotional campaigns and events.
- **Helmet brackets** to lock the helmets to the E-bike have been installed on over **60%** of E-bike fleet.

The E-bike share permit stipulates the operator's responsibility to educate riders about British Columbia's helmet laws, and also requires users to wear a helmet. Initial compliance was generally poor however the operator implemented several measures to improve the situation, including:

- Introducing prompts within the Lime app at the beginning of rides, reminding riders of the helmet requirement.
- Encouraging riders to snap a photo as proof of wearing a helmet before commencing their ride and offering a monetary discount as an incentive.

In 2023, Lime added helmet brackets and a lock system to over 60% of their fleet in order to reduce potential theft or loss of helmets. Riders also have the capability to report a missing helmet directly through the mobile app. Staff will continue to monitor the utilization of shared helmets to ensure they remain available for all riders.

Figure 11. Bike Bracket with Helmet Lock

Public Outreach

The operator educates the North Shore community about their E-bikes using various methods including in-app modules, advertising, social media, community partnerships, and direct communication via email and text.

COMMUNITY EVENTS

The operator has actively engaged residents at a variety of community events throughout the year to foster connections with interested residents. The operator has also collaborated with HUB Cycling to conduct rider safety workshops.

A few noteworthy aspects of community engagement efforts encompass involvement in events such as Go by Bike Week Celebration Stations, the Super Saturday Engagement Expo in CNV, Lynn Valley Days in DNV, and the Squamish Nation Amalgamation Day Celebration. Feedback from attendees at these events have been encouraging, with most showing a strong desire to gain further insights into the E-bike share pilot program.

2022.05.31 – GBBW Spring Celebration Station

2022.07.16 – Lynn Valley Days

2023.05.29 – GBBW Spring Celebration Station

2023.06.17 – CNV Engagement Expo

IN-APP AND EMAIL CAMPAIGNS

The operator conducts in-app safety campaigns focusing on pivotal themes, such as helmet use, proper parking, visibility, safe riding while sober, rider awareness, and avoiding sidewalk riding. These initiatives underscore crucial safety guidelines to ensure that E-bikes are used responsibly and safely. These messages are further amplified through cross-promotion on municipal communication channels.

Furthermore, the operator launched a #RollModel email campaign, inviting individuals to share their North Shore stories. Here are some of the shared quotes:

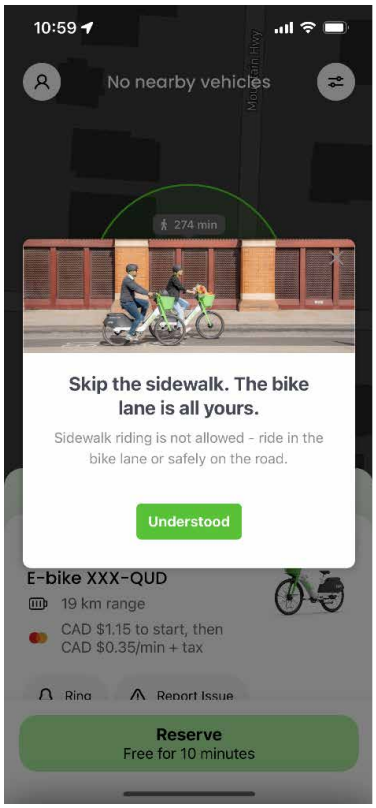


Figure 12 Example of In-app Safety Message

"I love Lime at home in North Van, but also in my former home Milan Italy…so I love the freedom Lime gives me across continents." – Tony

"I'm a social worker, I ride in on the bus from the Sunshine Coast to visit and help my elderly clients and to watch football (soccer) games on my days off (We Love Altitude FC!). Lime gets me around safe, fast and efficiently and helps fight the climate crisis. I wish we had Lime back when I was a childcare worker on the North Shore." – John

"Explore the beauty of West Vancouver with Lime, the app that lets you effortlessly rent E-bikes scattered throughout the city. Whether you're commuting or leisurely riding, Lime's E-bikes are always just steps away, allowing you to uncover hidden trails and charming spots." – Alireza

"I ride lime to get to and from work or anywhere I need to get within the city it's quick, cheap and efficient." – Daniel

"We took a trip to the North Shore and by coincidence, we noticed some Lime E-Bike parked on the street. We took one look at each other and went "Yes, let's do this again!" We got another ride pass and we got to explore Capilano and the amazing beach area beside Lions Gate Bridge. Electric scooter and E-Bike rentals can be so expensive in rental shops around the city. Lime makes it super affordable, easy and fun to explore these areas and have a great time." – Allan

Social Equity

Lime has introduced two company-wide equity programs—Lime Access and Lime Assist—with the goal of enhancing accessibility for all regions. However, these programs were not fully implemented on the North Shore during the pilot phase. There is insufficient data for staff to assess the social impact effectively.

LIME ACCESS – DISCOUNT PROGRAM

Lime Access is a globally offered program by the operator, Lime, aiming to provide affordable mobility options to low-income individuals and people from marginalized communities. Eligible applicants, identified through community partners, receive a 50% discount on bike rides.

In early summer 2023, municipal staff initiated discussions with Lime to explore this initiative further. Efforts have been made to collaborate with community partners, identifying organizations that align with and could benefit from the Lime Access program.

Alternative Payment Options

Lime primarily operates through credit and debit card payments, accessible via their mobile app. Recognizing the potential technical barriers for those without access to a credit card or smartphone, Lime introduced Alternative Payment Options as part of the Lime Access program:

- **Text-to-Unlock:** This feature allows users without a data plan to unlock a vehicle by texting a phone number.
- **Pay Near Me:** Users can generate a unique barcode and pay with cash at participating locations, enabling them to ride with Lime.

LIME ASSIST – ADAPTIVE VEHICLES

Lime Assist is a dedicated program designed to enhance the accessibility of shared electric vehicles for persons with varying abilities. On the North Shore, Lime offers the Pride Mobility Go Go® Sport 4-Wheel Mobility Scooter as the adaptive vehicle. These are made available to the community on demand at no cost. Lime also worked with local accessibility organizations and Canadian Accessibility Advisory Roundtable to increase awareness of this program.

This service became available to North Shore residents in summer 2023. The service has not had any usage so far.

Figure 13. Mobility Scooter offered by Lime Assist

MULTILINGUAL RESOURCES

To cater to linguistic diversity, the operator provides multilingual resources online for its E-bike share program, including some of the common languages spoken in the North Shore. Additionally, the mobile app automatically adjusts to match the language settings on users' phones.

Financial Considerations

PERMIT FEES

The operator pays an annual permit fee of $40 per E-bike, calculated based on total fleet size. The minimum annual fee is $8,000 based minimum fleet size of 200 E-bikes across the North Shore. The operator absorbs all program costs, including equipment, operating, and promotional costs. Since the pilot launched in summer 2021, the North Shore municipalities received a total of $28,000 in permit fees, which are allocated toward funding staff support for the pilot.

STAFFING RESOURCES

North Shore municipalities co-created a position to support the advancement of micromobility on the North Shore, including to eventually manage the e-bike share pilot. The first North Shore Mobility Options Coordinator was in place from 2020 to 2022, with municipal staff supporting/leading the E-bike share pilot as required.

A new North Shore Mobility Options Coordinator joined municipal transportation staff teams in Spring 2023. This shared coordinator model is highly regarded across the region, spurring liaison with other governments, and garnering attention at local and international shared mobility conferences.

REPORTING METHODOLOGY

Ride Report

In August 2022, a new digital data reporting tool called Ride Report was adopted by staff to enhance the monitoring and evaluation of the E-bike share pilot program. This tool supports the program's goals by providing comprehensive data analysis capabilities, including the generation of heatmaps and real time fleet data. Ride Report serves as the primary data source for this report, and can support data reporting and analysis in future, regardless of Operator. Note that some ridership data is still available prior to August 2022, but it is less comprehensive than the Ride Report data.

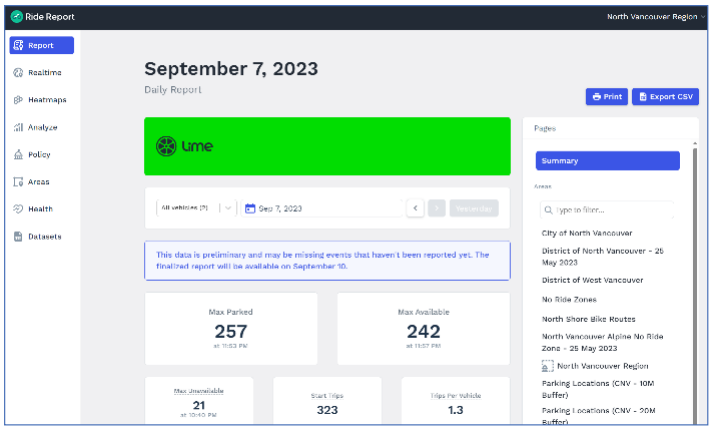


Figure 14 Ride Report Dashboard

Data extraction for CNV and DNV: July 25, 2021, to August 31, 2023

Data extraction for DWV: June 1, 2022, to August 31, 2023

Lime Insights

The operator also provides a data and reporting system called Lime Insights; this system provides a dashboard for viewing key metrics. This report utilizes data from Lime Insights as a supplementary data source.

Data Extraction: All time periods between program start and August 31, 2023.

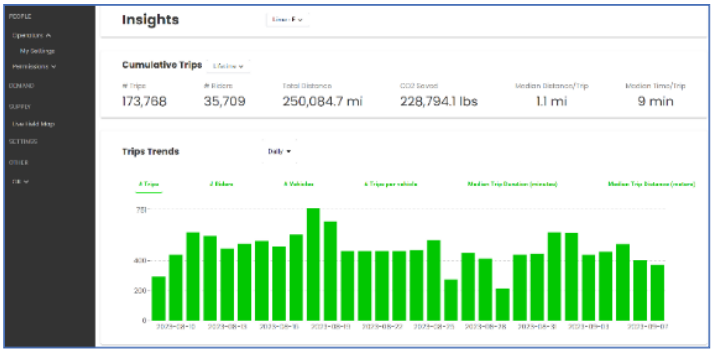


Figure 15 Lime Insight Dashboard

User and Non-User Survey

In spring of 2023, North Shore staff deployed a survey to gain valuable insights into the impact of the E-bike share pilot program on travel behavior. The survey was available online from May 25 to June 19 and was actively promoted through municipal communication channels, including social media and in-community at events such as Go By Bike Week Celebration Stations. In total, the survey received **380** individual responses.

Community Feedback

Public feedback was also gathered through monitored municipal email inboxes. Staff have maintained an issue log to document this input. Regular communication with Lime also allows staff to collect operational feedback.

NEXT STEPS & FUTURE CONSIDERATIONS

Next Steps

In consideration of these insights, transitioning from pilot operations to more permanent operation of E-bike share affords an opportunity to improve aspects of operation, increase ridership, and enhance positive impacts of shared mobility on the North Shore. Looking ahead, key considerations include:

- **From Pilot to Standard Operations:** Ascertaining Councils' commitments to operating E-bike share on the North Shore and resourcing a more permanent program accordingly.
- **Procurement and Governance:** Lime will operate the pilot program per Street Use Permits of CNV and DWV, and Highway Use Permit of DNV for up to 12 months. This extension will allow staff to:
  - Gather insights from other shared micromobility programs in the region.
  - Deepen partnerships with local and regional stakeholders, businesses, employers, TransLink, BC MoTI, and neighbouring First Nations governments to further explore shared mobility opportunities.
  - Refine the vendor evaluation criteria and consider the potential inclusion of additional or alternative vendors.

Future Considerations

SERVICE AREA EXPANSION

Investigate potential expansion zones considering user demand and existing bike infrastructure on the North Shore, such as Deep Cove and the west side of District of West Vancouver.

Engage with other municipalities and investigate potential opportunities and challenges associated with cross-border riding.

BOOST FLEET AVAILABILITY AND RELIABILITY

Fleet Size and Distribution: Given the growing demand, an increase in fleet size is recommended to ensure service reliability.

Minimum Deployment: Maintain a baseline number of E-bikes at key destination like town centers and transit stations.

Fleet Rebalancing: Regularly redistribute bikes in line with demand and user behavior to maintain bike availability.

STRENGTHEN PARKING MANAGEMENT

To improve optimal user experience and community harmony. This may include exploring benefits and trade-offs of docked systems.

Lime Groves Expansion: increase the number of designated Lime groves at key destination.

Wayfinding: Boost the visibility of parking zones with clear upright signage, especially in popular groves.

Review Penalties: Reevaluate penalties by considering escalated fines or offering incentives for proper parking.

ENHANCE SOCIAL EQUITY AND ACCESSIBILITY

Amplify efforts to promote social equity, liaising with local organizations to reduce mobility barriers for marginalized and underserved communities of all-aged.

Lime Access: Continue to support the Lime Access discounted program to provide affordable transportation option to low-income groups.

Lime Assist: Advocate the availability and benefits of adaptive vehicles to the community.

CONTINUE EMPHASIZE ON RIDER EDUCATION AND AWARENESS

Enhance Communication: Regularly update users on parking protocols through in-app messages and emails.

Awareness Campaigns: Organize targeted events in areas with high traffic area to raise safety awareness and promote compliance.

CONCLUSION

The North Shore E-bike share pilot program, in collaboration with Lime and the three North Shore municipalities, has demonstrated e-bike sharing has strong potential as an efficient and sustainable mode of travel in the region. When considering further growth and a more permanent program, addressing areas such as fleet availability, parking compliance, and social equity initiatives will be crucial. By harnessing the insights gained from this report and maintaining a commitment to sustainability, equity, and community, the program stands well-positioned to continue to elevate shared micromobility on the North Shore.

APPENDICES

Appendix A E-Bike Share Policy

Appendix B E-Bike Share Survey Questions and Results

COUNCIL POLICY

12 Transportation

Policy Name	E-Bike Share Policy
Policy Number	E16
Effective Date	November 2, 2020
Approved By	Council

PURPOSE

The purpose of this policy is to establish the City's vision and goals for Electric Bike (E-Bike) Share. This policy guides the E-Bike Share licensing framework, including the E-Bike Share Permit Guidelines and business license. Together, the policy and licensing framework create the enabling conditions for E-Bike Share to operate in a safe, accessible way that supports the City's goals.

POLICY

1. Scope

    a) E-Bike Share services are provided by a legal entity whose business is to offer on-demand public rental of motor assisted cycles (as defined in the *Motor Vehicle Act*). E-Bikes are typically distributed throughout a service area and picked up and dropped off primarily in the public right-of-way as an additional travel option for short, point-to-point trips. This policy does not cover businesses renting devices from a brick-and-mortar establishment for roundtrip use.

2. Vision, Goals and Alignment with City Policy/Strategy

    a) The City's vision for E-Bike Share is a widely-deployed service that provides a sustainable transportation mode which complements transit and provides a safe and comfortable alternative to private vehicles for local trips.

    b) E-Bike Share will support the following goals:

        i. *Increasing Freedom of Mobility*: E-Bike Share is intended to grow the number of travel options available in the City, which can promote equity in our transportation system by making active transportation an attractive and affordable option, helping to shift more local trips to active modes;

        ii. *Supporting and Supplementing Transit Usage*: E-Bike Share can play a vital role in connecting the first- and last-mile gap between transit and local destinations. The City will ensure E-Bikes are distributed across the community to complement the transit network and help increase transit ridership;

        iii. *Promoting Sustainable Transportation*: E-Bike Share can reduce community greenhouse gas emissions linked to transportation and improve health outcomes through cleaner air and increased physical activity;

iv. *Providing a Safe Mode of Travel*: E-Bike Share should be a safe mode of travel for riders and other road users. The City will work with partners to monitor incident reports and respond to risks if they appear;

v. *Maintaining a High Quality Public Realm*: E-Bikes must be safely stored to maintain accessibility and should complement the public spaces they share with other road users;

vi. *Making Efficient Use of Resources*: E-Bike Share operations should rely on existing infrastructure and planned investments and impacts to municipal resources must be monitored closely; and

vii. *Ensuring a Great Mobility Experience*: E-Bike Share is a key part of growing the City's active transportation network and reducing barriers to moving around. Understanding the community's experience will help the City improve E-Bike Share services as they evolve.

c) Alignment with City Policy/Strategy

i. E-Bike Share services support the Strategic Plan vision and priority to be a Connected City that provides active and sustainable ways for people and goods to move to, from and within the City safely and efficiently.

ii. E-Bike Share aligns with the Official Community Plan objectives to encourage technological innovation to overcome physical barriers to transportation, and to encourage transportation options that reduce fossil fuel use.

3. Operations

a) License to Operate

i. Service providers will be required to obtain a street use permit and business license to operate E-Bike Share services in the City.

ii. The E-Bike Share Permit Guidelines set the standards and procedures for all applicants seeking a street use permit to operate an E-Bike Share service in the City. The Guidelines include requirements for safety, service availability, operations and parking, insurance and liability, and data sharing and reporting.

iii. Applicants that are issued a permit must also obtain a business license, enabling them to operate in accordance with all City regulations and bylaws.

b) This E-Bike Share Policy covers Motor Assisted Cycles, also known as electric bicycles ("e-bikes").

4. Accountability

a) Council is responsible for approving the E-Bike Share Policy, approving and allocating funds and resources, and providing oversight regarding the E-Bike Share Policy.

b) The City Engineer is responsible for issuing the Street Use Permit (per Street and Traffic Bylaw, 1991, No. 6234).

c) The Licensing Inspector of the City is responsible for granting business license (per Business Licence Bylaw, 2018, No. 8640).

AUTHORITY

- Community Charter, SBC, 2003
- Local Government Act, RSBC, 1996
- Motor Vehicle Act, RSBC, 1996

REFERENCES

- Business License Bylaw, 2018, No. 8640
- Bylaw Notice Enforcement Bylaw, 2018, No. 8675
- Intermunicipal Business License Agreement Authorization Bylaw, 2001, No. 7350
- Street and Traffic Bylaw, 1991, No. 6234
- North Shore E-Bike Share Permit Guidelines

DOCUMENT HISTORY

Date	Action	By
November 2, 2020	Approved	Council

E-Bike Pilot Program Survey

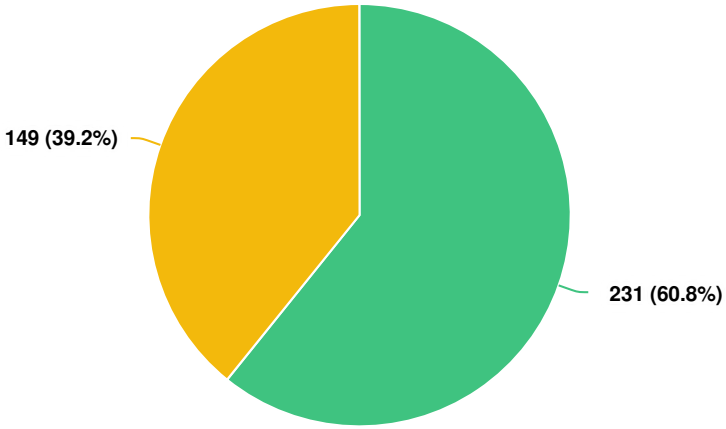
SURVEY RESPONSE REPORT
21 May 2023 - 19 June 2023

PROJECT NAME:
E-Bike Share Pilot Program

BANG THE TABLE engagementHQ

SURVEY QUESTIONS

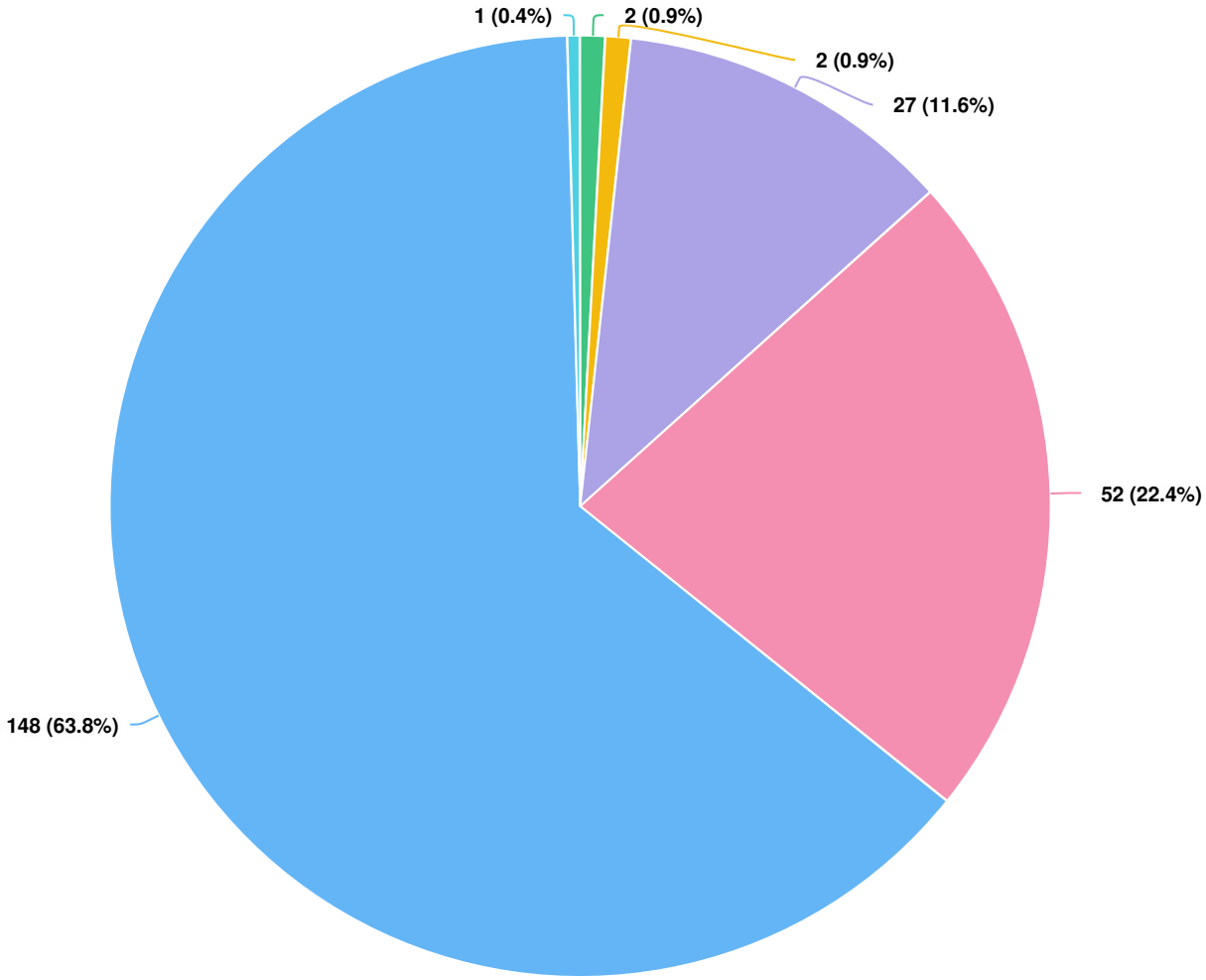
Q1 Have you used the e-bike share program since it began on the North Shore?



Question options

Yes No

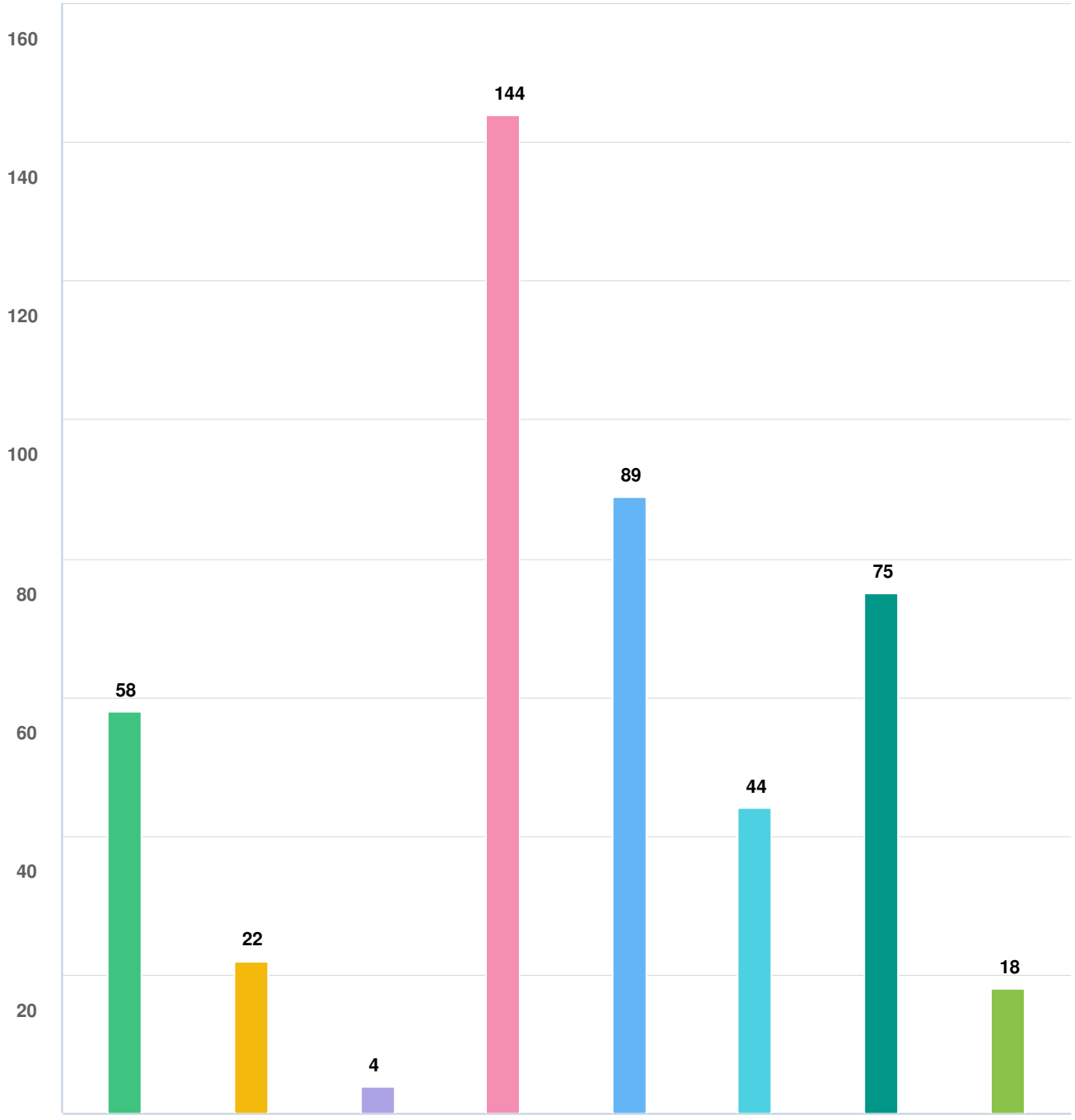
Q2 How often do you use the e-bike share program? (Select one)



Question options

Everyday
At least 5 times per week
2-4 times per week
Once per week to once per month
I have used it a few times since it began to operate
Not sure

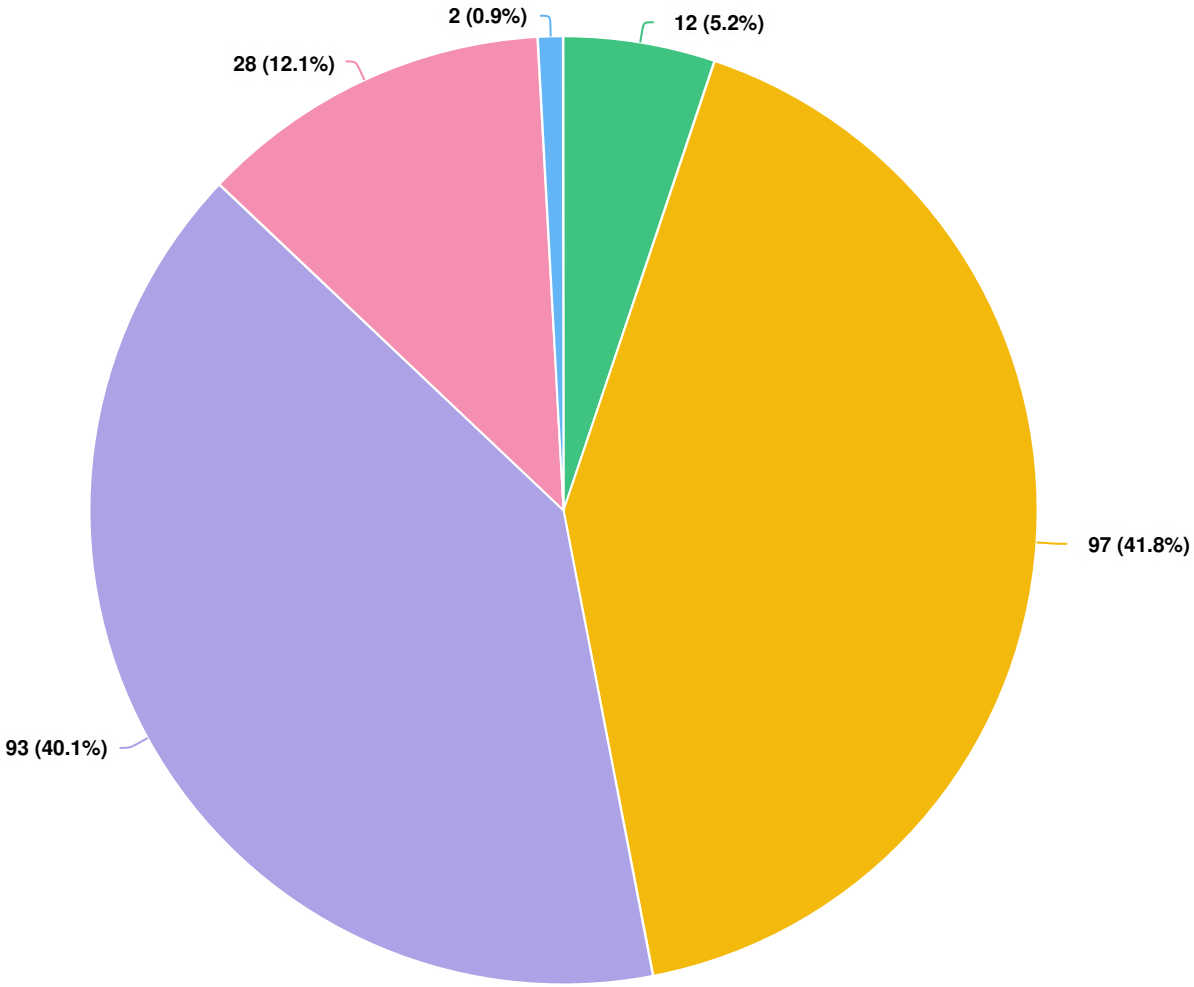
Q3 What are the most common purposes of your e-bike ride? (Select all that apply)



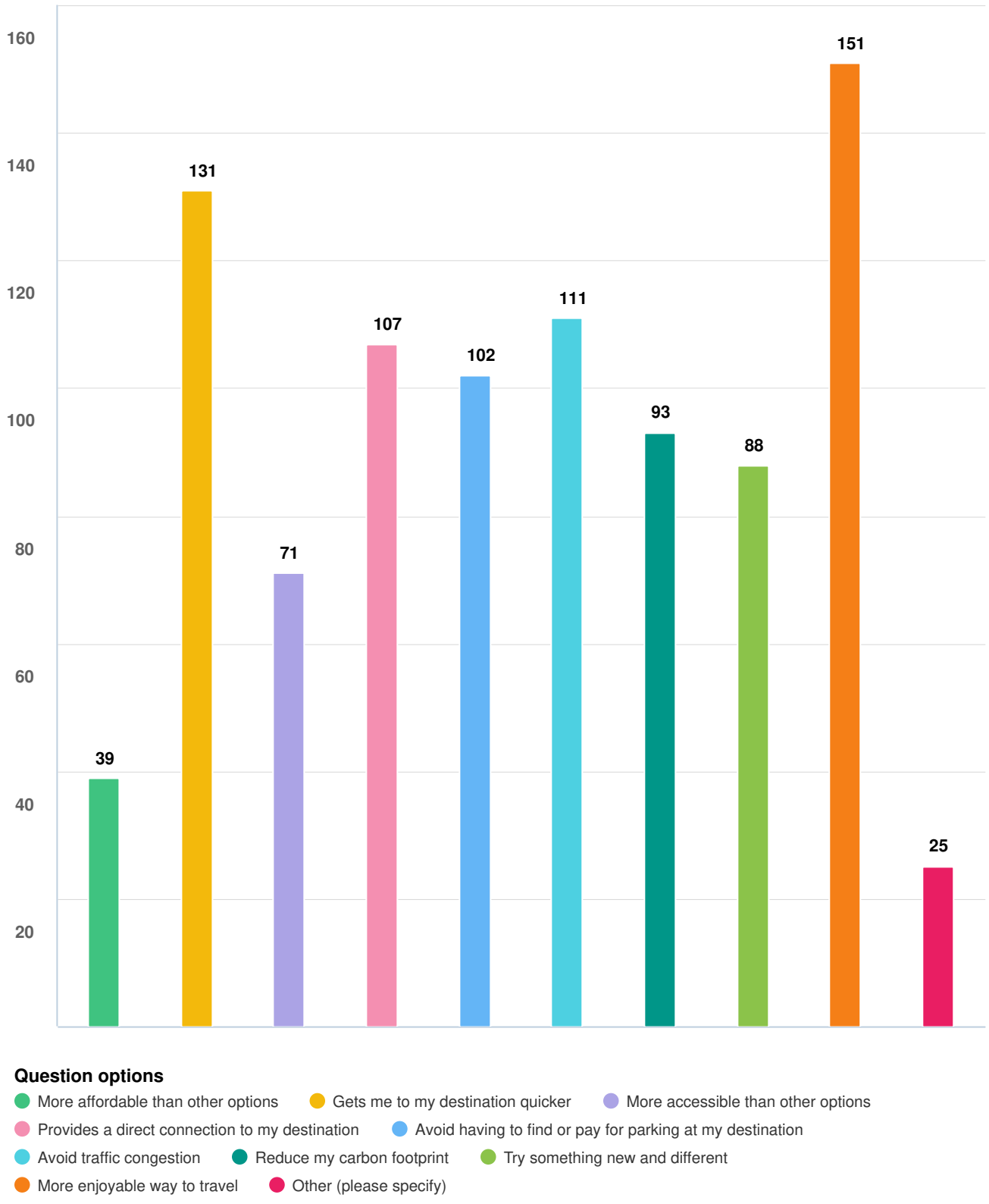
Question options

- Travel to or from work
- Work-related purposes such as attending meetings (but not commuting to or from work)
- Attending school
- Social outings (going to a restaurant, visiting friends, attending an event, etc.)
- Recreational (exercise, leisure, visiting a park)
- Shopping (groceries, clothing, household items, etc.)
- Personal business (bank, dentist, health appointments, etc.)
- Other (please specify)

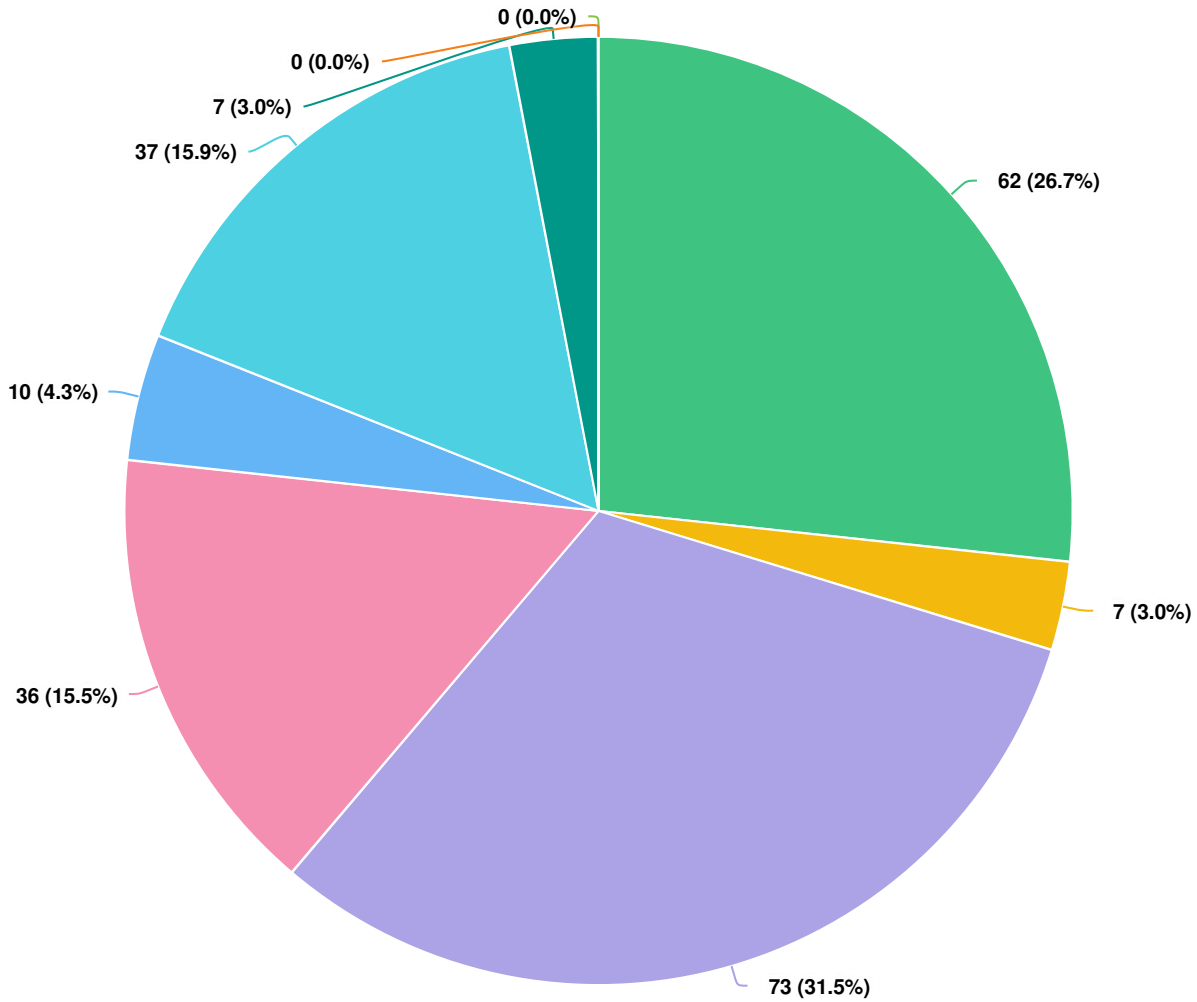
Q4 On average, how long are your e-bike rides? (Select one)



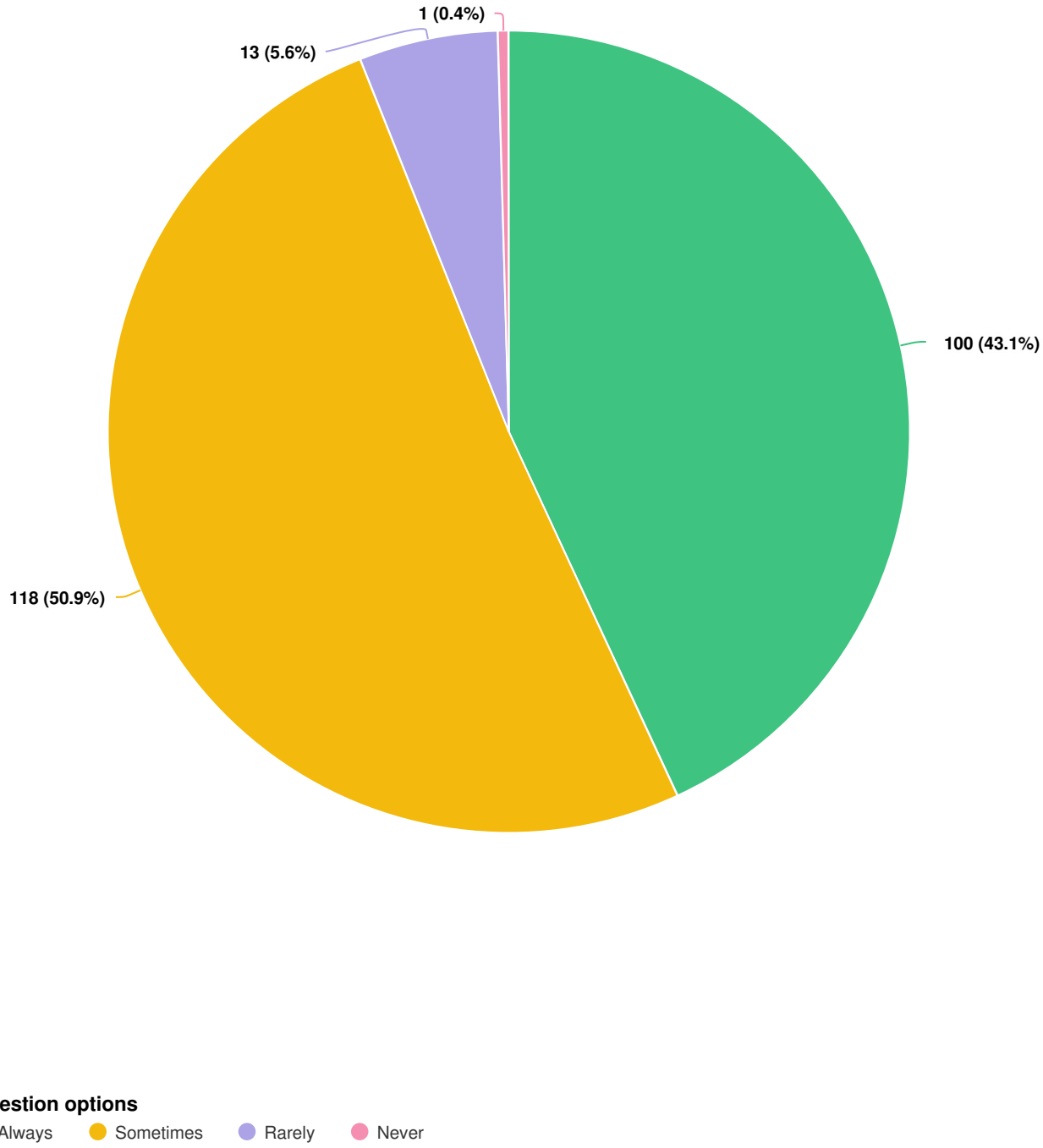
Q5 What are the main reasons you use the e-bike share program instead of another mode of transportation? (Select all that apply)



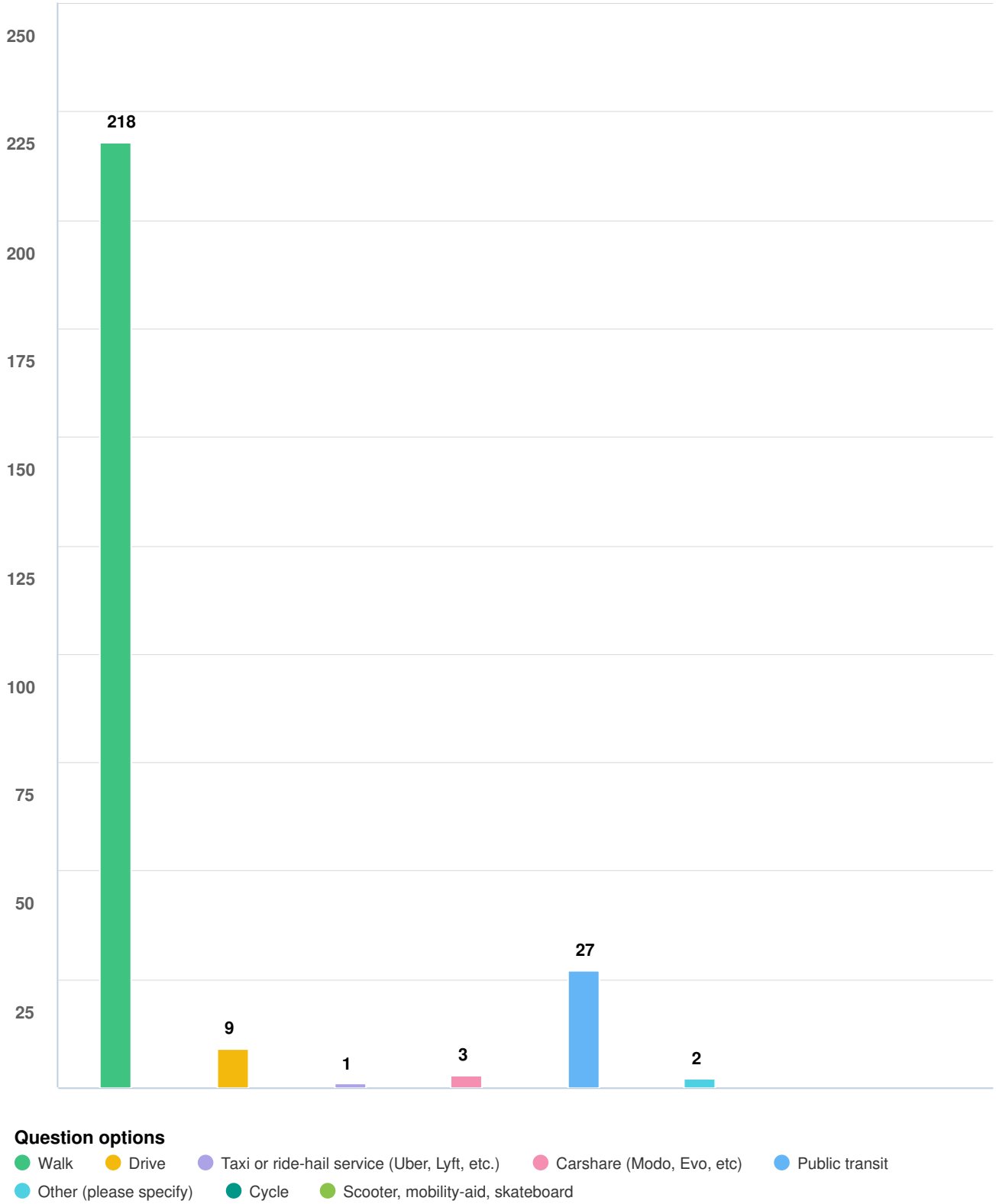
Q6 **Thinking about your last trip using the e-bike share program, how would you normally have traveled to your destination if the program wasn't available? (Select one)**



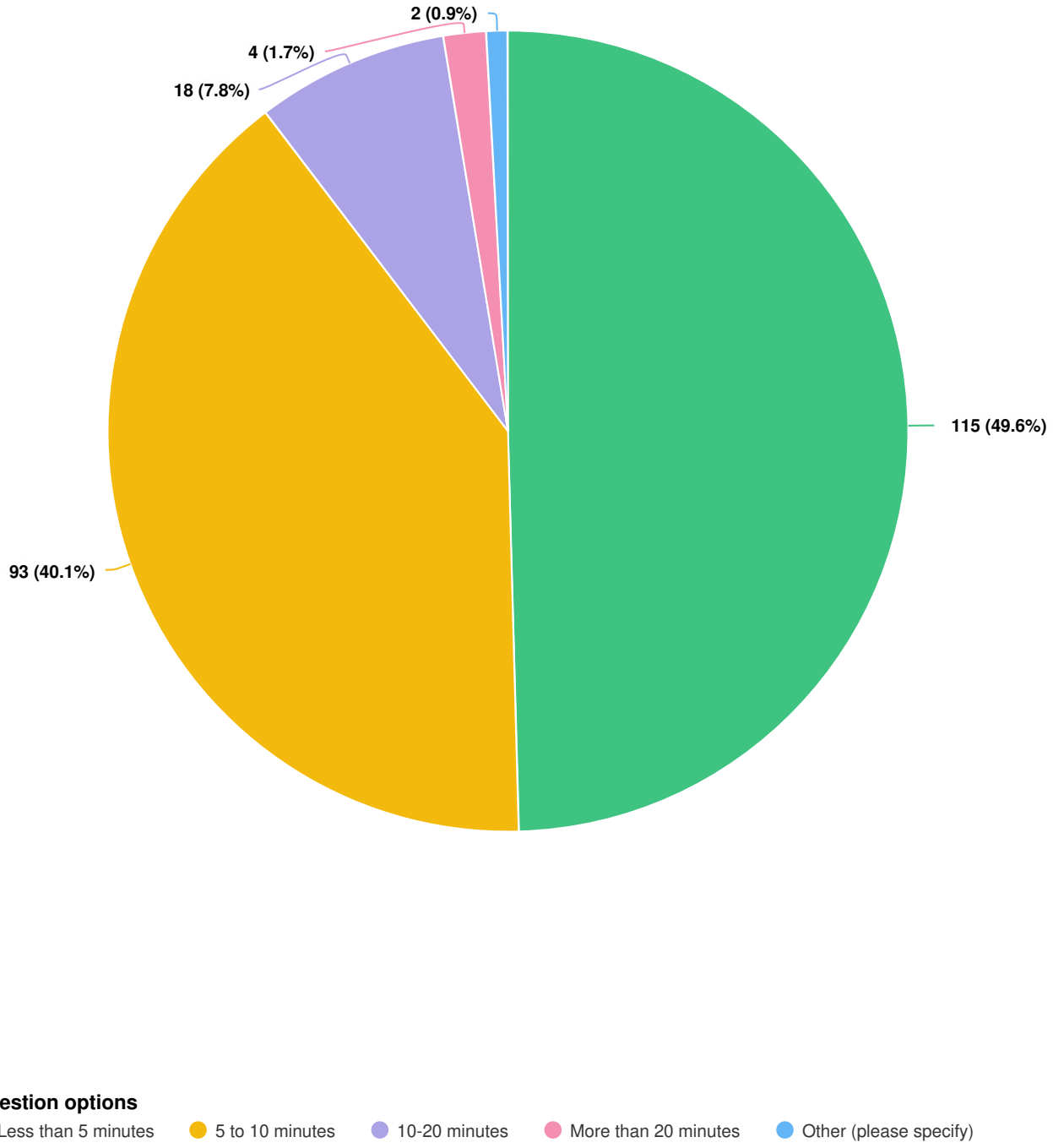
Q7 How often are you able to access an e-bike when you want to use one? (Select one)



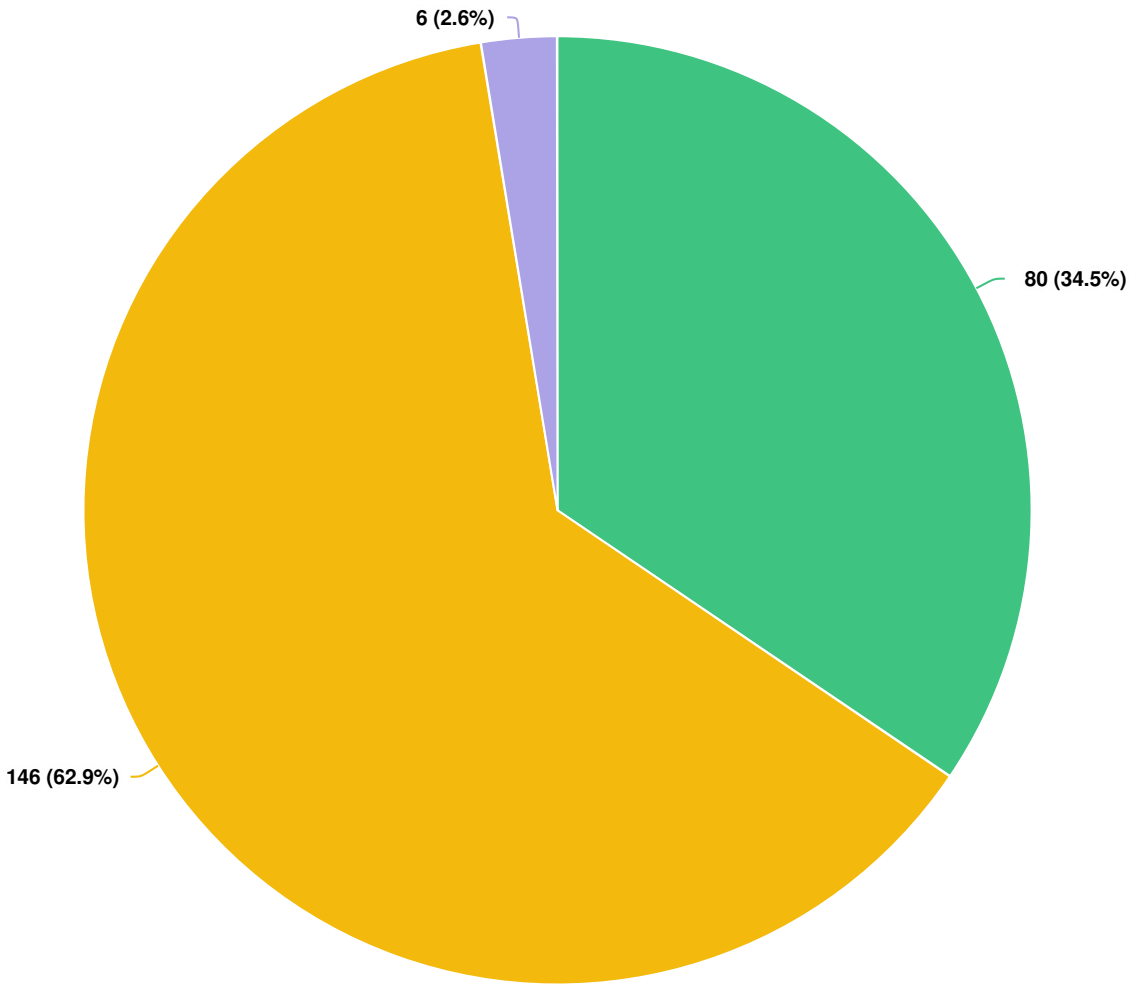
Q8 How do you usually get to an e-bike you plan to ride? (Select top 2)



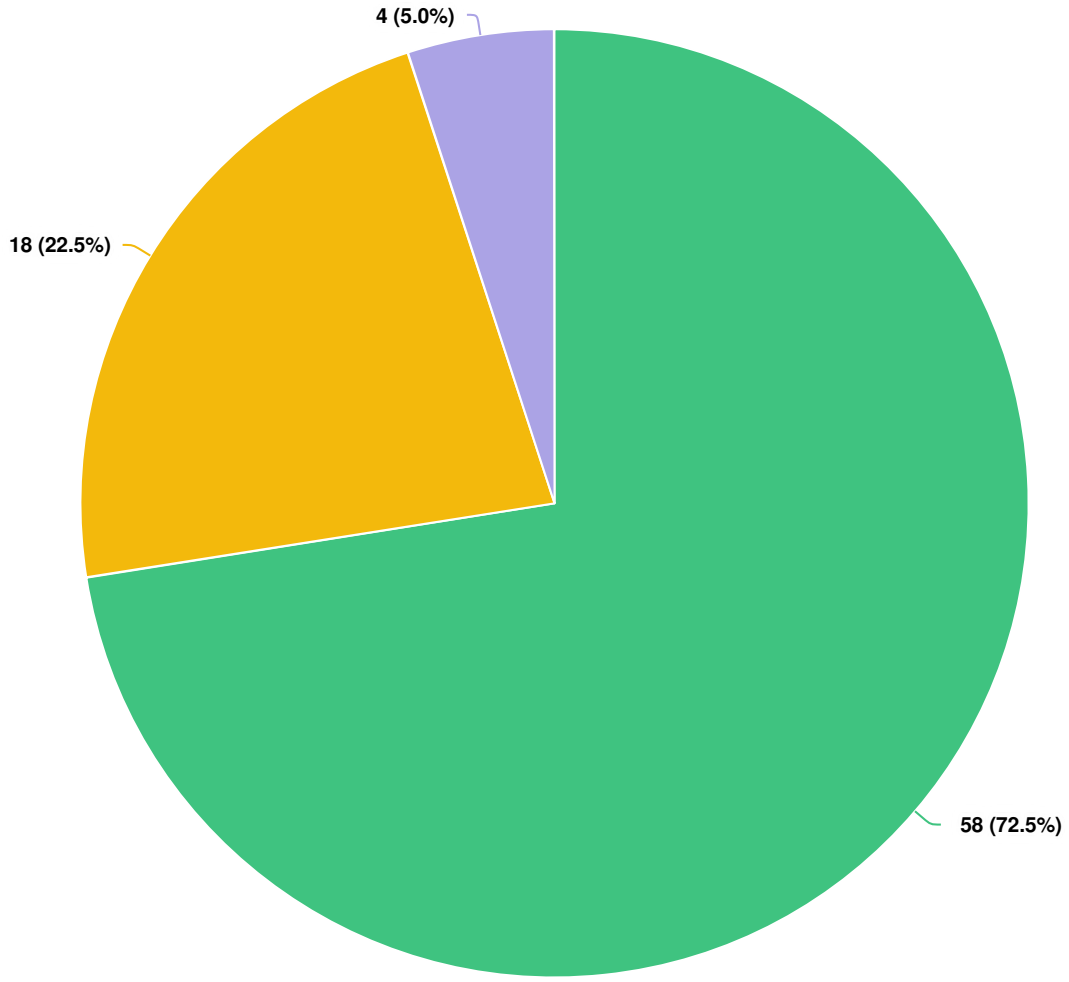
Q9 How long does it typically take you to get to an e-bike you plan to ride? (Select one)



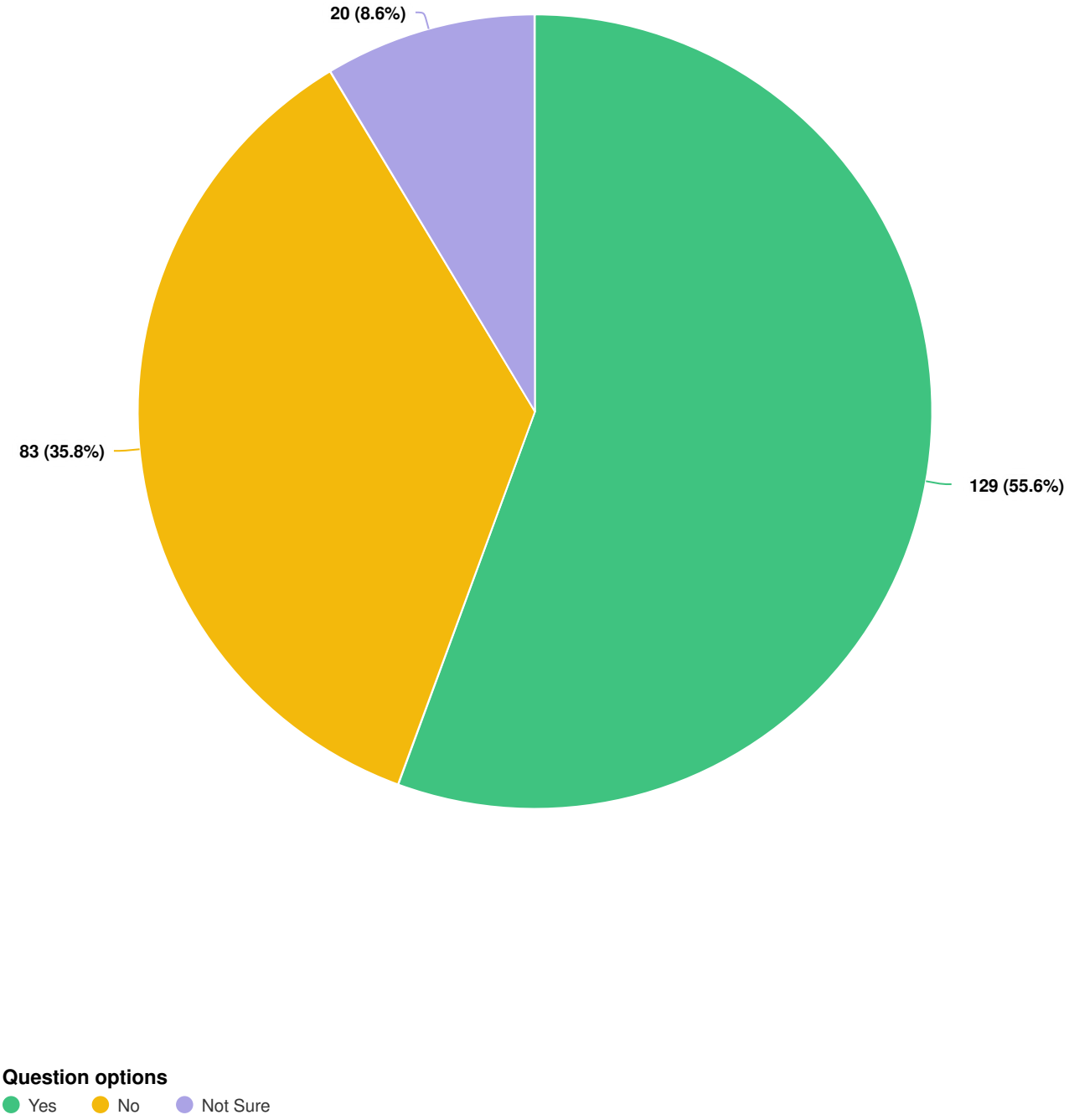
Q10 Do you use the e-bike share program to connect to transit?



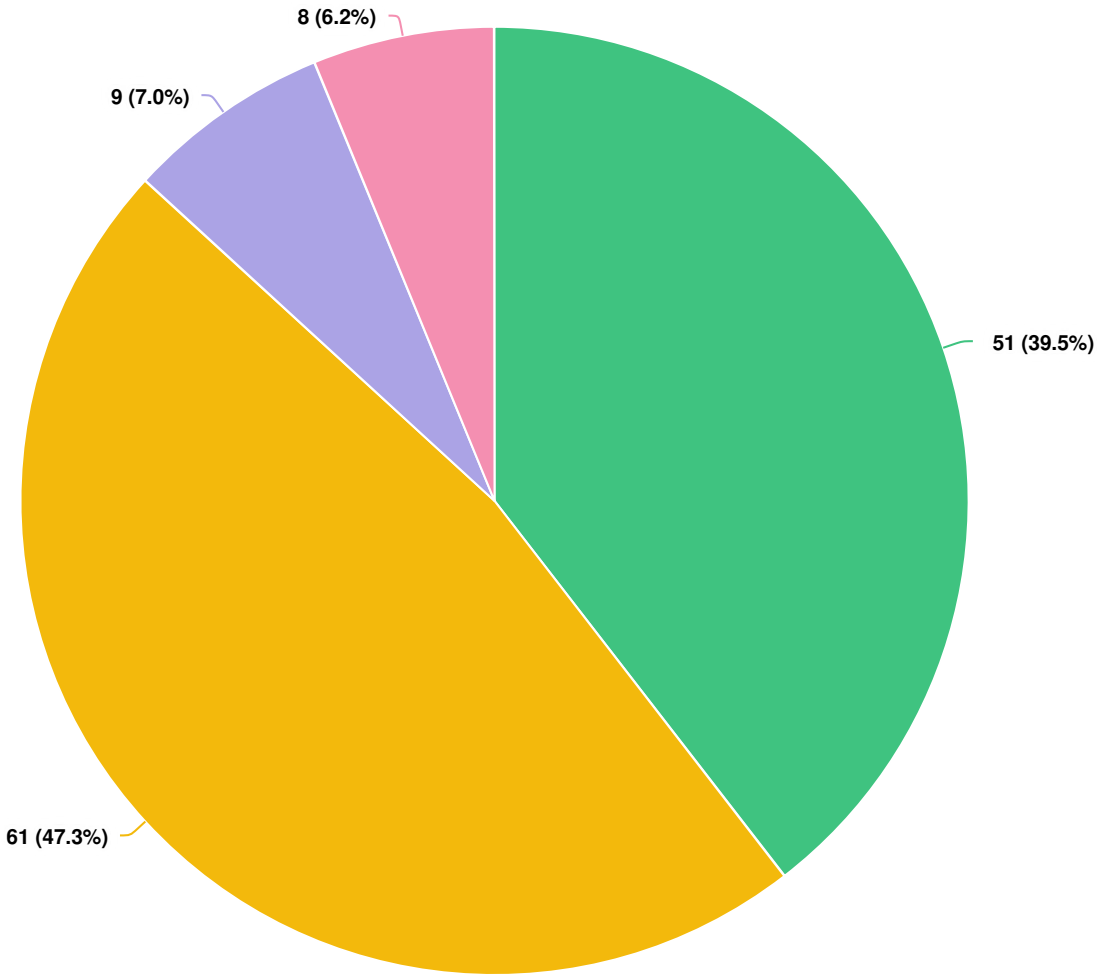
Q11 Are you more likely to use public transit when you have access to an e-bike?



Q12 **Have you reduced your amount of vehicle travel (private vehicle, ride hailing, or car-share) as a result of having access to the e-bike share program?**



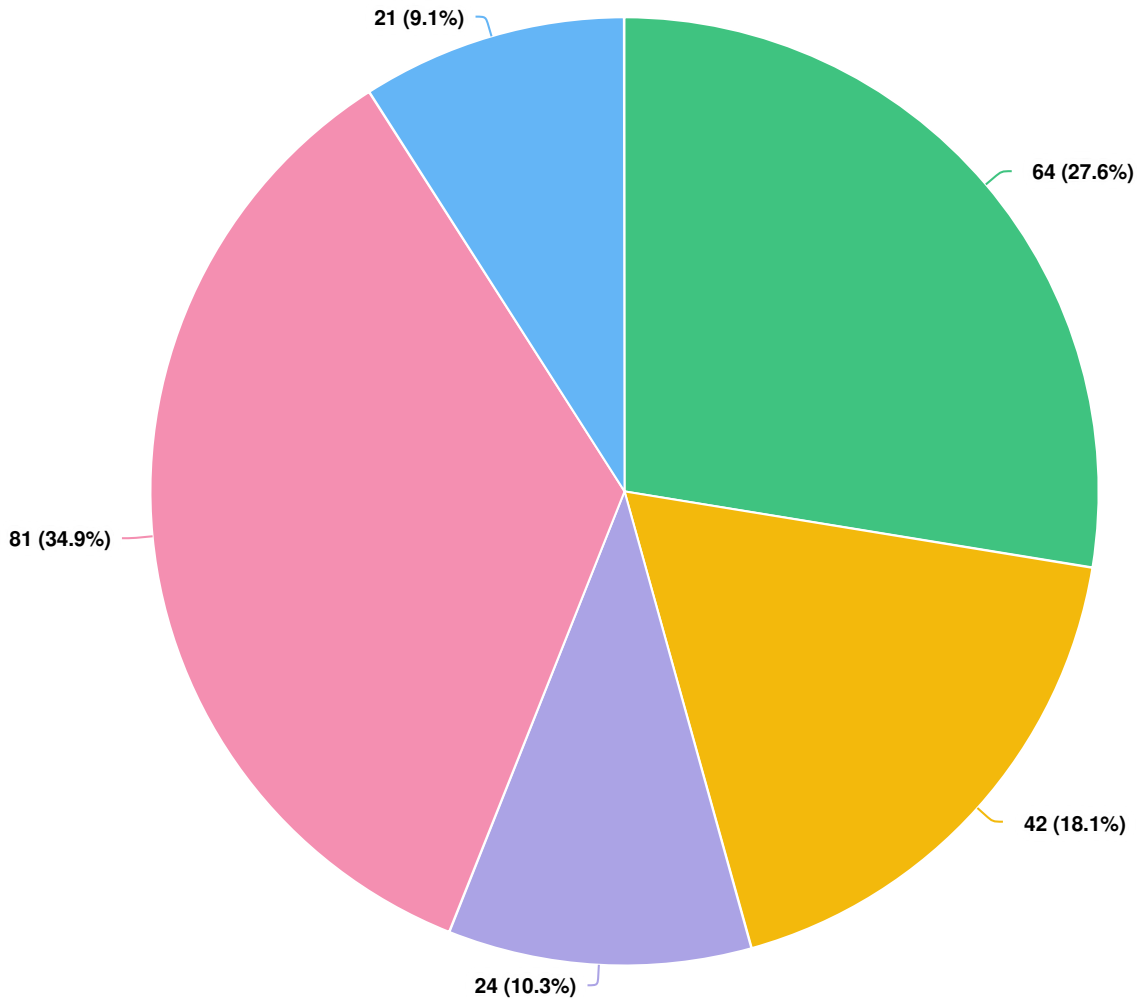
Q13 How much would you say your vehicle travel has decreased? (Select one)



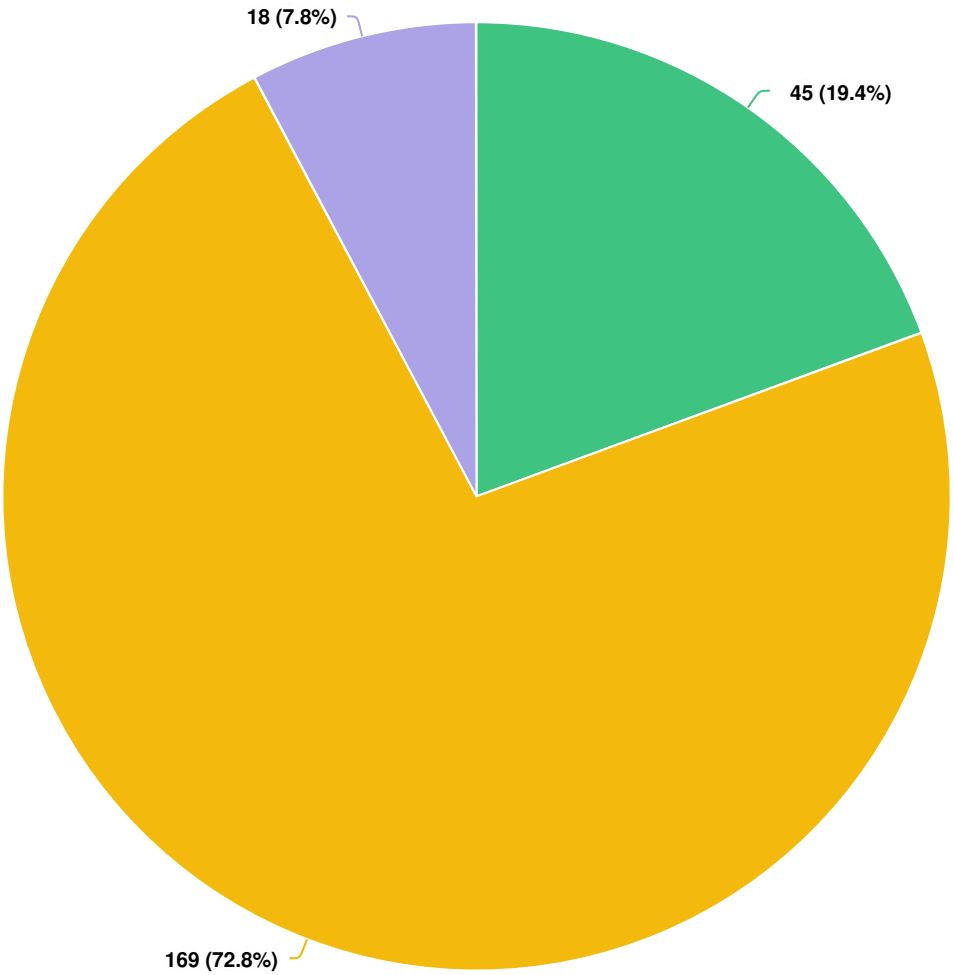
Question options

- It has decreased very little
- It has decreased a moderate amount
- I rarely drive now
- I do not drive anymore/got rid of my car

Q14 How often do you wear your own helmet when you use the e-bike share program? (Select one)



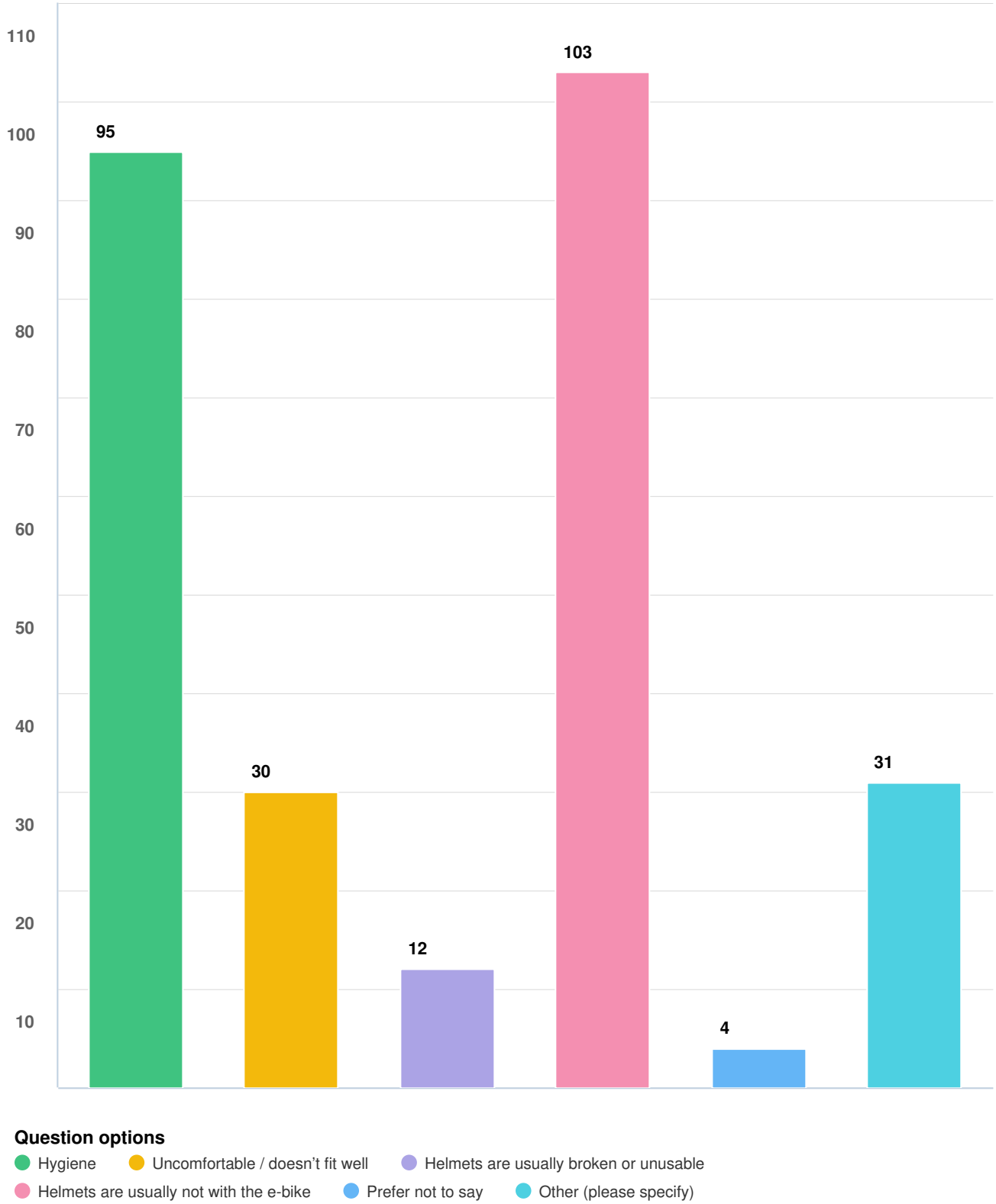
Q15 Do you wear the shared helmet provided through the e-bike share program?



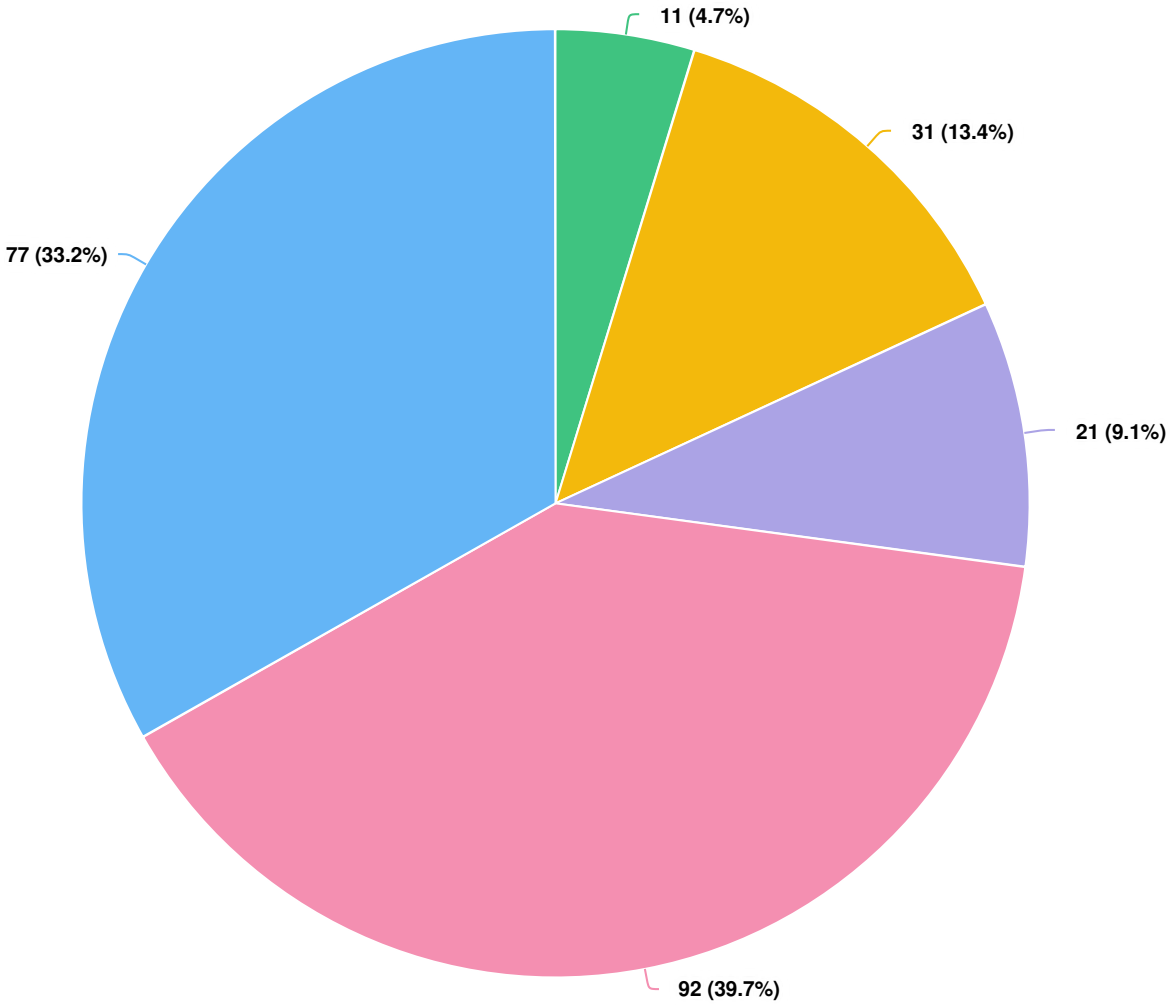
Question options

Yes No Prefer not to say

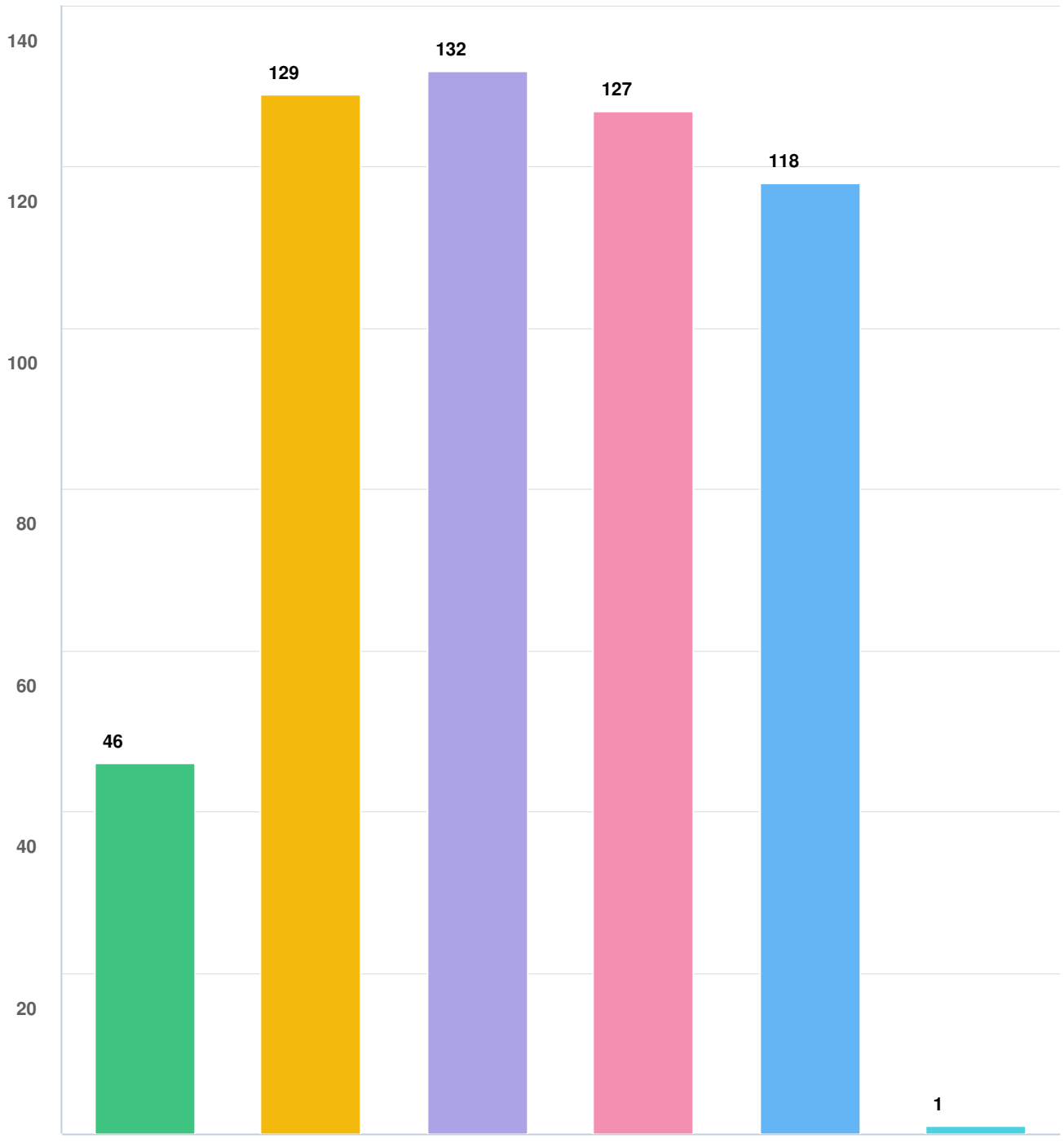
Q16 Please tell us what prevents you from using the provided helmet. (Select all that apply)



Q17 Overall, how satisfied are you with the e-bike share program on the North Shore?



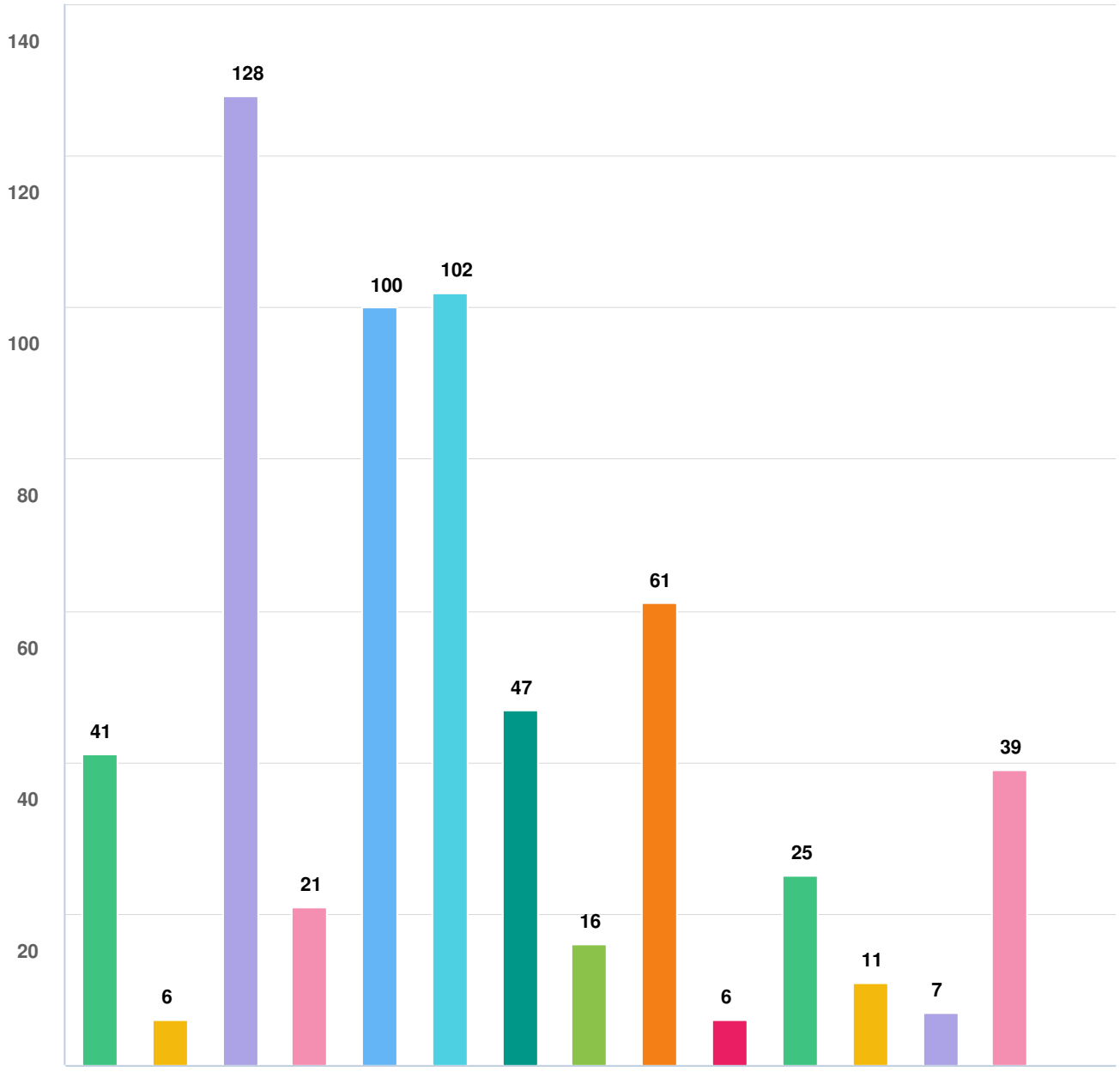
Q18 What features do you appreciate most about the e-bike share program on the North Shore? (Select all that apply)



Question options

- More affordable than other forms of transportation
- Convenient pick up and drop off locations
- The Lime app is easy to use
- Reduces my impact on the environment
- I can ride a bike without having to own one
- Prefer not to answer

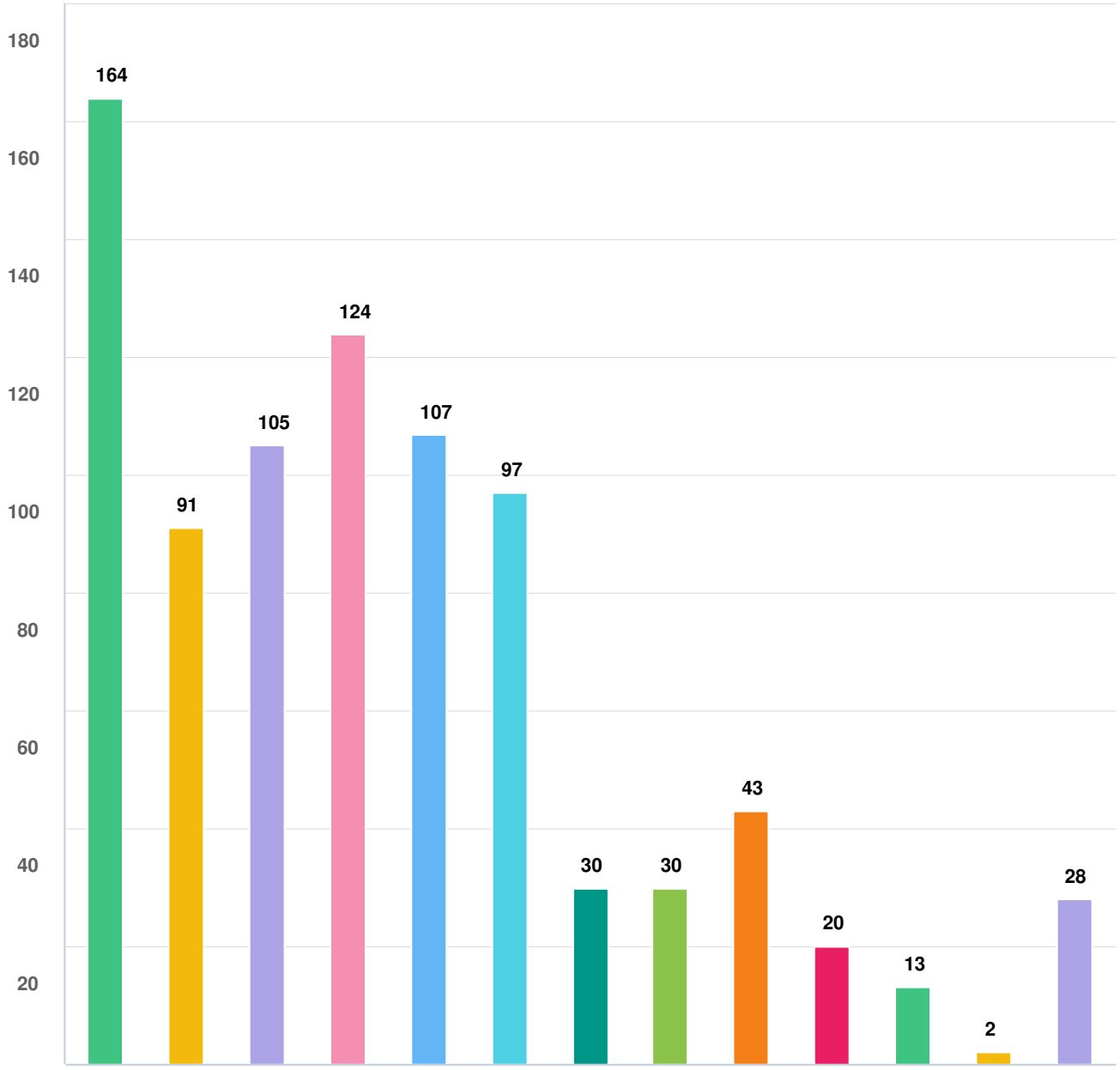
Q19 What prevents you from using the e-bike share program more often? (Select all that apply)



Question options

- I don't feel safe riding on the road with cars
- I'm not confident in my cycling skills
- It's too expensive
- The Lime app is difficult to use
- Not enough e-bikes available in my area
- Not enough e-bike designated parking (Lime Groves) near my destination
- Adverse weather that affects the road conditions for riding (too cold, too hot, rainy)
- The seats are wet from rain or snow
- There aren't enough protected bike lanes or paths on the routes I would travel
- It takes too long to get to the places I need to go
- Insufficient carrying capacity for my belongings, groceries, or goods
- The roads are too steep
- Prefer not to answer
- Other (please specify)
- Health limitations

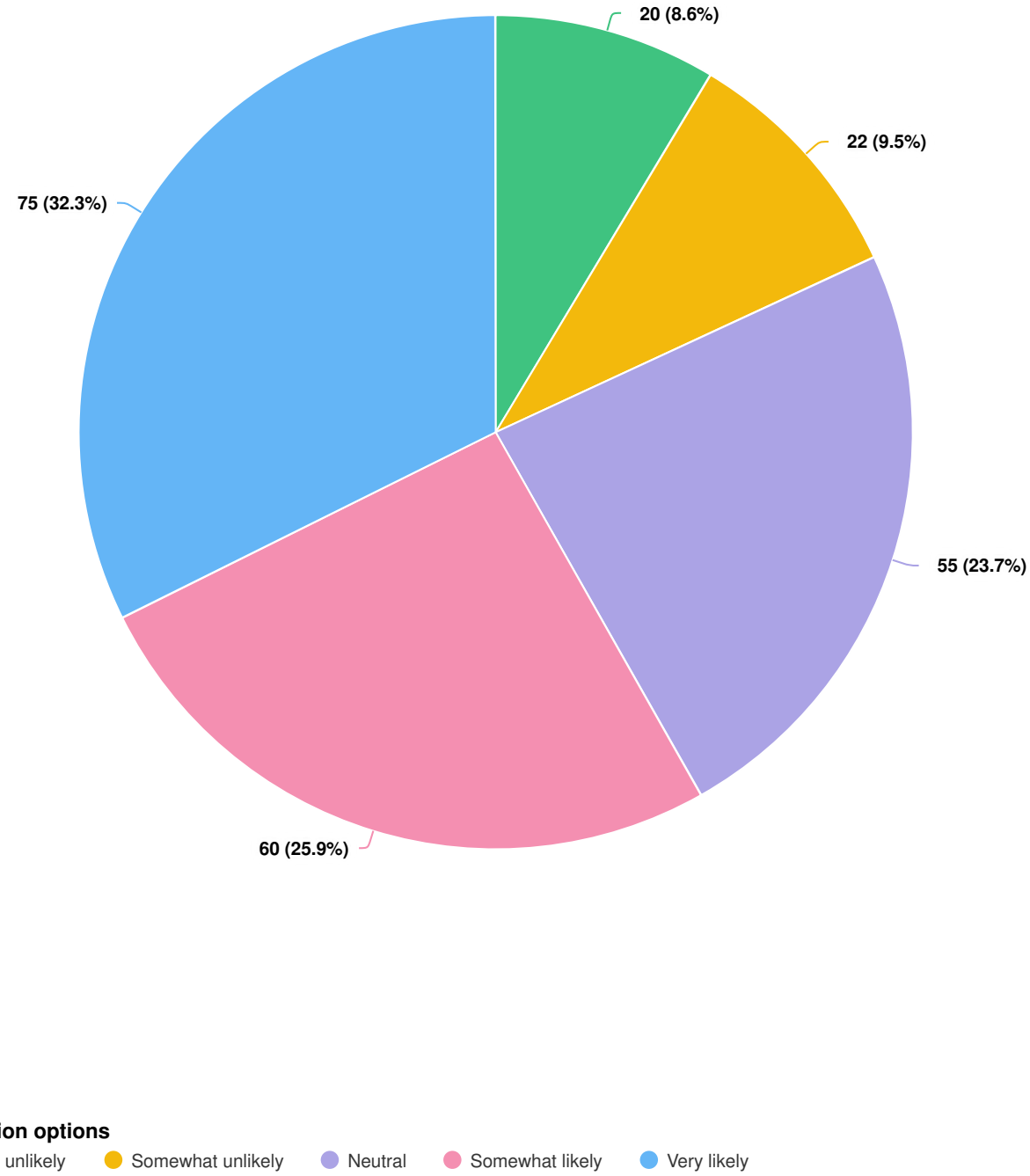
Q20 What would encourage you to take more e-bike trips? (Select all that apply)



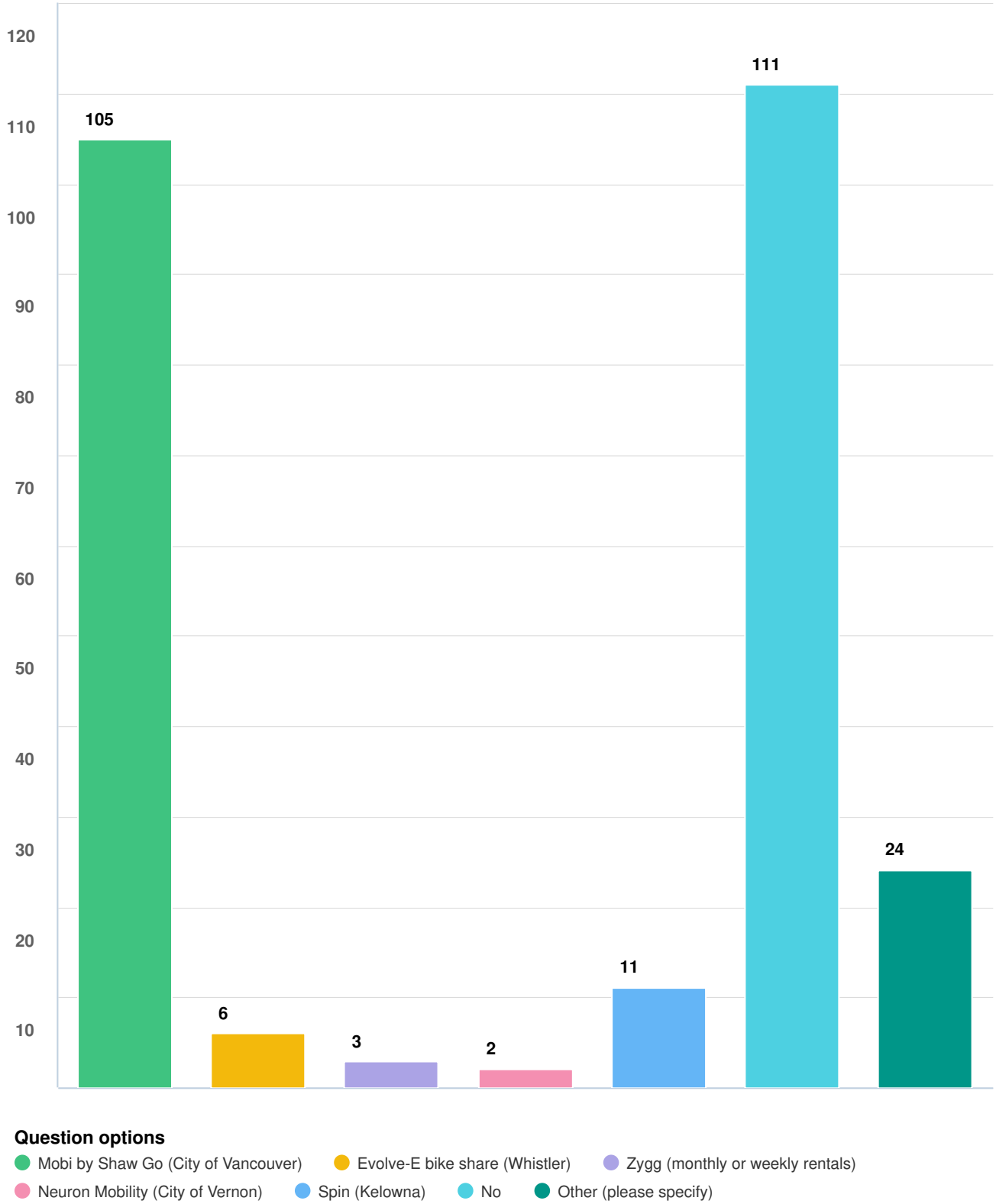
Question options

- Lower pricing
- Discounts for frequent riders
- Greater number of e-bikes available
- More designated parking areas (Lime Groves)
- Expansion of the service area beyond the North Shore
- Improved cycling infrastructure (more protected bike lanes, etc.)
- More information about bike routes on the North Shore
- Improved connection to the transit network for part of the trip
- Partnership programs with local businesses that offer incentives for bike use
- Lime app easier to use
- Lower the minimum age of riding (the current minimum age of riding a Lime e-bike is 16 years old)
- Prefer not to answer
- Other (please specify)

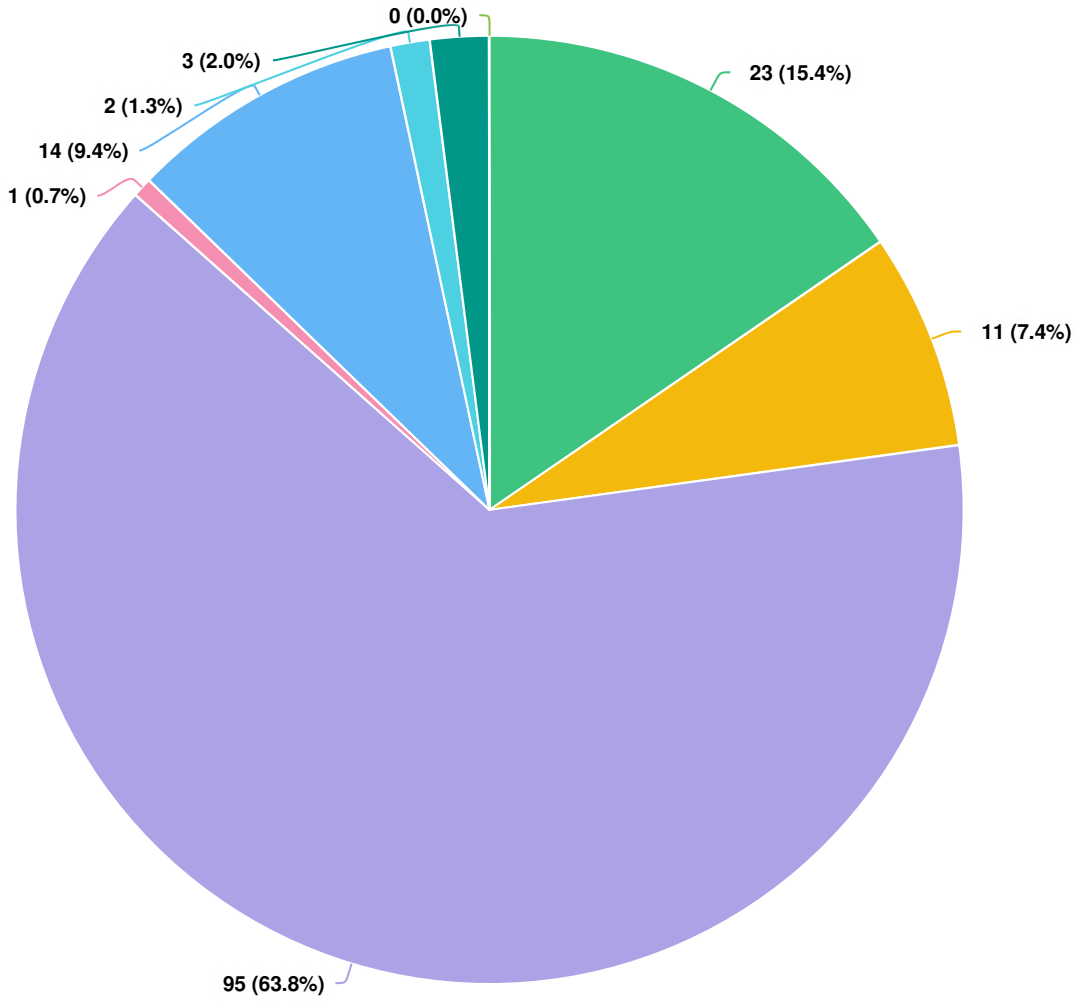
Q21 | **How likely are you to use the e-bike share program if it offered e-Cargo Bikes with greater carrying capacity (ie. to transport groceries or children)**



Q22 Have you tried other e-bike share programs other than Lime? (Select all that apply)



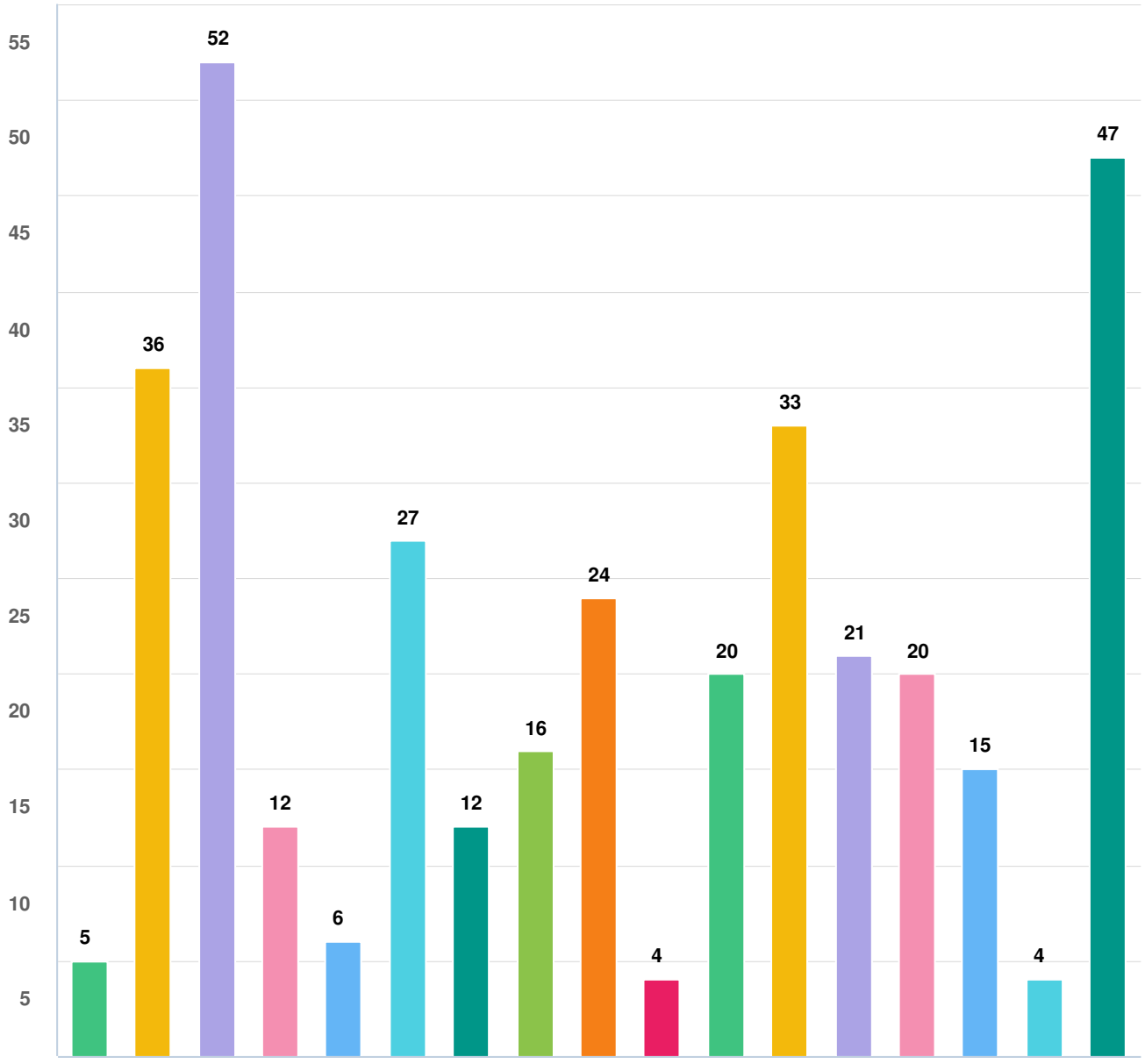
Q23 How do you typically travel to your destinations on the North Shore? (Select one)



Question options

Walk · Cycle · Drive · Taxi or ride-hail service (Uber, Lyft, etc.) · Public transit · Scooter, mobility-aid, skateboard · Other (please specify) · Carshare (Modo, Evo, etc)

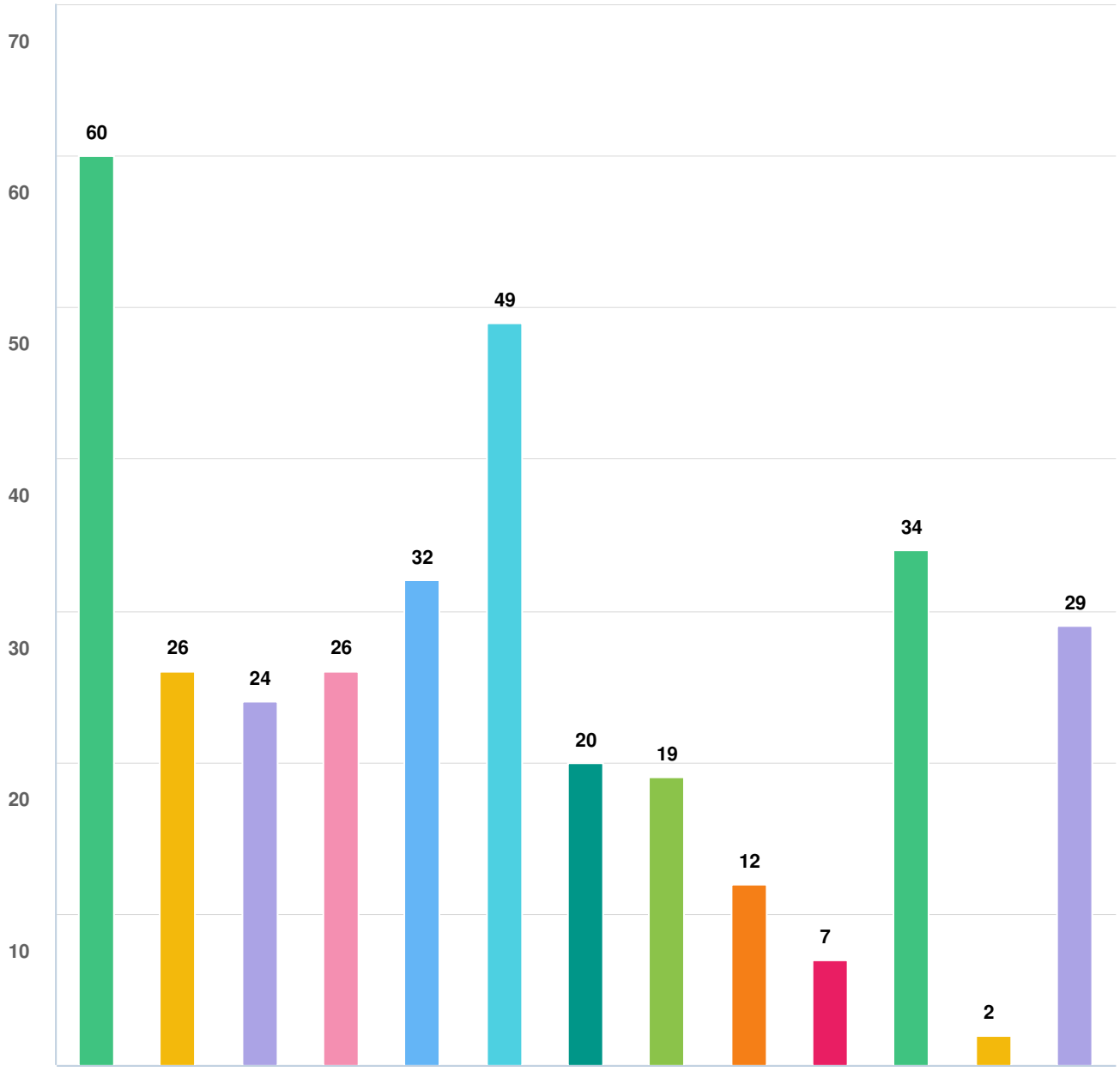
Q24 What prevents you from using the e-bike share program on the North Shore? (Select all that apply)



Question options

- I didn't know it existed
- I don't feel safe riding on the road with cars
- It's too expensive
- I'm not confident in my cycling skills
- The Lime app is difficult to use
- Adverse weather that affects the road conditions for riding (too cold, too hot, rain)
- The seats are wet from rain or snow
- Not enough e-bike designated parking (Lime Groves) near my destination
- There aren't enough protected bike lanes or paths on the routes I would travel
- Health limitations
- It takes too long to get to the places I need to go
- Insufficient carrying capacity for my belongings, groceries, or goods
- The roads are too steep
- I have no interest in the e-bike share program
- Not enough e-bikes available in my area
- Prefer not to answer
- Other (please specify)

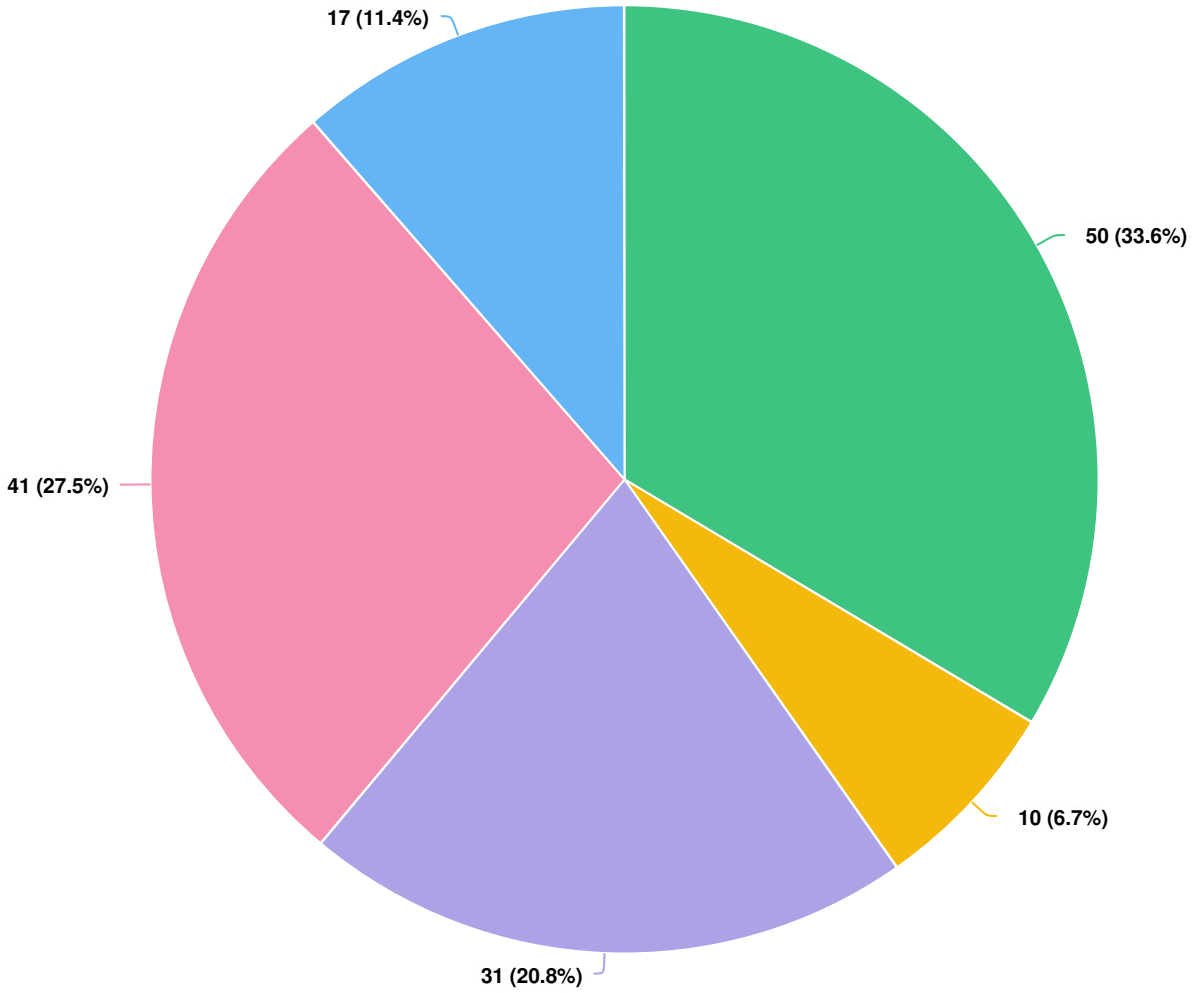
Q25 What would encourage you to try the e-bike share program on the North Shore? (Select all that apply)



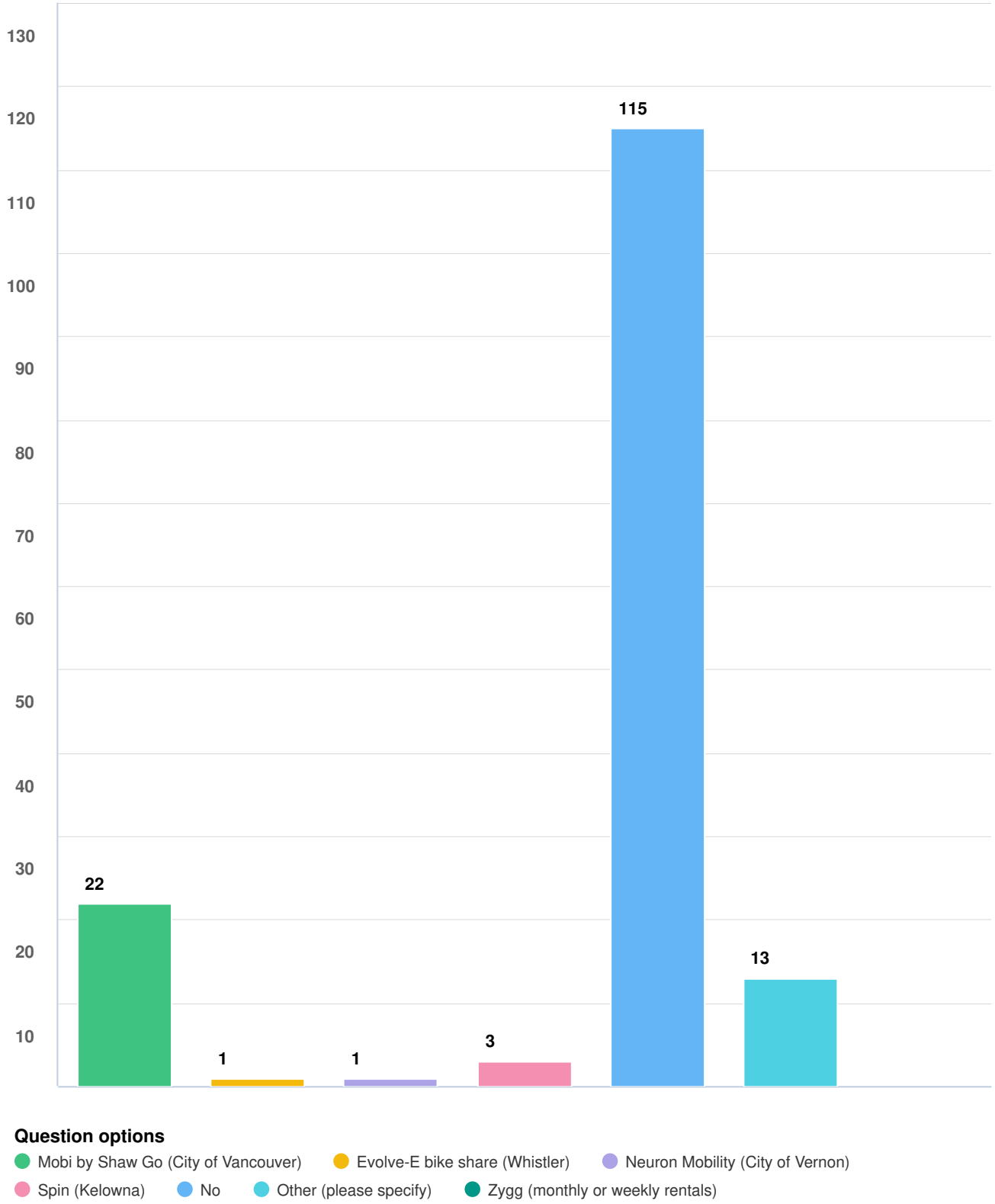
Question options

- Lower pricing
- Discounts for frequent riders
- Greater number of e-bikes available
- More designated parking areas (Lime Groves)
- Expansion of the service area beyond the North Shore
- Improved cycling infrastructure (more protected bike lanes, etc.)
- More information about bike routes on the North Shore
- Improved connection to the transit network for part of the trip
- Partnership programs with local businesses that offer incentives for bike use
- Lower the minimum age of riding (the current minimum age of riding a Lime e-bike is 16 years old)
- I have no interest in the e-bike share program
- Prefer not to answer
- Other (please specify)

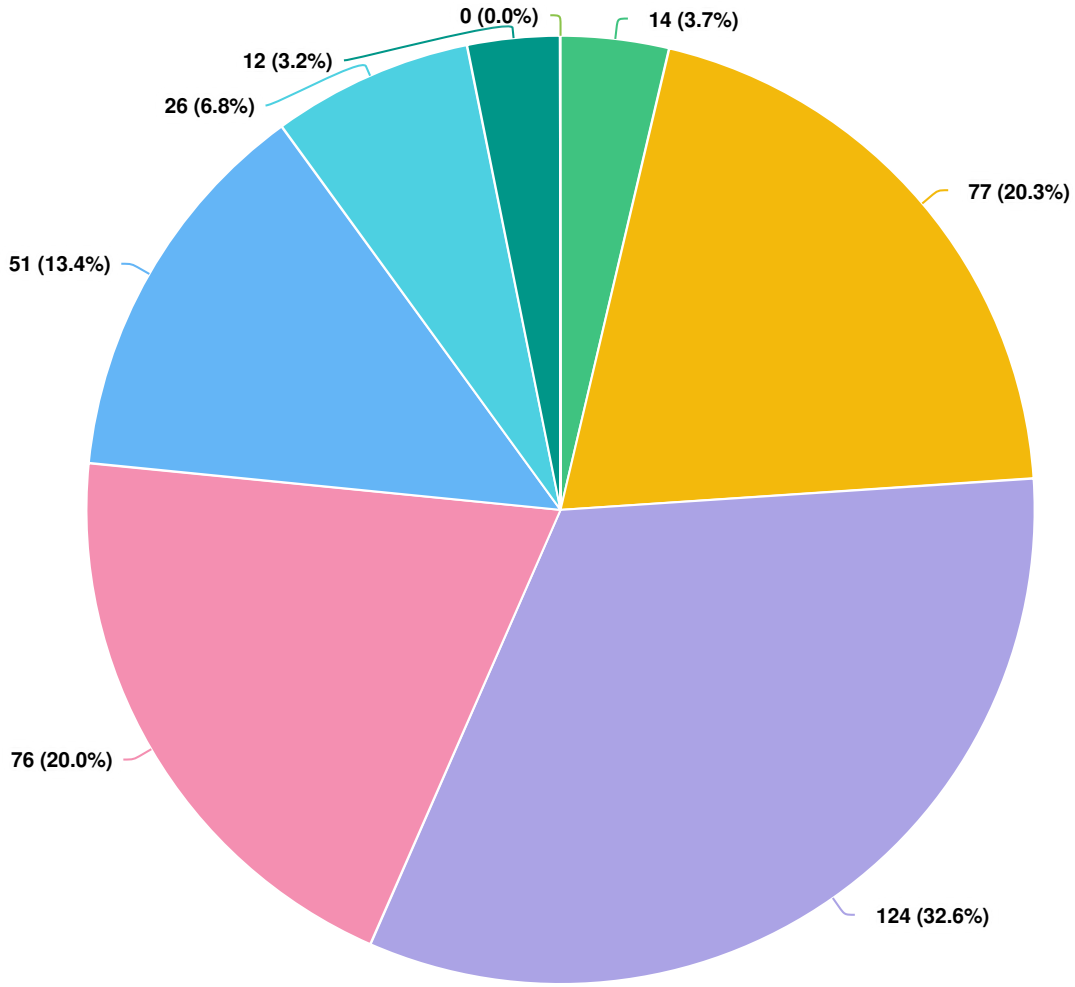
Q26 How likely are you to use the e-bike share program if it offered e-Cargo Bikes with greater carrying capacity (ie. to transport groceries or children)



Q27 Have you tried other e-bike share programs other than Lime? (Select all that apply)



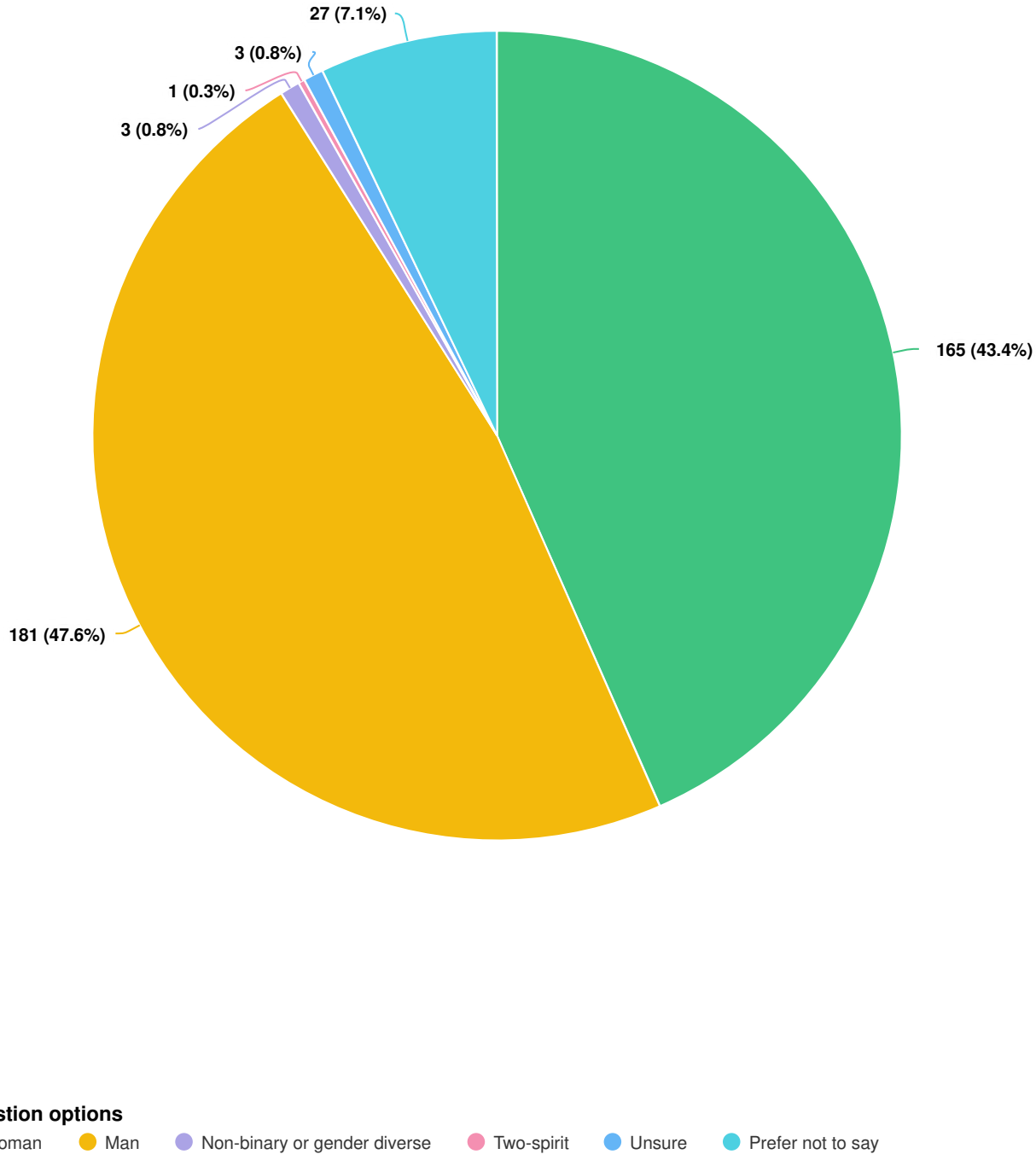
Q28 What is your age range?



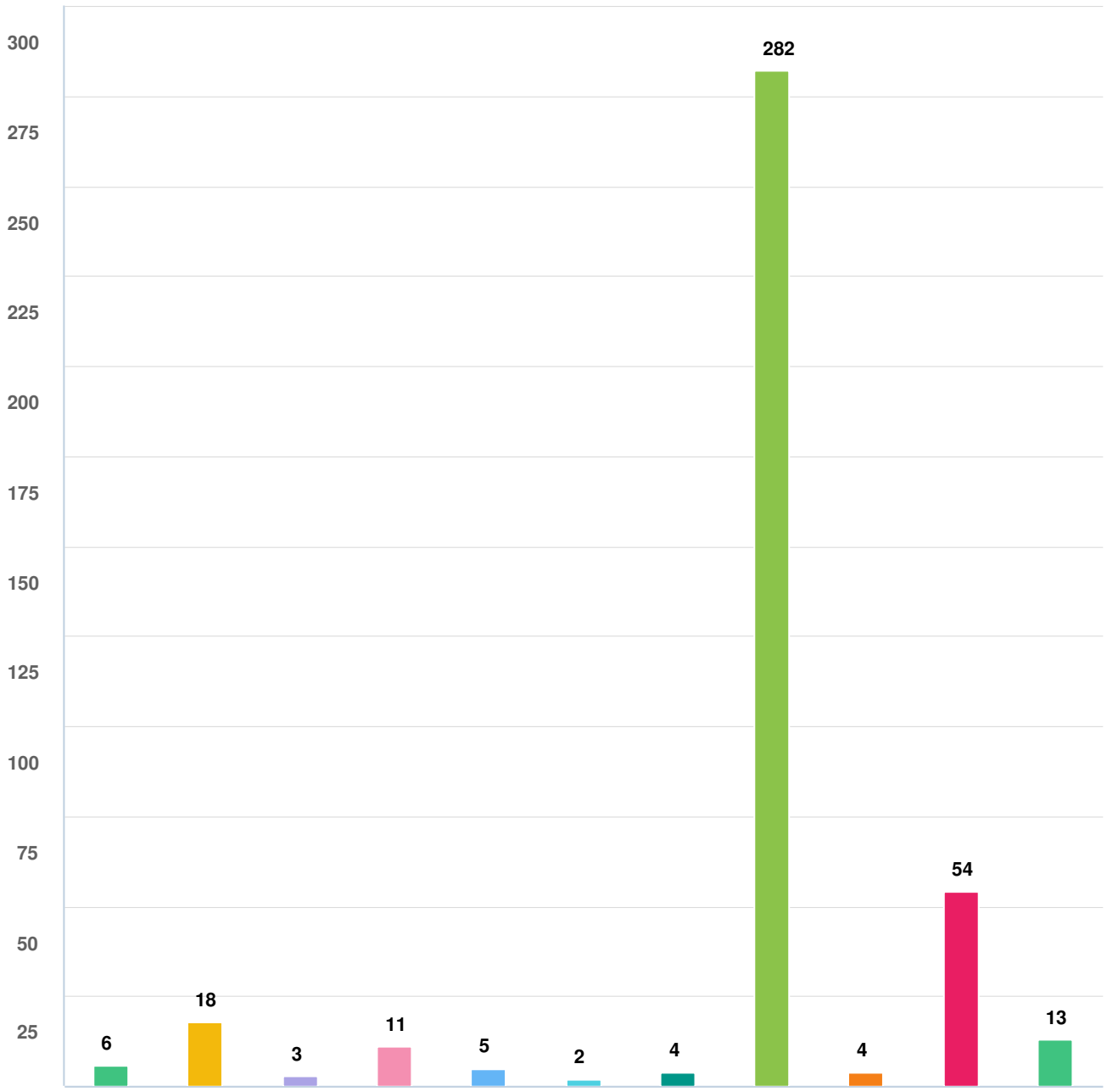
Question options

18 – 24 25 – 34 35 – 44 45 – 54 55 – 64 65 and over Prefer not to say
17 and under

Q29 What is your gender?



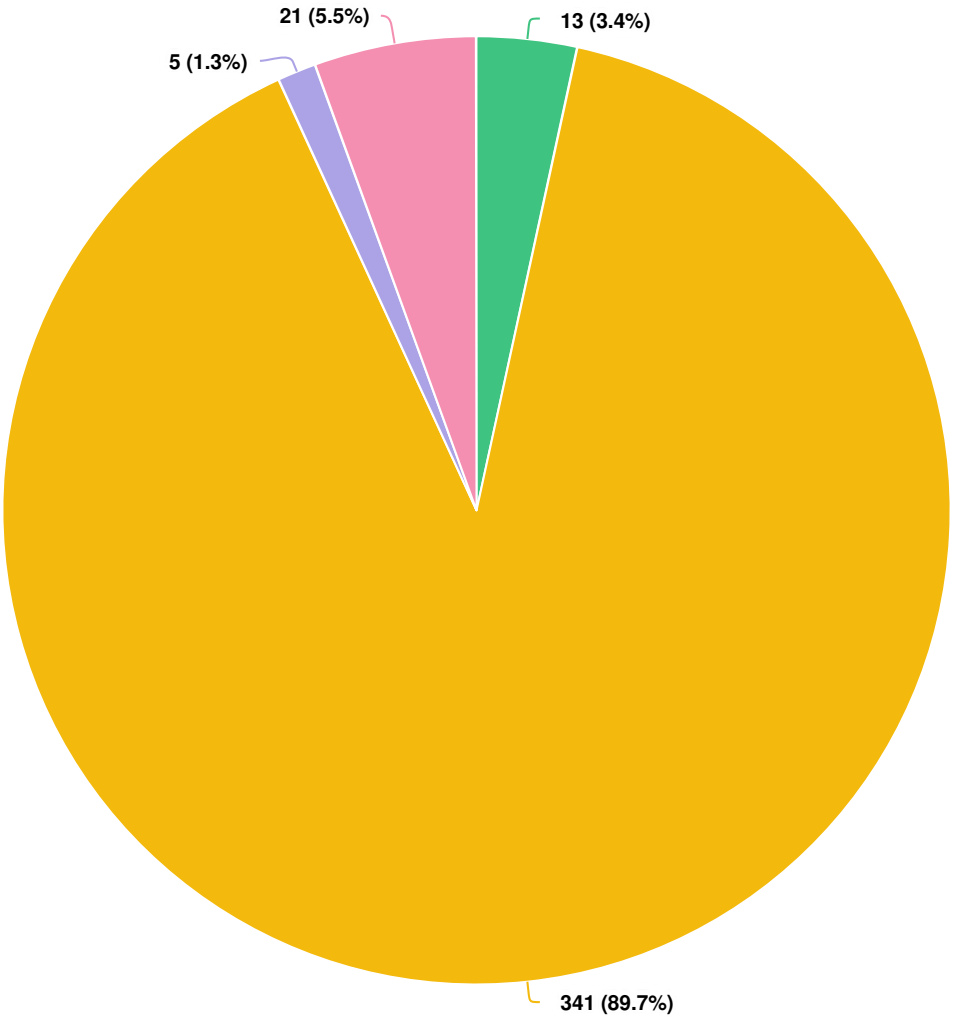
Q30 What do you consider your main ethnic origin or that of your ancestors? (Select all that apply)



Question options

- Indigenous (ie First Nations, Inuit, Metis)
- East Asian (ie. Chinese, Korean, Japanese)
- South East Asian (ie. Vietnamese, Cambodian, Malaysian, Filipino)
- South Asian (ie. Indian, Pakistani, Sri Lankan, Bangladeshi)
- West Asian (ie. Iranian, Afghan, Turkish)
- Black (African, Caribbean/Latin America, Canadian/American)
- Hispanic or Latin American
- Middle Eastern / North African (ie. Arab, Persian, Kurdish)
- White (ie. European – English, Italian, Ukrainian, French)
- Don't know
- Prefer not to say
- Other (please specify)

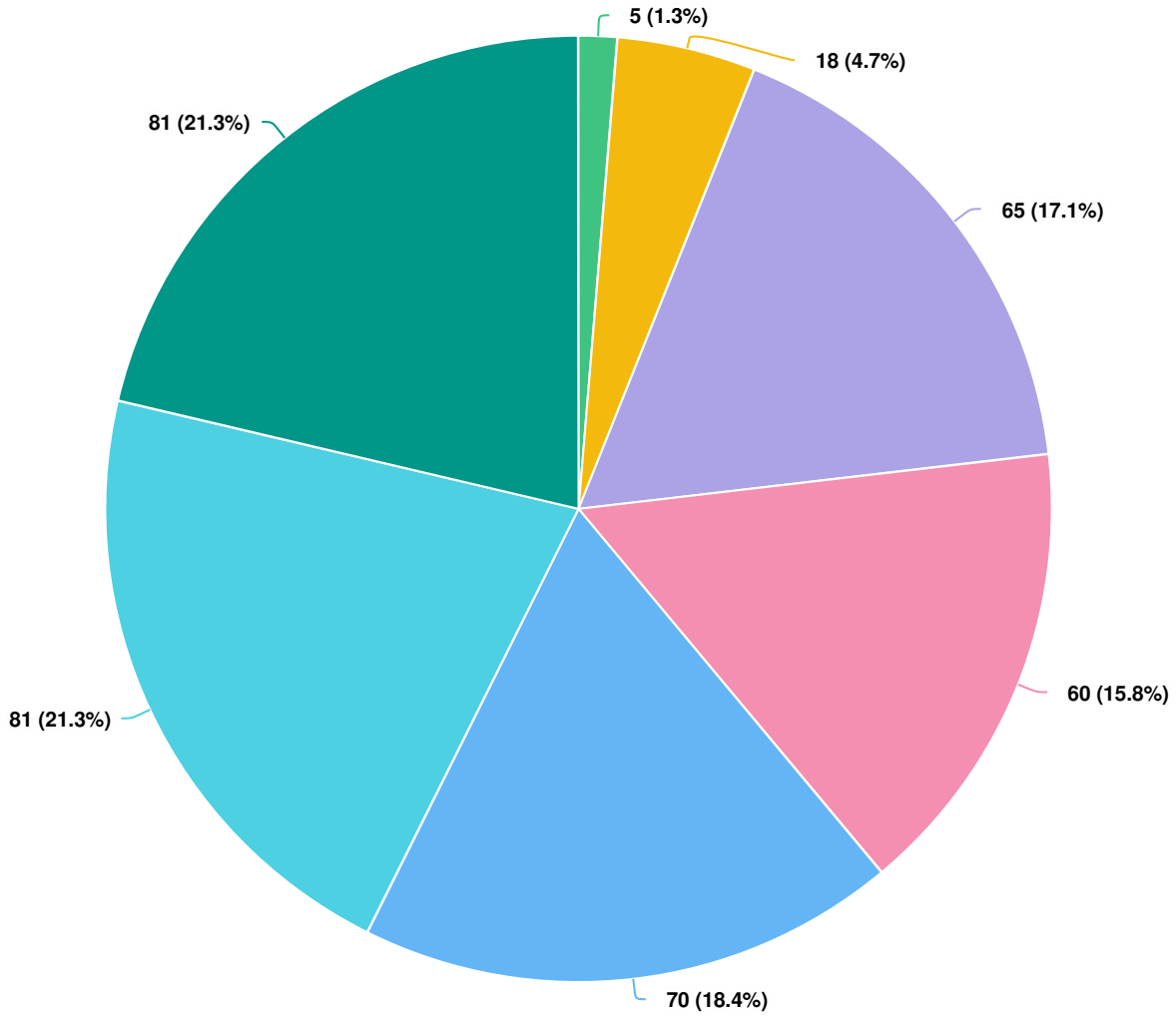
Q31 Do you identify as a person with a disability?



Question options

Yes No Unsure Prefer not to say

Q32 What is your total household income per year before taxes?



Question options

Under $25,000 | $25,000 to under $50,000 | $50,000 to under $100,000 | $100,000 to under $150,000 | $150,000 to under $200,000 | $200,000 or more | Prefer not to say

Q33 How did you hear about this survey? (Select all that apply)