CPBS
Center for Pedestrian and Bicyclist Safety

A Tier-1 University Transportation Center

Bike Lending in North America: Understanding Business Models, User Acceptance, Social Equity, and Public Safety

July 2024

A Report From the
Center for Pedestrian and Bicyclist Safety

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About the Center for Pedestrian and Bicyclist Safety (CPBS)

The Center for Pedestrian and Bicyclist Safety (CPBS) is a consortium of universities committed to eliminating pedestrian and bicyclist fatalities and injuries through cutting-edge research, workforce development, technology transfer, and education. Consortium members include: The University of New Mexico; San Diego State University; The University of California Berkeley; The University of Tennessee Knoxville; and The University of Wisconsin Milwaukee. More information can be found at: https://pedbikesafety.org

Disclaimer

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16. Abstract

Bike lending allows participants to borrow a bike similar to borrowing a book from a library. However, there is a lack of documented literature on this strategy. This research attempts to understand and characterize the existence of bike lending programs in North America through a literature review, census of bike lending programs (n=55), expert interviews (n=24), a survey of bike lending operators (n=31), and two focus groups with bike lending participants (n=12) conducted between January 2024 through April 2024. The census identified and characterized bike lending programs in North America, and it provided a basis for the remaining methods. Information gathered from the experts was augmented through a survey of operators, allowing for characteristics of bike lending programs to be quantified, such as operations, bike safety, challenges and opportunities, and resources needed to support bike lending and bike safety. The focus groups were conducted to gain insight on the participant perspective of bike lending. The findings across this multi-method approach suggest that bike lending programs are seeking more sustainable funding sources to support long term operations of bike lending programs. Additionally, both bike lending programs and users would like to see more cycling infrastructure to encourage participation and promote safe cycling.

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
		NOTE: volumes greater than 1000 L shall be shown in m^3		
		MASS		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
		TEMPERATURE (exact degrees)		
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C
		ILLUMINATION		
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	$candela/m^2$	cd/m^2
		FORCE and PRESSURE or STRESS		
lbf	poundforce	4.45	newtons	N
lbf/in^2	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
		TEMPERATURE (exact degrees)		
°C	Celsius	1.8C+32	Fahrenheit	°F
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/m^2	$candela/m^2$	0.2919	foot-Lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in^2

Bike Lending in North America: Understanding Business Models, User Acceptance, Social Equity, and Public Safety

A Center for Pedestrian and Bicyclist Safety Research Report

July 2024

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Acronyms, Abbreviations, and Symbols

Electric bicycle	e-bike
U.S.	United States

Abstract

Bike lending allows participants to borrow a bike similar to borrowing a book from a library. However, there is a lack of understanding on this strategy. This research attempts to understand and characterize the existence of bike lending programs in North America through a literature review, census of bike lending programs (n=55), expert interviews (n=24), a survey of bike lending operators (n=31), and two focus groups with bike lending participants (n=12) conducted between January 2024 through April 2024. The goal of the bike lending census was to identify and characterize all the bike lending programs in North America. This provided a basis for the remaining methods, to support identification of experts for interviews, dissemination of the survey for operators, and recruitment channels for the focus groups. The expert interviews included professionals who work both directly with bike lending programs, as well as others who work in adjacent spaces, or have worked in bike lending in the past. Information gathered from the experts was further augmented through a survey of operators which allowed for quantification of various aspects of bike lending, including operational characteristics, bike safety, challenges and opportunities, and resources needed to support bike lending and bike safety. The focus groups were conducted to gain insight on the participant perspective of bike lending. The findings across all methods suggest that bike lending programs are seeking more sustainable funding sources to support long term operations of bike lending programs. Additionally, both operators and participants would like to see more supportive cycling infrastructure to encourage participation in bike lending programs and to promote safe cycling.

Executive Summary

This research presents a comprehensive overview of the current state of bike lending in the U.S. and Canada. Through a multi-method approach (January 2024 through April 2024), various bike lending models were identified, characterized, and examined to gather generalized insights on the role of bike lending. The research team conducted a census of bike lending programs to gain an initial understanding of bike lending. The census also provided the research team with a list of bike lending programs to reference for the various engagements with experts, operators, and participants. The research team conducted expert interviews, occurring from January through March 2024, with 24 individuals to gain insights on bike lending operations, bike safety, bike infrastructure, and the support needed to sustain bike lending programs. The experts represented various bike lending programs, and other organizations that have worked with bike lending programs in the past, or work in positions adjacent to bike lending. Key findings from the expert interviews suggest that bike lending programs exist with various operational models and are typically designed to meet the needs of the communities they serve. However, bike lending programs often face challenges such as financial sustainability and gaps in supportive infrastructure. These two issues were also found to be reinforced through the findings from a survey of bike lending operators (n=31). From March to April 2024, this survey was deployed to 51 of the identified bike lending programs to further quantify bike lending operations, bike safety, the impacts of bike lending, and the greatest challenges, benefits, and necessary resources associated with bike lending.

In addition, the participant perspective on bike lending was examined through two focus groups in April 2024, with 12 former bike lending program participants. The focus group participants were recruited from two bike lending programs in Canada and one program in the U.S. The focus groups allowed the research team to gain a better understanding of the bike lending experience, perceptions of bike safety, desired changes to improve bike safety, and the impacts of participating in a bike lending program. The focus groups found that the participants generally enjoyed their experience participating in the program, as they were able to access new destinations and have new experiences. However, participants expressed some safety concerns related to infrastructure and the operation of e-bikes.

Key findings from this research suggest that bike lending programs vary across the U.S. and Canada, with programs largely shaped by community needs or funding opportunities. Bike lending programs have various goals including providing critical access to transportation, supporting outdoor recreation, offering a trial opportunity for those who may be looking to purchase their own bike, and supporting health initiatives. Additionally, bike lending programs offer various types of bikes and with fleet sizes ranging from two to hundreds of bikes. This research also identified financial constraints and infrastructure challenges as key challenges to the operations of bike lending programs. Bike lending programs often attempt to reduce safety concerns among participants and potential liability to the program through the provision of a helmet, lock, and a brief safety discussion prior to the lending period. Altogether, the findings of this report suggest that bike lending programs have the potential to increase the adoption of cycling, however,

additional funding and infrastructure are needed to overcome challenges among bike lending programs and to create a more welcoming environment for cyclists.

Introduction

Bike lending provides individuals an opportunity to experience bike ownership and mobility. Bike lending programs differ from traditional bikesharing in that the use of the bike typically comes with little to no financial investment. Bike lending operators are typically not in the business of profiting from the bike lending program and are often centered around addressing local community, environmental, and transportation equity challenges. Given that bike lending programs are typically rooted in addressing community needs, many bike lending programs offer a variety of bikes, often ranging in size, use case, and price point. Additionally, bike lending programs may provide individuals with a mobility option that they do not always need access to or allow individuals to understand how a bike may fit into their lifestyle before making the investment in purchasing their own bike, and in particular more expensive e-bikes and cargo e-bikes. It is widely believed that bike lending has grown, however there is a lack of systematic documentation on bike lending programs in North America.

This study aims to document the state of the industry and better understand the role of bike lending in North America. This research, conducted from January to April 2024, includes an overview of the operations, geographical distribution, safety, bike infrastructure, impacts, and the resources needed to support the bike lending programs. Ultimately, this research may be used to support existing bike lending programs, inform the development of new bike lending programs, and inform future directions for encouraging the expanded use of bicycle use and bike safety.

This research is based on a multi-method approach beginning with a review of literature review on bike lending business models, the role of bike lending, barriers to bike lending and bike adoption, and the potential impacts of bike lending. The research team also conducted a census of bike lending programs in attempt to identify and characterize all the bike lending programs in North America. To supplement these findings, expert interviews were conducted with people who work directly or adjacent to bike lending programs (n=24), a survey was deployed to bike lending operators (n=31), and two focus groups were conducted with bike lending participants (n=12). The findings from this study are provided in this report and organized into the following five sections:

1. **Literature Review:** This section summarizes the existing information on bike lending programs, and explores literature describing factors that relate to bike adoption.
2. **Data and Methodology:** This section provides a description of the various methods used to collect data and inform the conclusions of this research.
3. **Results:** This section summarizes the key findings from each distinct method employed in this research.
4. **Discussion:** This section synthesizes the findings across the various methods and contextualizes the findings according to emerging key themes.
5. **Conclusions and Recommendations:** This section provides an overview of key takeaways from this research, as well as recommendations for future research on bike lending.

Literature Review

In the past few decades, the implementation of off-road, paved bike trails has increased from nearly 6,000 miles in 1991, to over 39,000 miles in 2021. In 2019, research from the League of American Bicyclists suggested that only 0.5% of people in the U.S. were using a bike to commute to work. However, newer research suggests large increases in cyclists from 1990 to 2021 in four major U.S. cities: 1) Seattle, Washington, 2) Chicago, Illinois, 3) San, Francisco, California, and 4) Portland, Oregon. It is hypothesized that more recent increases in cycling may be attributed to the infrastructure changes during the COVID-19 pandemic (i.e., temporary or trial bike lanes, etc.) (Strauss, 2021; Buehler & Pucher, 2021). Additionally, the U.S. has seen a large increase in the popularity of e-bikes in the past few years, with nearly four times as many e-bikes sold in 2022 compared to 2019 (Vehicle Technologies Office, 2023). However, for many the cost of owning a bike or e-bike may be cost prohibitive. Several cities and towns across North America have attempted to increase access to pedal bikes and e-bikes through the implementation of bike lending programs (Janzer, 2022).

This literature review on bike lending was conducted from January 2024 to April 2024 and includes gray literature, academic literature, and professional literature published within the last 10 years. Due to the lack of documentation specific to bike lending and the impact of e-bikes, the research team included news articles (approximately 50% of literature) discussing these topics. The research team identified relevant literature primarily through online search engines. Key search terms include: bike lending, bike equity, bike infrastructure challenges, and impacts of bike lending. Through the literature review, the research team observed a lack of peer-reviewed literature and a lack of information on bike lending operations in Mexico. Based on the identified literature, the remainder of the literature review is organized into the following four subsections:

1. Bike Lending Business Model: Explains common goals among bike lending programs and explains the differences between bike lending and bikesharing.
2. Role of Bike Lending Programs: Discusses the potential role of bike lending programs in areas such as exposure to bikes, supporting transportation equity, and promoting safe cycling infrastructure.
3. Barriers to Bike Lending and Adoption: Describes the existing barriers for individuals to participate in bike lending programs and adopt cycling in general.
4. Impacts of Bike Lending: Explains the potential impacts of bike lending in the areas of cycling adoption, infrastructure development, and bike-related education.

The findings for each of these areas are discussed in the following subsections.

Bike Lending Business Models

The business models represented by bike lending programs in North America are diverse and often tailored to meet the specific needs and objectives of the communities they serve. Bike lending programs are typically community oriented programs that offer distinct differences from bikesharing[1]. Traditional bikesharing systems have become ubiquitous in many metropolitan regions. Station-based bikesharing systems may rely on user subscriptions and municipal contractual agreements, facilitating a public-private partnership model. The provision of local rights-of-way often supports this operational model, while private entities handle day-to-day operations. Despite their widespread adoption, the financial viability of these systems remains a contentious issue. The delicate equilibrium between operational costs, user fees, and public funding is fraught with challenges for competing priorities, often exacerbated by political considerations (Assuncao-Denos, 2017). Figure 1 below illustrates the key similarities and differences between bike lending and bikesharing.

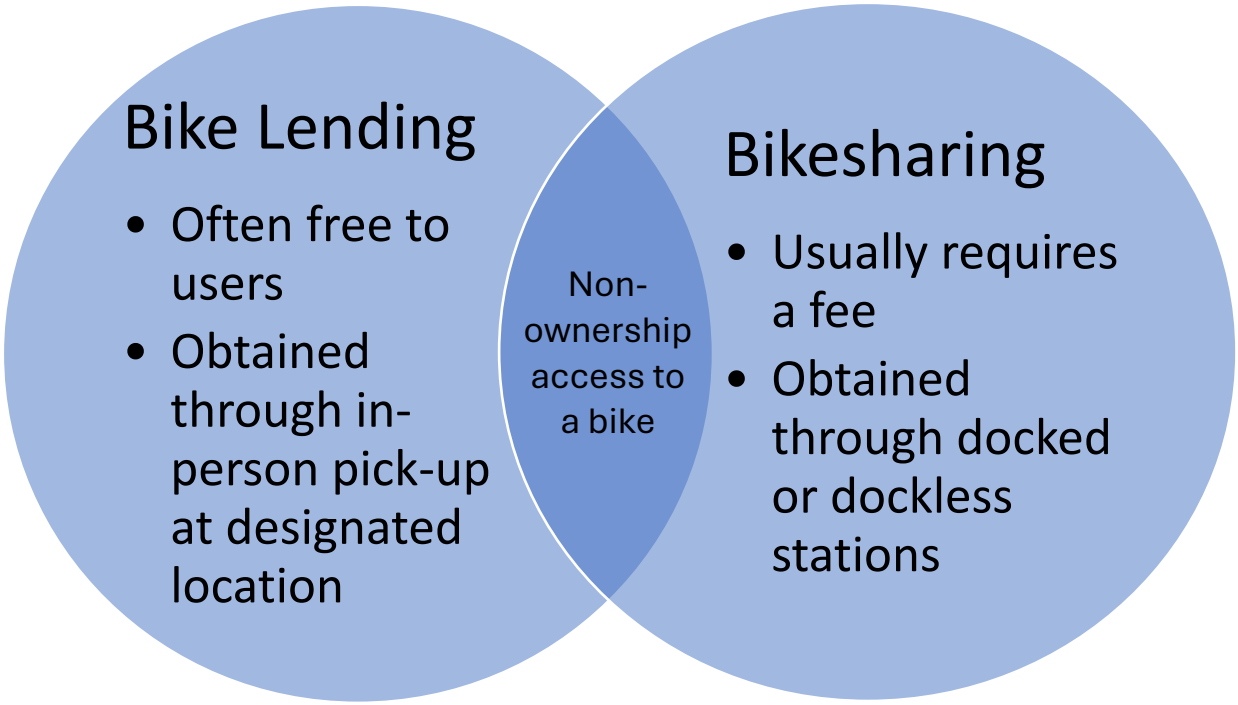

Figure 1. Comparison of Bike Lending and Bikesharing

[1] According to SAE International JA 3161, bikesharing is defined as "A service that provides travelers on-demand, short-term access to a shared fleet of bicycles, usually for a fee. Bikesharing service providers may own, maintain, and provide charging (if applicable) for the bicycle fleet."

Bike lending programs tend to offer a community-focused approach to allowing individuals to have access to a bike at community destinations (i.e., public library, etc.). Alternatively, bikesharing often relies on the public rights-of-way for bike storage and relies on user fees to support the programs (i.e., membership, time-based fees) (Assuncao-Denis, 2017). Participation in a bike lending program is often free or low-cost (Bliss, 2021) and rely on donations or minimal fees to sustain their operations, which operate on the principles of accessibility and inclusivity. By offering free or low-cost access to e-bikes, they often aim to reduce barriers to entry. However, bike lending programs may be implemented with a variety of desired outcomes, including offering participants an opportunity to try a bike before they purchase their own, reducing vehicle emissions by substituting vehicle trips with a bicycle, or addressing transportation equity challenges (Bliss, 2021; Janzer, 2022). This model not only promotes cycling within communities but also addresses socioeconomic disparities in access to sustainable transportation options (Bliss, 2021; Janzer, 2022).

As with bikesharing, funding and financial sustainability are important considerations. Whether through government grants, private sponsorships, or user fees, securing a consistent and reliable funding stream may influence the longevity and success of bike lending programs. The economic realities of operating such programs necessitate careful consideration of cost structures, from initial investments in bicycles and infrastructure to ongoing maintenance and operational expenses. Understanding these financial underpinnings is crucial for developing strategies that promote the sustainability of bike lending initiatives over the long term (Johnson, 2023; REI, 2022; Ride1Up, 2023).

In summary, the business models supporting bike lending programs in North America are characterized by their adaptability and responsiveness to the needs of diverse communities. From traditional bike-sharing systems to community-centric lending libraries, each approach presents unique opportunities and challenges. The sustainability of these programs is linked to their ability to secure stable funding sources and manage operational costs effectively, underscoring the importance of strategic financial planning in promoting sustainable mobility.

Role of Bike Lending Programs

Bike lending programs are often influenced by community need and public acceptance. The variety of bike options, with numerous brands and models available, makes selecting the “right bike” complex. Some programs offer riders the opportunity to try bikes through test rides or short-term loans, assisting decision-making and encouraging eventual purchase (Peddle My Wheels, 2024; Bike SLO County, 2020; The Bike Center, n.d.). This approach underscores the importance of accessibility and the need to tailor these services to fit the lifestyles of potential users. Studies examining the shift in commuting patterns due to the introduction of bike and e-bike lending programs highlight the critical role of accessibility and the tailored fit of these services to the utility of potential users (Fitch et al., 2022). Furthermore, understanding the demographic and psychographic characteristics of the user base is essential for crafting programs that resonate with

diverse community segments, potentially enhancing user engagement and program uptake (Assuncao-Denos, 2017).

Addressing social equity through bike lending programs is another consideration among bike lending programs to ensure that the benefits are accessible to all community members. Initiatives targeting transportation deserts aim to remove barriers to mobility, providing access to employment, education, and services. This focus on inclusivity may improve quality of life among participants and foster greater connectivity and accessibility within a community (Berger et al., 2018). Equity-focused efforts further underscore the benefits of equitable infrastructure development, ensuring that investments in biking facilities benefit a broad spectrum of the population (Daly, 2014). Additionally, public safety is linked to the availability of cycling infrastructure playing a pivotal role in safeguarding road users. The development of bike lanes and other supportive infrastructure may minimize the risk of collision and injury for bike lending participants, creating a welcoming environment for new cyclists. As such, investment not only enhances the physical safety of cyclists but also contributes to a perception of cycling as a safe, viable mode of transportation (Assuncao-Denos, 2017). Overall, bike lending programs are situated in a position to address various issues including user acceptance, social equity, and public safety. Bike lending programs provide an opportunity to address a community's diverse transportation needs, provide equitable access to cycling resources, and support the safety of all cyclists.

Barriers to Bike Lending and Adoption

Bike lending programs encounter challenges and barriers that impede widespread adoption and effectiveness. These barriers, from perceptual and physical, to implementation and operational, influence the public's engagement with bike lending services. One impediment to the adoption of bike lending programs is the perception of cycling. Concerns over the physical exertion required, navigating through traffic, and the inherent risks of sharing roads with motor vehicles deter potential users. Studies into these uncertainties highlight the need for comprehensive strategies to alter public perceptions and encourage cycling as a feasible mode of transportation (Fowler et al., 2017). Additionally, the physical challenges posed by geography, such as hills, and the inconvenience of arriving at destinations in a less-than-presentable state due to sweat further compound these barriers (MacArthur et al., 2018).

Moreover, operational challenges, including the maintenance and distribution of bicycles and the development of user-friendly platforms for service access, present operational hurdles. The logistical aspects of ensuring a reliable, accessible, and well-maintained bike fleet demand substantial resources and management. Insights from one article on bike lending suggest that overcoming these operational barriers is crucial for the sustainability and success of bike lending programs (Hurford, 2022). Economic barriers and equity considerations are also thought to play a pivotal role in the accessibility and viability of bike lending programs. The "bike lending library" concept emerges as a more equitable model, proposing an alternative that reduces economic barriers and promotes broader cycling engagement (Berger et al., 2018). Safety concerns,

particularly the risk of collisions with motor vehicles, represent a major barrier. Additionally, the legislative landscape around cyclist safety, as evidenced by the vetoed bill "safe-passing distance" in Texas, highlights the need for policies that equitably distribute road safety responsibilities between motorists and cyclists (Davis, 2023). The absence of adequate cycling infrastructure, such as protected bike lanes and paths, exacerbates perceived danger for cyclists and potential users from embracing bike lending programs. Initiatives aimed at improving cycling infrastructure, therefore, may play a role in the success of bike lending programs (Davis, 2023).

The requirement of having a smartphone and credit or debit card to access many bikesharing programs, introduces barriers to entry, particularly for lower-income individuals or those without access to such technologies. Addressing these barriers requires innovative approaches to ensure that bike lending programs are inclusive and accessible to all community members, regardless of their economic status or technological access (Berger et al., 2018; McNeil et al., 2018). Figure 2 illustrates the various barriers to cycling, such as climate, car-centric infrastructure, and upfront costs, and it connects them with potential strategies like education, the development of infrastructure, and policy interventions, highlighting a multifaceted approach to improving bike accessibility and safety in urban environments (Berger et al., 2018; Community Cycling Center, 2012).

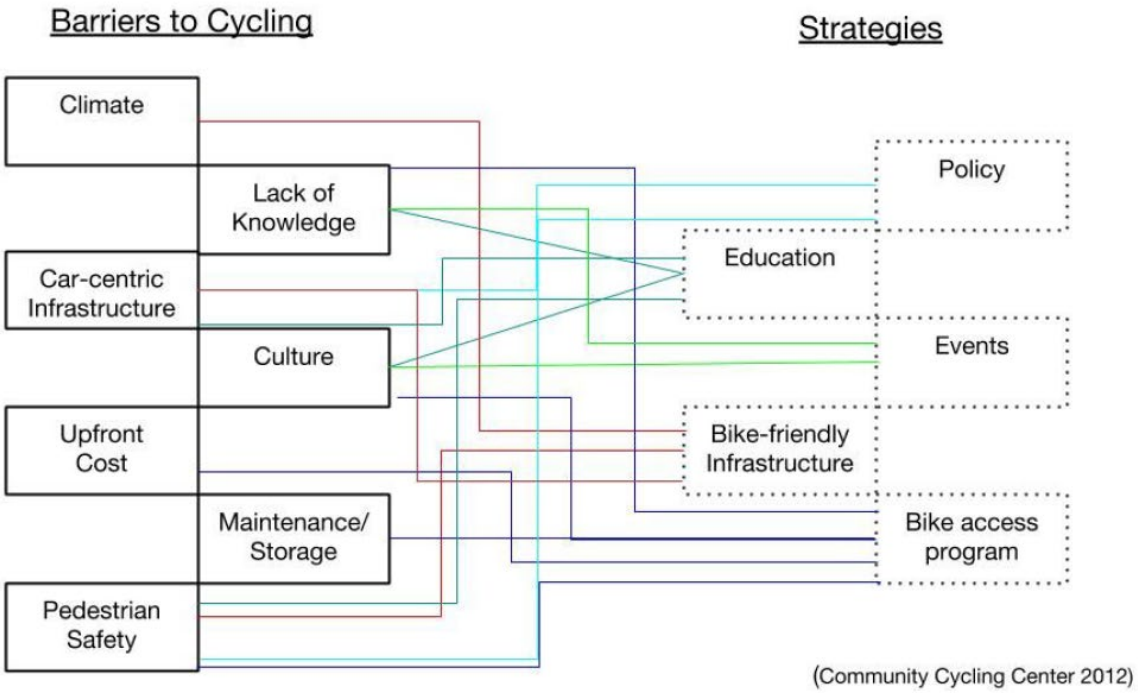

Figure 2. Barriers to Cycling and Potential Strategies

Impacts of Bike Lending

Bike lending programs offer the potential to promote the broader adoption of bikes and may serve as the impetus for other community impacts. Drawing on the adoption trends of technologies like cell phones and electric vehicles, it becomes evident that varied exposure through long-term test rides and financial incentives could significantly influence consumer decisions toward bike or e-bike purchases. This strategy underscores the importance of creating diverse opportunities for individuals to experience bikes firsthand (Bliss, 2021).

The implementation of a bike lending library may facilitate the development of cycling infrastructure in the area. Establishing a safe cycling route connecting libraries, marked by clear signage and without car traffic, may enhance safety and confidence among users (Berger et al., 2018). Moreover, embedding bike safety and education programs within local school curriculums can address barriers related to a lack of cycling knowledge and culture. Such initiatives can lay the groundwork for a lifelong cycling culture, promoting biking as a leisure activity and a viable mode of daily transportation (Berger et al., 2018). Enhancing bike lending programs and cycling infrastructure requires a comprehensive strategy that includes legislative support, community-based initiatives, educational programs, and targeted efforts to improve public safety and infrastructure. Through these strategic enhancements, communities may significantly increase bike commuting, contributing to a more sustainable, healthy, and equitable urban mobility landscape. Bike lending programs, offering a variety of vehicle form factors, could cater to a broader audience's needs. Complementing these lending programs with cycling accessories and clothing would make bike commuting a more attractive and practical option. Encouraging multimodal commutes and targeting non-bike commuters through improved and safe bike routes could expand the user base (Fitch et al., 2022).

Exploring bike lending programs indicates their potential to contribute to sustainable urban mobility. While challenges like infrastructural needs and perceptual barriers exist, the benefits to emissions, the economy, public health, and social equity remain compelling. Diverse business models and the necessity for supportive infrastructure indicate the need for an approach that includes government, educational, and community-driven support. It is important to note that the literature review gaps in peer reviewed publications (i.e., journal articles) on bike lending. Furthermore, addressing the research gaps in countries like Mexico is important to gaining a holistic understanding of bike lending in North America.

Data and Methodology

Following the literature review, this research employed four methods: 1) census of bike lending programs in North America, 2) expert interviews, 3) survey of bike lending program operators, and 4) focus groups with bike lending participants. These four methods allowed the research team to characterize bike lending programs and understand bike lending programs from both the operator and participant perspective. Each method and its limitations are described in greater detail in the following sections.

Census of Bike Lending Programs in North America

The goal of the bike lending census is to compile a catalog of all the bike lending programs currently operating in the U.S., Canada, and Mexico. The census of bike lending programs occurred from January 2024 to April 2024 and consisted primarily of online research and review of websites describing bike lending programs. As a starting point, two news articles were referenced (Bliss 2021; Janzer 2022), which describe a few bike lending programs in the U.S. Additional research was conducted to identify other programs using terms such as bike lending, bike library, book a bike, e-bike lending, e-bike library, and reserve a bike, followed by geographical qualifiers such as state names (e.g., bike lending California) and country names (e.g., bike lending Canada). The search yielded 58 programs which were narrowed down to 55 programs that fit the criteria of bike lending, as opposed to bikesharing. The bike lending programs span the U.S. (n=49) and Canada (n=6). The distinction between bike lending and bike sharing was determined primarily on the research team's best judgment of the program's structure, goals, terms of use, and pricing structure (if applicable). Each bike lending program that was identified was recorded in a spreadsheet and further characterized according to the following characteristics: 1) General Information (i.e., location, type of organization, year of inception), 2) Bike Types Offered (i.e., e-bikes, mountains bikes, children's bikes, tricycles, etc.), 3) Accessories Offered (i.e., helmet, basket, bike lock, etc.), 4) Populations Served (i.e., general, youth, low income, etc.), 5) Lending Arrangements (i.e., requirement of user agreement/waiver, library, card, photo ID, deposit, etc.), 6) Safety Training (i.e., education provided on helmet usage, hand signals, road signage, etc.), 7) Other Services/Incentives Offered (i.e., bike purchase assistance, bike purchase discount), and 8) Additional Information (i.e., website link, contact information). Information from expert interviews was also used to fill in information in the bike lending census spreadsheet when it wasn't available online.

Throughout the implementation of this process the research team identified a few limitations to this method. It was evident that some bike lending program websites were not maintained or updated on a regular basis, which may have led to outdated or inaccurate categorization of the program. The research team also found that some bike lending programs operate on a seasonal basis (i.e., bikes are available during the summer months only). Given that the census was conducted primarily during the winter months, it is possible that this may have influenced the accuracy of information displayed on the website (i.e., from the previous season of operation). The census also does not include bike lending programs that may have once operated but are no longer

in operation and no information is available online. Another challenge was that not all websites provided information on the eight characteristics previously identified. In particular, the research team had difficulty identifying the start date of many of the programs and the number of bikes that were available within each program. Additionally, the research team identified three bike lending programs in Mexico. However, due to lack of information and uncertainty if they are currently operating, they have been excluded from the census summary of results and analysis. Similarly, two bike lending programs in California that were not included in the census (City of Long Beach E-Bike Lending Library and Leimert Park Ride On! Bike Co-Op), due to their debut in the late stages of research and lack of information prior to their debut.

Expert Interviews

The research team conducted a series of expert interviews with 24 stakeholders to gain further insights on bike lending programs. The research team targeted a diverse set of bike lending programs, including programs with different types of bikes, programs that cater towards different populations, and programs with various business models. As a result, the experts also held various roles such as program manager, librarian, director, founder, and bike mechanic. The expert interviews were conducted from January 2024 to March 2024 via video conferencing and lasted approximately 1 hour. The expert interviews were guided by an expert interview question protocol (see Appendix A) with questions regarding the operational details of bike lending programs, bike safety, bike infrastructure, and resources needed to support bike lending, bike ridership, and bike infrastructure. Information from the expert interviews was also used to fill in information in the bike lending census spreadsheet when it was not available through the program website. The main limitation associated with the expert interviews is that the research team was not able to conduct interviews with bike lending program experts in Mexico. Table 1 below indicates the organizations and bike lending programs that were represented through the expert interviews.

Table 1. Organizations and Bike Lending Programs Represented in Expert Interviews by Type

Bike Lending Programs Operating Under Non-Profit Organizations	Bike Lending Programs Operated by Public Entities	Bike Lending Programs Operated by Transportation Organizations*	Other
• GoSGV (Active San Gabriel Valley) • Camberville E-Bike Lending Library (Community Pedal Power) • Charlottesville E-Bike Lending Library (Virginia Organizing) • Ghisallo Bicycle Lending Library (Ghisallo Cycling Initiative) • Norte Bike Library (Norte Youth Cycling) • Upper Valley E-Bike Lending Library (Vital Communities)	• Book-a-Bike (Athens County Public Libraries) • Brattleboro E-Bike Lending Library (Brooks Memorial Library) • Library of Things (Ilsley Public Library) • Rutland E-Bike Lending Library (Rutland Recreation & parks Department)	• NETC Bike Libraries (Northeast Transportation Connections) • Markham and Newmarket Cycles (The Centre for Active Transportation) • Westside Rides (Westside Transportation Alliance)	• City of Oakland • GRID Alternatives • Shared Mobility Inc. • Ridepanda • The Bike Center, Santa Monica

*Transportation organizations may also be non-profit organizations

Survey of Operators

To further enhance the quantitative characterization of bike lending programs in North America, a survey was deployed to bike lending operators. The survey was sent via email or online contact portal to 51 individuals associated with bike lending operations and resulted in 31 responses that were included in the analysis (61% response rate). The individuals identified as the point of contact for the survey deployment were determined through both the census of bike lending programs and expert interviews. The research team used Qualtrics to populate survey questions into a digital format and produce a survey link that was sent via email. The survey was open to accept responses from mid-March 2024 to early April 2024. The responses represent bike lending programs from Canada (2), the U.S. (28), and one unknown location.

Similar to the expert interviews, the operator survey included a series of questions related to operational details of the bike lending programs, bike safety, and support and resources needed for bike lending. In addition, the survey also inquired about the operators' role and perspective on the impacts of bike lending. The survey attempted to collect sociodemographic data of participants, however, only five bike lending programs reported that they collect data on their participants. Given the limited sample size and lack of generalizability of the data, it has been excluded from this report. The operator survey questions are provided in Appendix B. As with the bike lending census and expert interviews, bike lending programs in Mexico are not represented in the survey results due to lack of available information. The survey also does not capture data from all the bike lending programs that are known to exist in the U.S. and Canada.

Focus Groups

Two focus groups were conducted with bike lending program participants (n=12 participants) to gain insight on the bike lending experience and impacts, from the participant perspective. The focus group participants were recruited from the following three bike lending programs: Markham Cycles (Ontario, Canada), Newmarket Cycles (Ontario, Canada), and Rutland E-bike Lending Library (Vermont, U.S.). The Markham and Newmarket Cycles lending programs both offer a variety of bikes including adult tricycles, e-bikes, pedal bikes, and youth bikes. The Rutland E-bike Lending Library exclusively offers e-bikes, but offers various types including commuter, fat tire, folding, longtail, and recumbent tricycle. The focus groups were conducted via videoconferencing (i.e., Zoom) in April 2024 and lasted about 1.5 hours. All focus group participants were offered a gift card to select merchants upon conclusion of the focus group. Table 2 below indicates the number of focus group participants from each bike lending program.

Table 2. Focus Group Participants by Bike Lending Program

Bike Lending Program	Number of Focus Group Participants
Markham Cycles	6
Newmarket Cycles	3
Rutland E-Bike Lending Library	3

The focus group questions prompt an understanding of participants' general experience with bike lending, perceptions of safety while participating in the bike lending program, strategies to improve bike safety, and the impacts of bike lending. The focus groups were guided by a focus group question protocol (see Appendix C). The key limitations associated with the focus groups are the limited representation in terms of geographic distribution and built environment types. All three programs are located in an area with similar weather conditions throughout the year, offering little insight on how weather may play a role in bike lending participation and impacts of the bike lending program. Additionally, the Newmarket Cycles and Rutland bike lending programs are located in exurban cities, whereas Markham Cycles is located in an edge city of Toronto, Canada. Together, these programs do not provide insight on operation and impacts of bike lending programs in highly urbanized city centers.

Results

This section provides an overview of the key findings from the census of bike lending programs, expert interviews, survey of operators, and focus groups with bike lending participants. The overarching themes and findings that emerged from this research will be presented in greater detail in the Discussion section that follows.

Census of Bike Lending Programs

The census of bike lending programs was conducted from January to April 2024. The findings from the census are provided in the following subsection: 1) General Information, 2) Bike Types Offered, 3) Accessories Offered, 4) Populations Served, 5) Lending Arrangements, 6) Safety Training (i.e., education provided on helmet usage, hand signals, road signage, etc.), 7) Other Services/Incentives Offered, and 8) Overview of Key Census Findings.

General Information

The bike lending census yielded 55 bike lending programs in the U.S. (89%) and Canada (11%). In the U.S., the research team identified the greatest number of bike lending programs in California and Ohio, with 10 in each state. Other notable states with multiple bike lending programs include: Oregon (4 programs), Vermont (4 programs), Colorado (3 programs), and Virginia (3 programs). The six bike lending programs in Canada are located in the provinces of Ontario (3 programs), British Columbia (2 programs), and Manitoba (1 program). Figure 3 below indicates states where bike lending programs were identified. As noted previously, three bike lending programs were identified in Mexico, but were excluded from this analysis due to lack of information and uncertainty surrounding their operations.

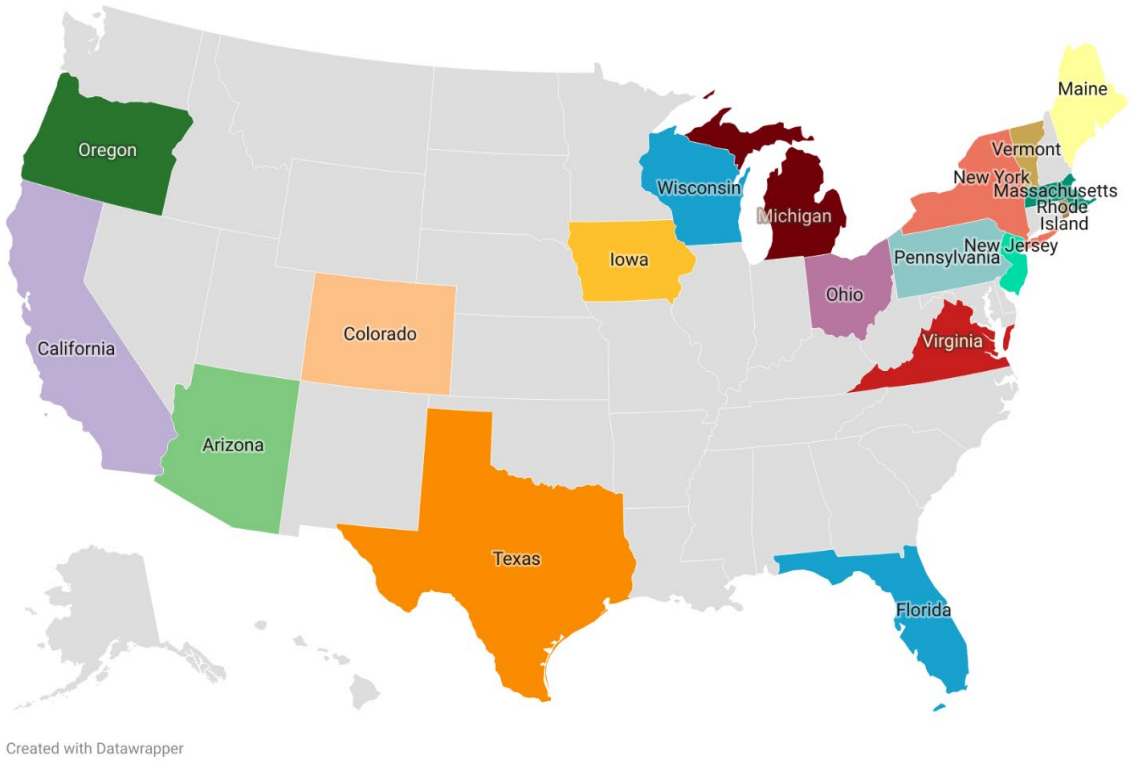

Figure 3. States with Bike Lending Programs

When available, the research team recorded the year in which the bike lending program started. Excluding the 11 programs for which the start date was not available, it was found that 58% of the remaining bike lending programs began between 2019 and 2023. Figure 4 provides an overview of the number of bike lending programs in the U.S. and Canada over the past few decades. The research team made the assumption that all programs for which information could be found are still in operation.

The research team also attempted to characterize the bike lending programs by the type of organization operating the programs and where the program is housed. A majority of programs are publicly owned and operated (53%, n=29/55), followed by programs operated by non-profit organizations (31%, n=17/55), programs that are privately owned and operated (11%, n=6/55), and all other programs which were publicly owned and privately operated or the operational model was unknown (5%, n=3/55). Many of the publicly owned and operated bike lending programs were housed at public libraries and other publicly owned facilities (i.e., community centers). The remaining bike lending programs were either operated from a bike shop or other privately owned facility (i.e., private university). Figure 5 below provides an overview of the types of facilities that house bike lending programs.

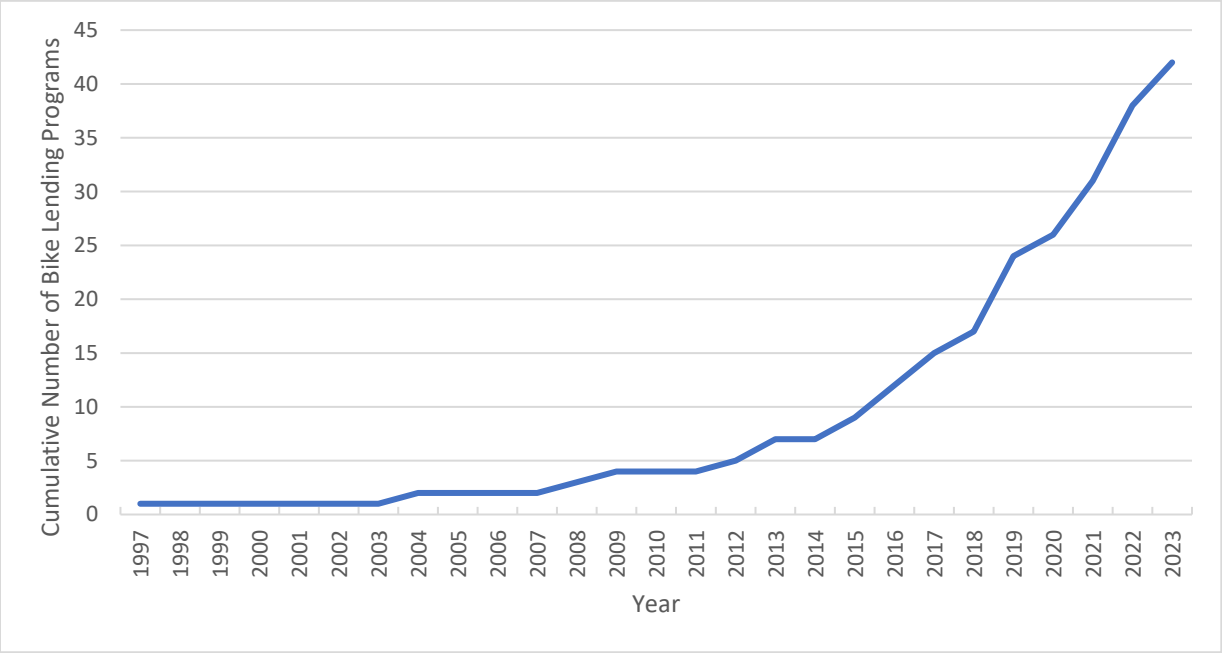

Figure 4. Number of Bike Lending Programs in the U.S. and Canada Over Time

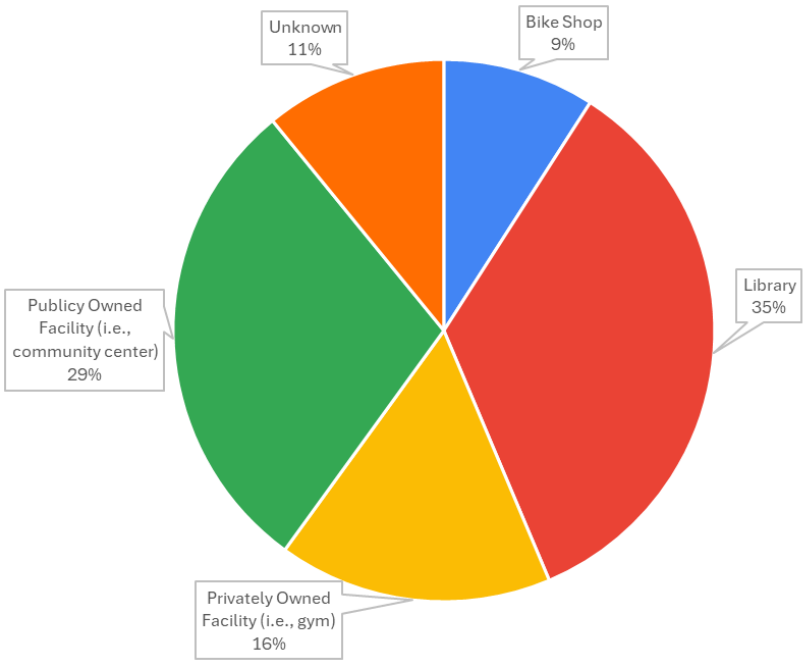

Figure 5. Facilities that House Bike Lending Programs by Type

Among the operating organizations and facilities that house bike lending programs, it was found that seven bike lending programs are housed and operated by higher education institutions. These institutions include: 1) Lane Community College, 2) Roanoke College, 3) Rollins College, 4) Montclair State University, 5) University of California, Berkeley, 6) University of Massachusetts Amherst, and 7) University of Oregon.

Bike Types Offered

Based on the information provided on bike lending program websites, the research team characterized bike offerings into the following seven categories: 1) children's bikes 2) e-bikes, 3) e-cargo bikes, 4) mountain bikes, 5) standard street/commuter bikes, 6) tricycles, and 7) other bikes (i.e., adaptive bikes, tandem bikes, trailer bikes, etc.). The most commonly offered bike types were standard street/commuter bikes and e-bikes with 62% (n=34/55) and 42% (n=23/55) of programs offering at least one of these bikes, respectively. Figure 6 below provides additional information on the types of bikes offered by the bike lending programs identified through the census. Some bike lending programs provide one type of bike exclusively, while others offer various bike types. The bike lending programs with the fewest bikes offer as little as two bikes while bike lending programs with the greatest number of bikes offer 800 to 900 bikes. Additionally, for the purposes of this analysis, the e-bike category is inclusive of all classes (i.e., Class 1, Class 2, and Class 3[2]) and types of e-bikes (i.e., longtail, foldable, etc.), with the exception of e-cargo bikes.

[2] In 2014, PeopleForBikes introduced a three-class system for regulating e-bikes in the U.S. Class 1 e-bikes are equipped with motors, but only provide assistance when the rider is pedaling and only up to 20 miles per hour (mph). Class 2 bike have a motor that can be activated without pedaling and up to 20 mph. Class 3 e-bikes have a motor and speedometer, but only provide assistance when the ride is pedaling and may reach speeds up to 28 mph. (PeopleForBikes, n.d.).

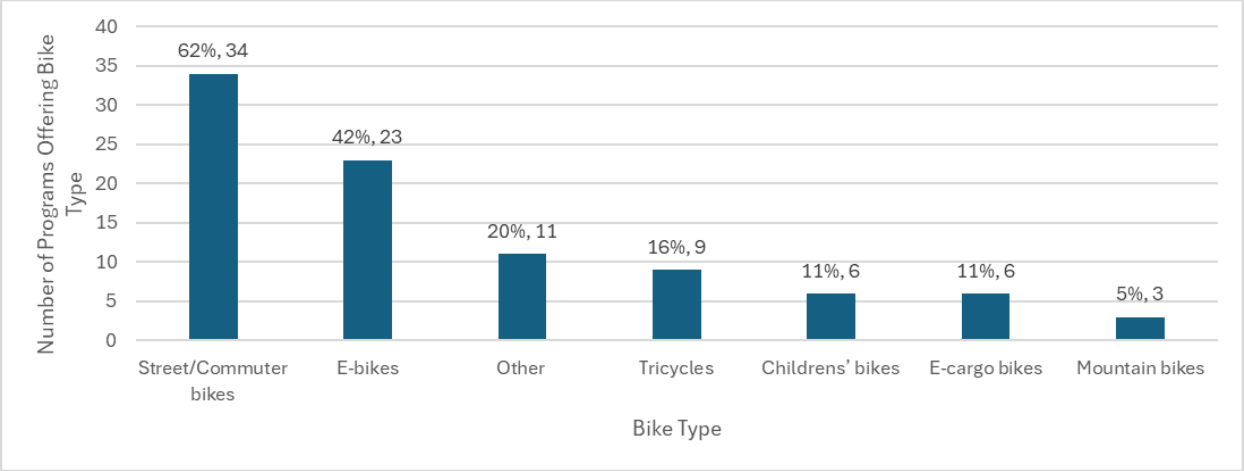

Figure 6. Bike Types Offered Through Bike Lending Programs (n=55)

Accessories Offered

The research team also characterized bike lending programs by the accessories that they provide participants. The most commonly provided accessories are bike locks and helmets, and they are typically offered as a "standard" package with the bike, such that participants are required to take the accessories. Other programs offer helmets and bike locks as an optional accessory if they do not provide their own. However, few programs do not provide these accessories at all or it is unknown/unspecified if these accessories are provided. Figure 7 below provides an overview of helmet and bike lock offerings among the bike lending programs. Some bike lending programs also have accessories such as headlights, taillights, and bells that may come pre-installed on the bikes. Other less commonly offered accessories include but are not limited to baskets, panniers, child seat attachments, mirrors, and reflectors. Programs with e-bikes also typically provide the bike lending participant with the e-bike charger, if applicable.

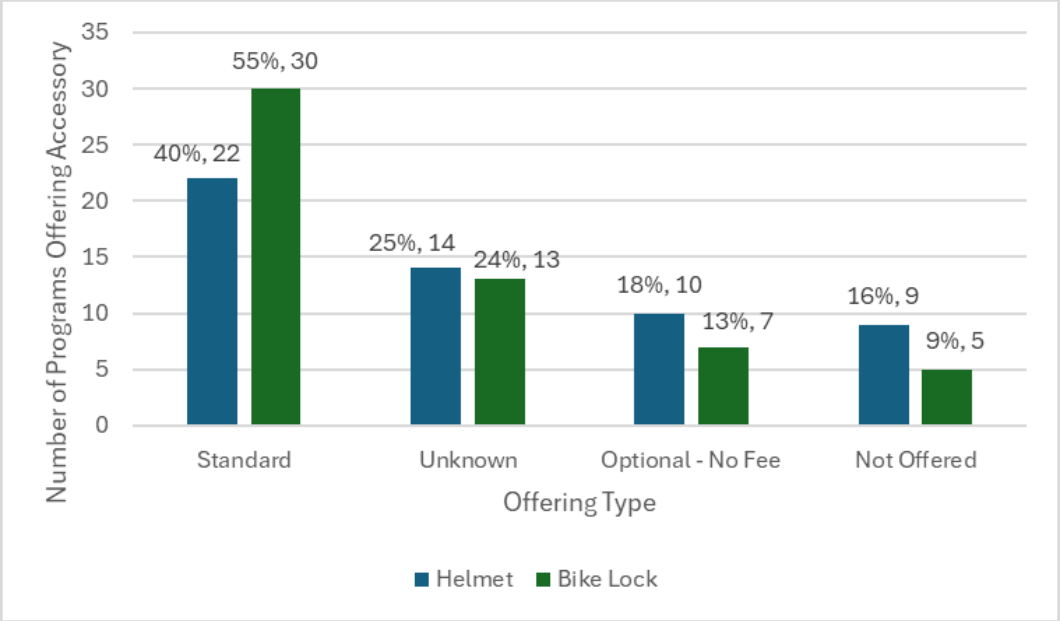

Figure 7. Bike Lending Helmet and Bike lock Offerings (n=55)

Populations Served & Lending Arrangements

The majority of bike lending programs (n=38/50) appear to be designed to serve the general population (i.e., adults that are 18 years old or older). However, there may be some additional criteria that participants must meet before they can participate in the bike lending program, such as providing proof of residency in the community or a library card. Some programs serve more specific populations such as youth, low-income individuals, or group affiliates (i.e., university students and staff). These programs have specific criteria such as age, income, or employment requirements to be able to participate in the bike lending program. Additionally, the bike lending programs at educational institutions often require participants to provide a school-issued ID card to prove their affiliation. The research team identified 15 programs that provide children's bikes (exclusively or in addition to adult bikes) and two programs that specialize in providing bike lending service for low-income individuals.

Once a participant is eligible to participate in the program, bike lending programs may have other requirements before the participant can receive a bike. These requirements can include signing a user agreement or waiver (n=37), a deposit or fee (n=6), or an agreement to store the bike indoors overnight (n=7). Most programs are free to participants, offering a low financial investment opportunity to try a bike. However, some programs may have requests for donations, require a deposit, or have the ability to charge participants if a bike is not returned or returned with damage. One bike lending program, GoSGV, requires participants to pay a monthly membership fee to participate in the bike lending program, but after 36 months of continuous membership, the

participant may keep the bike as their own. Programs may also require participants to store the bike indoors overnight, which is typically motivated by the prevention of bike theft and vandalism. The bike lending programs were also found to have varying bike lending periods ranging from two hours to 36 months (as seen in the GoSGV program). Based on available data, the median length of a lending period is one week.

Safety Training

The research team also asked questions about the prevalence of safety training in bike lending programs through the census. The census found that very few programs (n=3/55) require a formal safety training, class, or orientation as part of the lending process. However, a variety of bike lending programs are part of larger organizations (i.e., non-profit or bike shop) that offer optional group rides, clinics, programming, or maintenance workshops that are open to bike lending participants. The research team also found through the expert interviews that whoever is lending out the bike often provides participants with an overview of the bike, bike safety tips, best practices for bike storage/locking, location-specific safety recommendations, route planning, and answers for any questions the participant has before leaving with the bike. Bike lending programs with e-bikes also may encourage participants to take a short test ride with the bike to ensure that they are comfortable riding a bike with the electric-assist features (at least five programs).

Other Services/Incentives Offered

During the census, the research team also recorded if bike lending programs offer participants other services and post-lending support. The census revealed four programs that provide assistance to participants who are looking to purchase their own bike (i.e., deciding on a bike model to purchase based on experience with the bike lending program) and four programs offer discounts or discount codes for a bike purchase to participants who have participated in the program. The programs that provide purchase assistance and/or discounts for a bike purchase come from programs that offer e-bikes. A unique model that was found was the RVA E-Bike Library in Virginia, which has partnered with a bike shop to offer a $500 e-bike rebate, helmet, and lock to public school teachers and city employees in the City of Richmond, Virginia. Additionally, some bike lending programs that are part of larger organizations (e.g., programs that also offer other bike-related programming) offer earn-a-bike programs or other opportunities for individuals to obtain a free or low-cost pedal bike (at least four programs).

Expert Interviews

The research team conducted expert interviews between January and March 2024 (n=24). The interviews addressed questions relating to the following four topics surrounding bike lending: 1) operational details, 2) bike safety, 3) bike infrastructure, and 4) support and resources. The findings associated with each of these topics are summarized in the following subsections.

Bike Lending Operations

Based on the findings from the census of bike lending programs, it is evident that bike lending comes in various forms and operational models, this was further reinforced through the expert interviews. For example, the experts provided a variety of responses when asked to describe the mission or goal of the bike lending program. The goals or missions typically aligned with one or a combination of the following statements:

- Encouraging the trial of bicycles, to inform future purchase decisions, especially for e-bikes;
- Promoting awareness and education about cycling as a clean mode or transportation;
- Providing bicycles for transportation and to support physical activity;
- Bringing a clean mobility option to an underserved community;
- Reducing financial barriers for children or low-income families to access bikes; or
- Building a community of cyclists that may influence infrastructure changes.

Some experts (n=5/24) noted that the goal or mission of a bike lending program may have been shaped by funding opportunities (i.e., clean mobility, transportation equity, health initiatives, etc.) or that the goal of their program has evolved over time. For example, one program expressed how they initially received funding for the bike lending library to support behavior changes through a modal shift from cars to e-bikes. However, in reality they have found that their program has had greater impacts in terms of improving quality of life. For instance, some participants may have previously used an unreliable transportation mode to access their job, but after having access to a bike they were able to arrive at work on time or were able to work a job with late night hours because they were able to access the job at a time when public transit was limited.

Funding: Bike lending programs may be funded through a variety of sources including grants, city or regional government funding, private donations, and partnerships with local businesses. For instance, grants may serve as initial seed money, as seen with Brattleboro and Rutland E-Bike lending libraries, which were initially started by a state level bike and pedestrian advocacy group called Local Motion. After a few years, local efforts were required to take over the bike lending operations and find their own source of funding and operational support. Government funding also plays a role in supporting bike lending programs. For example, the City of Oakland benefits from state cap and trade funds, and the Ghisallo Cycling Initiative leverages federal traffic safety funding. Regional government funding and school board contributions help sustain The Centre for Active Transportation in Canada. Programs like The Bike Center in Santa Monica initially received city funding but later integrated the bike lending program into the bike shop business model. Some lending programs also started through personal investments, like those made by the founder of Camberville E-Bike Lending Library. These programs may evolve to receive more community support through donations and local business partnerships. Business sponsorships and community donations may also support operations as expressed by Norte Youth Cycling and Shared Mobility Inc. These diverse funding mechanisms reflect the different approaches and

funding opportunities that bike lending programs have taken advantage of to tailor their programs to community needs and available resources.

Populations Served: Given the variety of missions and goals among bike lending programs, it is evident that populations served and usage of the bikes also vary among programs. As such, some programs cater more towards commuters who are using the bikes for essential travel to work, while other programs tend to serve populations who are typically using the bike for recreation. A few experts also noted how participants typically are not avid cyclists. Typically, participants may have ridden a bike as a child, but have not done so in the few years prior to engaging in the program. Additionally, many participants of programs with e-bikes have never ridden an e-bike prior to their participation in the program. Thus, program staff recognize the need for instruction on bike usage, as well as education to promote safe riding among users.

Fleet Acquisition: The researchers also asked the experts a series of questions to characterize how they acquire bikes and what types of bikes are included in their fleets. The bike lending programs acquire bicycles through diverse strategies to meet their specific operational needs. Many bike lending programs partner with local bike shops to leverage local expertise and support. This method of bike acquisition may also allow greater support for participants who wish to purchase a personal bike after participation in the bike lending program. Other programs, like Camberville and Charlottesville E-Bike Lending Libraries, combine direct purchases, community donations, and partnerships with manufacturers to build diverse fleets. Bike lending programs that work in partnership with bike shops may also have the ability to purchase bikes from manufacturers and other distributors, as they would for general bike sales. Some programs have also noted that a portion of their fleet may have been acquired through a direct donation of bikes. Programs offering e-bikes often prioritize reputable vendors, like Aventon, Gazelle, Rad Power, Specialized, and Trek. Generally, bike lending programs may adapt their acquisition methods to align with community preferences and financial resources.

Fleet Size and Types: Similarly, fleets are often planned to meet program goals or community needs. Reinforcing the findings from the census of bike lending libraries, the experts described programs with fleets ranging from two to hundreds of bikes. Fleet size, however, is often limited by logistical constraints such as storage space and funding. The experts also described fleets with varying compositions. For example, some programs specialize in providing certain types of bikes (i.e., children's bikes, e-bikes, pedal bikes), while other programs offer a variety of bike types. Additionally, within programs, particularly e-bike lending programs, a variety of e-bikes (i.e., e-cargo bikes, fat tire e-bikes, commuter e-bikes, folding e-bikes, etc.) may be offered to allow participants to try various types of e-bikes for the purpose of informing a future purchase. Some programs also noted the importance of including step-through bikes or adaptive bikes to support bike accessibility and equity among a broad range of potential users.

Accessories for Participants: In addition to the bike, lending programs typically offer a range of accessories in support of rider safety and convenience. Helmets are a common accessory offered

to participants, often provided as mandatory due to liability and safety concerns, or in some cases, on an optional basis, or when the program has helmets available to give to participants. Many programs also provide locks to help prevent theft while the participant is responsible for the bike. Some programs offer bikes with built-in or optional add-on lighting to support general visibility or night riding. Additionally, several programs offer practical accessories like baskets, panniers, and cargo trailers for personal belongings. Tag-along bikes for children and various bike modifications like child seats or handlebars cater to families. More specialized items, like reflective vests, bar mitts for winter riding, e-bike chargers, and safety pamphlets, are also provided by certain programs. The extent of accessories offered often depends on the program's focus and resources, with some prioritizing a basic set for every rider while others provide a more extensive range to meet specific needs.

Lending Process: The experts were asked to describe the process a potential participant must go through to participate in the program. The process typically begins with the participants completing some form of registration, online or in-person, to indicate interest in the program and what kind of bike they may be interested in borrowing (if applicable). Participants are then typically required to provide some form of identification, proof of local residency, or provide some form of collateral for accountability purposes. Prior to receiving the bike, participants are often required to complete a waiver of liability or agree to certain lending terms and conditions. Program staff then may assist the participant in getting situated with the bike and accessories, sometimes offering discussions on safe operations and ride of the bike and a test ride. Similar to borrowing a book from a library, participants are expected to return the bike within a defined time period and in reasonable condition. Bike lending programs typically do not impose geographical restrictions for the usage of the bikes, but sometimes request participants store the bikes indoors, when possible, to reduce theft risk. Some programs have also opted to equip bikes with tracking devices to support locating the bike in the event a bike is lost, stolen, or not returned. Overall, the bike lending programs attempt to emphasize streamlined lending processes that promote safety for both the participant and bike.

Lost or Stolen Bike Protocols: In the case where a bike is not returned to the lending program, 14 experts indicated that they have a standard protocol to attempt recovery of the bike. The protocol typically begins with the program coordinators attempting to contact the participant through various methods (i.e., phone call, email, mail), requesting that they return the bike. If the participant does not respond or refuses to return the bike the programs may explore recovery of the bike by referring to the GPS tracking devices (if available), visiting the borrower's physical address, or reporting the bike as stolen to local law enforcement. Experts have noted that a lost, stolen, or unreturned bike becomes the liability of the participant, per signed agreement, but many organizations noted that they may not enforce repayment for the bike due to the financial burden. Experts explained that they attempt to understand the circumstances of a lost or stolen bike and recognize that many participants are utilizing the bike lending program because they cannot afford their own bike, and thus, would be unable to afford the replacement of lost or stolen bike through the program. To support the recovery of a lost or stolen bike, programs may also opt to register the

bikes with law enforcement, but recovery rates of bikes vary across programs. It is also important to note that experts generally noted few to no stolen bikes over the life of the program. Many experts suggest that participants recognize the community value provided by the program, and pre-lending education on bike security, in addition to the provision of a lock, help promote the return of bikes at the end of the lending period.

Bike Lending Program Expansions: The researchers asked the experts about their prospects of expanding their bike lending program. Many expressed aspirations to grow the program but are faced with operational challenges that may limit their ability to expand (i.e., funding, staffing, physical space). As such, few programs expressed that they are currently in the process of expanding or have plans to expand. However, aspirations for expansion of programs included general expansion in the number of bikes available, providing a greater variety of bike types, or the addition of adaptive bikes which tend to be more expensive than pedal bikes and e-bikes. Generally, the experts expressed a desire to expand their programs but logistical challenges posed barriers to expansion plans and aspirations.

Bike Safety

The research team was able to gain insights on the safety considerations of bike lending through the expert interviews. Experts were asked a series of questions pertaining to safety training that may be provided to participants, insurance coverage for the program, frequency of crashes or accidents among participants, and support for participants who may face challenges while they are borrowing a bike.

Safety Training: Among the experts who are involved in the operations of bike lending programs there were varying approaches to the provision of safety information prior to lending. For example, some organizations may require participants to participate in a safety training session. Other programs may offer a safety discussion that typically covers safe bike operations and rules of the road. Some experts described how they will often attempt to gauge the participants' knowledge of cycling and tailor these discussions to meet each participant's needs. Lastly, some bike lending programs rely on optional programming to provide participants with additional safety training for cyclists. The experts who work with programs that offer e-bikes generally expressed the importance of a pre-lending safety discussion, given that most participants have not used an e-bike before. A few experts also suggested the benefit of e-bike lending participants completing a test ride nearby, before leaving, to verify that they are comfortable and do not have any final questions about the operations of the e-bike.

Program Insurance: The experts were also asked about the state of insurance coverage for the program. The experts who work directly with programs typically expressed one of the following three statuses regarding insurance: 1) they accept liability risks without insurance due to high insurance costs, 2) they are able to have insurance through a broader policy that may cover other programs or a broader entity (i.e., city recreation department that support various activities), or 3) the program holds its own insurance policy. Some the experts who worked with programs,

particularly those that offer e-bikes and hold insurance policies, described the process of obtaining insurance as a challenge due to uncertainty of e-bike safety among insurance writers and challenges meeting insurance requirements set forth through funding mechanisms (i.e., grants that require programs to hold a certain level of insurance). Additionally, some experts expressed that they carry insurance for the bikes through the manufacturer, in the case that a bike is lost, stolen, or unreturned. Generally, the experts expressed there are varying perceptions of the level of risk associated with e-bikes that among insurance companies, making it a difficult space to navigate.

Safety Incidents Among Participants: To better understand the risk associated with bike lending for both the participants and the bikes, experts were asked to describe how frequently crashes or accidents occur among participants and how often bikes are lost or stolen. Six experts reported minor incidents among participants with insignificant harm to the participant or bike and three experts reported more serious incidents (i.e., collision with a vehicle). However, most experts expressed that they were not aware of any incidents, and among those that did report incidents, it was not a frequent occurrence. In the case that experts reported an accident, they were asked to characterize the nature of the incident. Experts cited collision with vehicles, distracted driving or riding, poor infrastructure, user error, and lack of education as key reasons for the accidents. Similarly, the experts expressed generally low frequencies of bike theft or vandalism, with many attributing it to the provision of a lock and education on how to properly lock the bike when it is not in use. Three experts specified that they have not had any bikes stolen or vandalized.

Support for Participants: To wrap up the discussion of bike safety, experts were asked if any support is provided to program participants who may face challenges while they have a bike on loan. Support was found to be offered by bike lending programs through on-demand assistance or community programming. Some experts involved in program operations described that participants are provided with a phone number or email that they can call if they experience a challenge with the bike. These cases are typically handled on a case-by-case basis. For participants who experience a mechanical challenge or a component of the bike needs to be prepared, some program staff are equipped to assist themself, the participant may be directed to a partnering bike shop, or the participant may learn how to fix the bike themself through community bike fix programs. The mechanism through which support is provided to participants is largely dependent on the business model of the program. For example, bike shops and other bike-oriented organizations that host bike lending programs are equipped with the tools and in-house resources necessary to repair bikes. Alternatively, programs hosted at public libraries may need to outsource bike repairs and maintenance to bike shops, due to the lack of knowledge or equipment among program staff.

Bike Infrastructure

Across the interviews, the experts described a wide variety of existing infrastructure for cyclists. However, even experts in areas with supportive infrastructure for cyclists suggested improvements to promote cycling safety. For example, many experts suggested expansion of various levels of bike infrastructure including: bike trails (i.e., Class I) (n=6), separated bike lanes (i.e., Class IV)

(n=6), standard bike lanes (i.e., Class II) (n=2), and bike boulevards (i.e., Class III) (n=3). Table 3 below provides additional information on the different classes of bike facilities, according to the California Highway Design Manual. Additionally, five experts expressed the need for the cycling infrastructure to be organized as a network that connects to key destinations and provides continuous access to bike infrastructure (n=5). Experts explained that current infrastructure in their area may not support cycling in dedicated infrastructure over long distances (i.e., a bike lane may be present on a certain stretch of a road and then disappear). The experts also expressed other infrastructure needs, such as utilizing traffic calming strategies (i.e., reducing the speed on roads that also accommodate cyclists), enhancing lighting along bike paths, providing facilities to support bike storage while they are not in use, and connecting bike routes to public transportation. When discussing infrastructure challenges and opportunities, two experts also noted the need for increased education and awareness for drivers regarding cyclists' safety. Altogether, the experts generally expressed the need for a multi-faceted approach to improving safety for cyclists via infrastructure improvements. Collectively, the experts suggest that through the integration of various classes of bike infrastructure and other supportive infrastructure communities may support a safe and accessible cycling environment.

Table 3. Types of Bike Facilities (Caltrans, 2020; Caltrans, 2022)

	Class I (Bike Path)	**Class II (Bike Lane)**	**Class III (Bike Route)**	**Class IV (Separated Bikeways)**
Description	Rights of way with exclusive use to pedestrians, may serve corridor that is not served by streets and highways	Delineates the rights of away assigned to bicyclists, especially on corridors where it may be difficult to ride side-by-side with vehicles	Routes typically shared with vehicles to provide continuity between bike facilities or designate preferred bike routes through high demand corridors	Bikeway specifically for the use of bicycles with separation (e.g., grade, posts, barriers, parking) from vehicles
Typical Use Cases	Recreational or high-speed commuting	Streets with significant bike demand	Connects routes not served by Class I or II bike facilities	Provide greater separation and minimize interactions between cyclists and vehicles

Support and Resources

The experts were also asked a series of questions to assess the greatest benefits provided by bike lending, the greatest challenges in implementing or operating bike lending, and the support or resources that are necessary to support bike lending programs. The most commonly cited benefit of bike lending programs was the ability to provide access to pedal bikes or e-bikes at little to no cost (n=18). Other benefits provided by bike lending programs include enhancing personal independence or mobility (n=5), the ability to allow participants to try a bike before they purchase their own (n=4), opportunity to explore and enjoy the local area (n=4), health benefits (n=3), promoting environmental sustainability (e.g., using a bike instead of a car) (n=3), providing a community building opportunity (n=3), and providing mobility to complete daily tasks (n=3). Two experts also noted that beyond the benefits provided by the bikes themselves - the programs also support safety training and cycling education to the community (n=2). Generally, bike lending program benefits are often linked to the community needs and the level of community involvement associated with the program.

Despite the variety of benefits provided by the bike lending programs, the experts expressed key challenges in operating a bike lending program. The most frequently cited challenges were associated with financial concerns (i.e., operational cost, purchase of new equipment, etc.) (n=8). Following that, six experts indicated that staffing or the time associated with managing the program is a challenge and four noted infrastructure and safety concerns as a limitation for the program. Less commonly cited challenges include program development and marketing, seasonal weather effects (i.e., fewer participants during months with inclement weather), and limited storage for the bikes. Despite these challenges, many of the experts who are involved in the operations recognize great value in the programs and continue to support the programs' existence with the resources available to them.

Following the discussion of the greatest benefits and challenges associated with bike lending operations, the experts were asked what support or resources they think are needed to increase participation in the bike lending programs. Reflecting the most cited challenge associated with bike lending operations, expressed that more financial support is needed to purchase new bikes, maintain existing fleets, and potentially subsidize participation costs (if applicable) (n=11). Seven experts suggested that they would need more outreach and promotion to increase participation in the programs they represent. Some experts also noted that resources to support operations (i.e., logistics management and storage space) would be needed to expand their programs (n=6). Additional support for bike lending programs was recommended through infrastructure improvements to support cycling (n=4) and educational initiatives to help potential participants feel more comfortable participating in the program (n=3). These responses suggest bike lending programs need a variety of resources to support their programs and meet the needs of the community they serve.

Lastly, participants were asked about support and resources that would be needed to increase bike ridership in their area, in general. The most frequently cited factor to support bike ridership and

safety is more supportive infrastructure for cyclists (n=10). One expert also noted the importance of maintaining existing infrastructure, regardless of weather conditions (i.e., plowing bike lanes after it snows), to support continuous use throughout the year. Beyond infrastructure improvements, four experts suggested the education or marketing efforts surrounding safe and respectful usage of the road for drivers and cyclists may support increased ridership. More targeted community engagement that fosters a cycling culture was also suggested as a mechanism for supporting more ridership at a local level (n=2). One expert also expressed that policy may be leveraged to implement financial incentives to support individual purchase of an e-bike. Altogether, the experts suggest that infrastructure improvement coupled with education are areas in need of the most support to promote overall ridership and safety for the cycling community.

Survey of Operators

The results of the bike lending operator survey (n=31), deployed in March to April 2024, are organized into five key topics: 1) general information about bike lending operators and programs, 2) operational details, 3) bike safety, 4) impacts of bike lending, 5) challenges and opportunities. A summary of survey key findings in each of the topic areas is provided in the sections that follow.

General Information

The survey began by asking respondents for general information about their role and the type of bike lending organization. This allowed the research team to gain a better insight into the roles of the individuals who were responding to the survey and provided an insight on the operational structure of the bike lending programs. The role with the greatest response, program manager, was represented by 39% (n=12/31) of the survey respondents. This category was followed by "Other," which based on text responses includes, but is not limited to roles such as: communications manager, volunteer safety trainer, founder, and owner. The remaining respondents represented executive directors (10%, n=3/31), library directors (6%, n=2/31), librarians (6%, n=2/31), and outreach coordinators (3%, n=1/31). Figure 8 provides an overview of the types of positions held by the bike lending survey operator respondents.

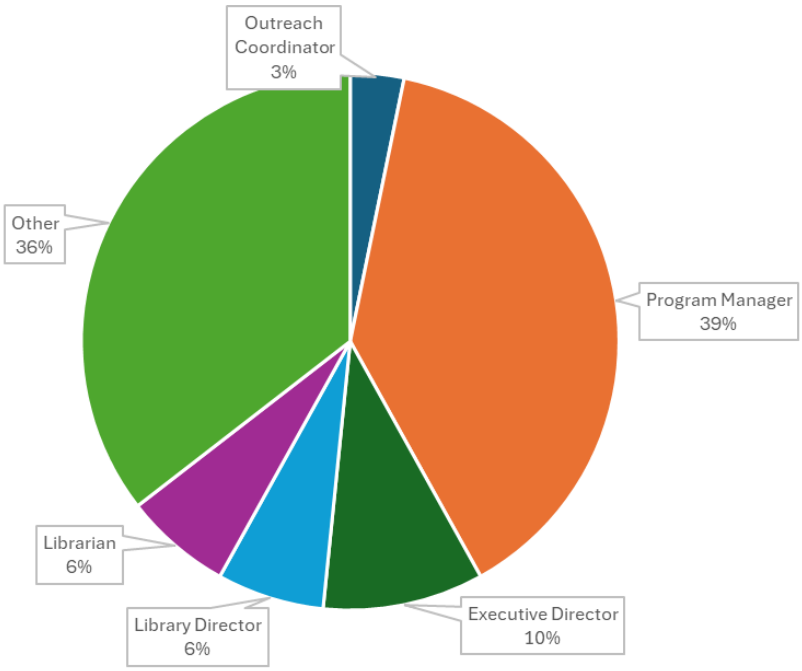

Figure 8. Bike Lending Operator Survey Respondent Roles (n=31)

As a part of the preliminary questions, the survey respondents were also asked to characterize the bike lending program that their work pertains to. This allowed the research team to get a better understanding of the business model, operational structure of the program, and potential funding mechanisms that may support the program. About 50% of programs were associated with non-profits, followed by programs that are publicly owned and operated (39%). One program each was identified as a privately owned and operated program, publicly owned and privately operated, and another model that wasn't specified. Figure 9 below displays the distribution of bike lending programs by organization type.

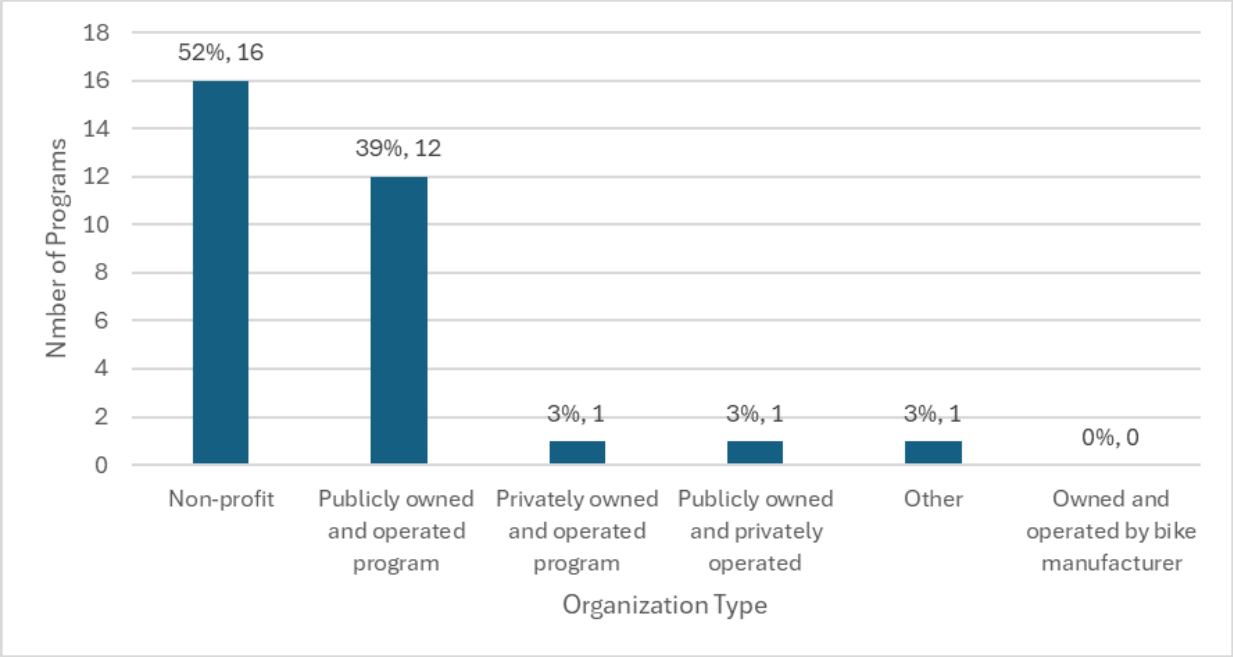

Figure 9. Bike Lending Programs (n=31) by Organization Type

Operational Details

The next section of the survey asked a series of questions to better quantify the operational details of the bike lending programs. The research team was interested in understanding operational details including the types of bikes offered through the programs, the length of the lending period, and the types of accessories offered to participants. The survey results showed that the most commonly offered bike type was an e-bike (52% of programs), followed by children's bikes (35% of programs), and road bikes (32% of programs). Participants who indicated that they also offer other types of bikes, indicated that they have tricycles, ultra-low step through bikes, adaptive bikes, or a tag-along bike. Figure 10 below indicates the distribution of bike types offered across the 31 represented bike lending programs.

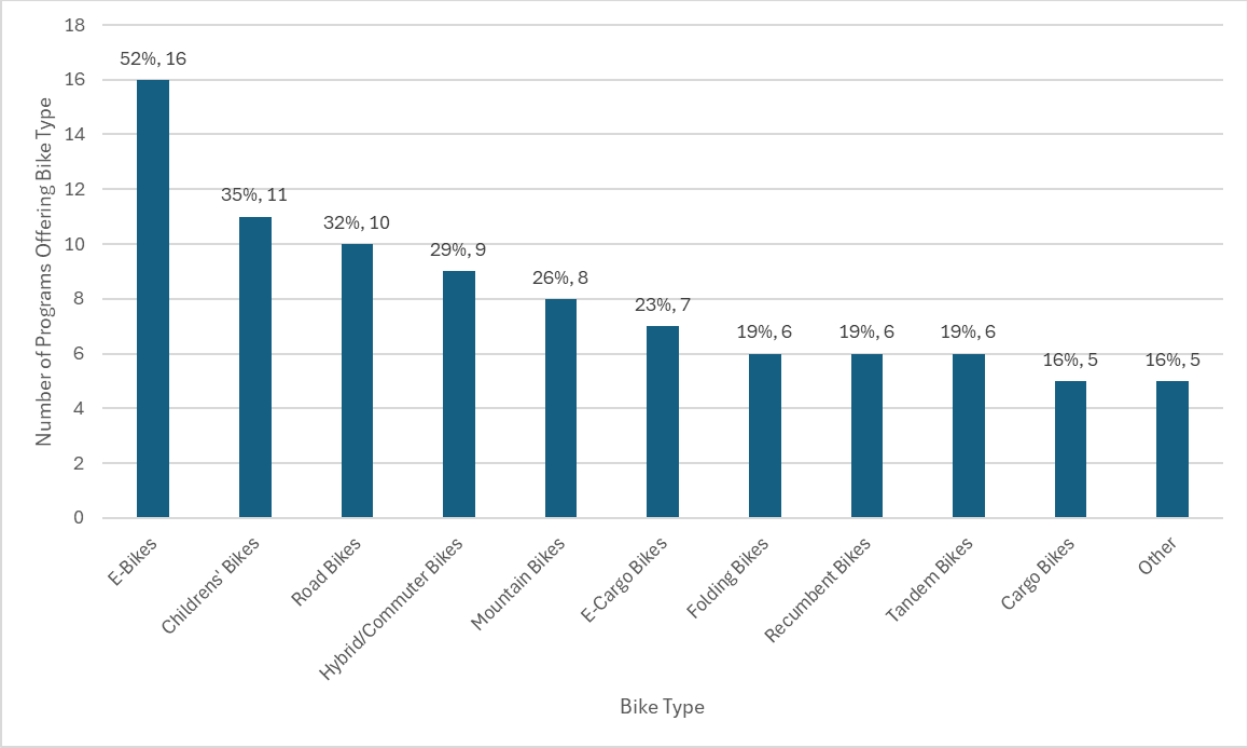

Figure 10. Types of Bikes Offered by Bike Lending Programs (n=31)

Survey respondents were also asked to select the length of the lending period that participants get to keep the bike before the bike loan ends or must be renewed. The most commonly reported lending period was less than one day (16%). However, the range of lending period lengths is vast, as at least one program was represented in each lending period option. Figure 11 below provides greater detail on the number of bike lending programs that offer bikes for various lending periods.

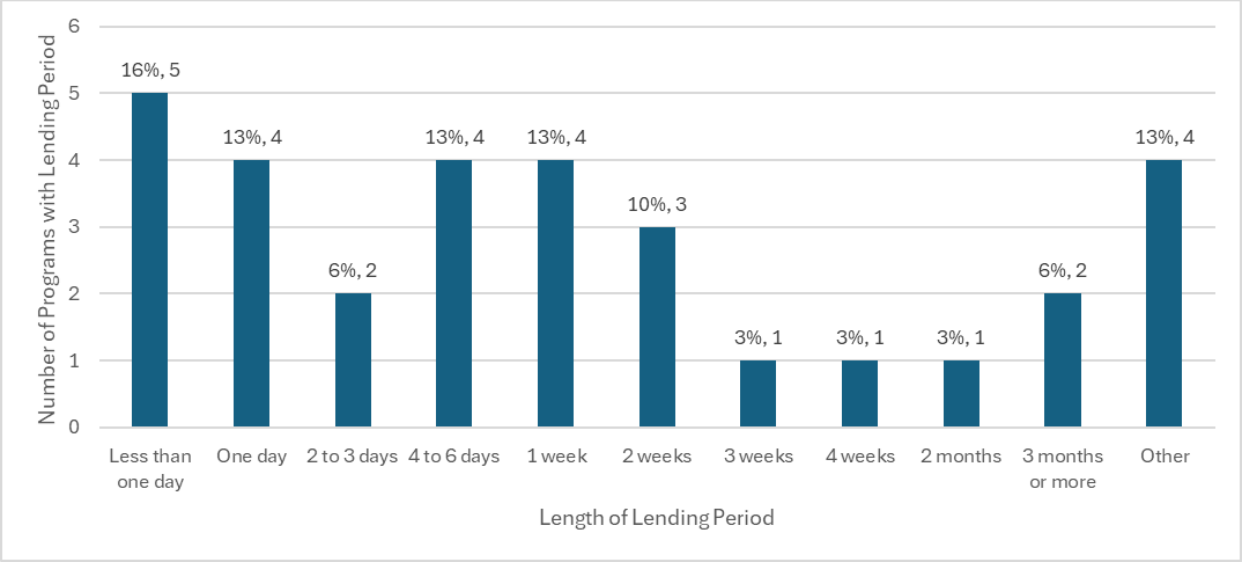

Figure 11. Length of Lending Period (n=31)

Respondents were also asked about the accessories that they provide to the program participants. The most commonly offered accessories were a bike lock (87% of programs), followed by a helmet (77% of programs). All the programs offered some kind of accessory to their participants. Some programs also offered other accessories such as an extra battery (for e-bikes), e-bike charger, first aid kit, repair kit, or an instruction sheet. Additionally, some respondents noted that they give out helmets or other accessories when they have them available. **Error! Reference source not found.** Figure 12 below provides greater detail on the number of programs that offer various accessories to bike lending participants.

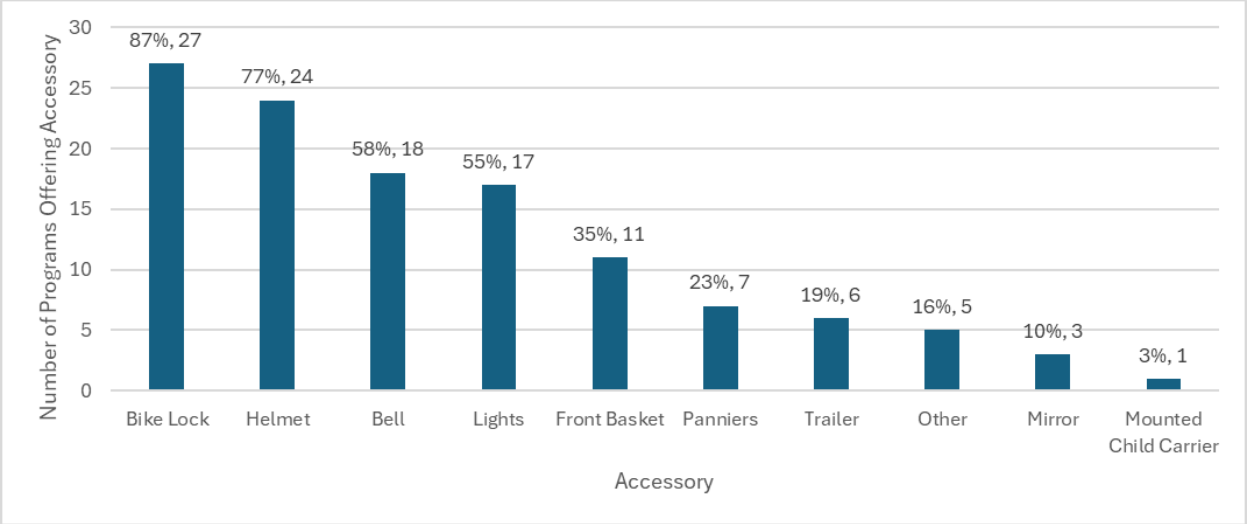

Figure 12. Accessories Offered to Bike Lending Program Participants (n=31)

Bike Safety

To gain a better understanding of the safety precautions associated with bike lending programs, the survey also asked respondents if program participants are provided with safety training prior to the lending and what topics are covered in the safety training. About half of the programs (n=16), do not require safety training. The remaining 15 programs either provide safety training prior to lending a bike (n=7) or offer optional safety training/programming that participants may attend (n=8). Due to the additional safety concerns associated with e-bikes (i.e., ability to travel at faster speeds), the research team analyzed the presence of a safety training program, with respect to whether or not the bike lending program offers e-bikes and/or e-cargo bikes. The analysis suggests that the seven programs that require safety training prior to lending out a bike are all programs that offer e-bikes or e-cargo bikes. Table 4 below provides greater detail on safety training for bike lending programs.

Table 4. Safety Training and Bike Type

	Offers E-Bikes or E-Cargo Bike	Does Not Offer E-Bikes or E-Cargo Bikes	Total
Requires safety training	7 (23%)	0 (0%)	7
Does not require safety training	6 (19%)	10 (32%)	16
Does not require safety training, but offers optional safety training/programming	5 (16%)	3 (10%)	8
Total	18	13	31

The respondents who indicated that their programs either require safety training or offer optional safety training/programming (n=15), were further asked about the topics that are covered in the training. The most commonly covered topics include bike parking and security (n=12), hand signaling as a bike (n=12), and helmet usage (n=12). Respondents also indicated other topics that are covered including: proper shifting and braking, removing the front wheel, local laws, pre-ride safety check, biking etiquette, and winter ridings. Figure 13 provides additional information on the training offered to bike lending participants.

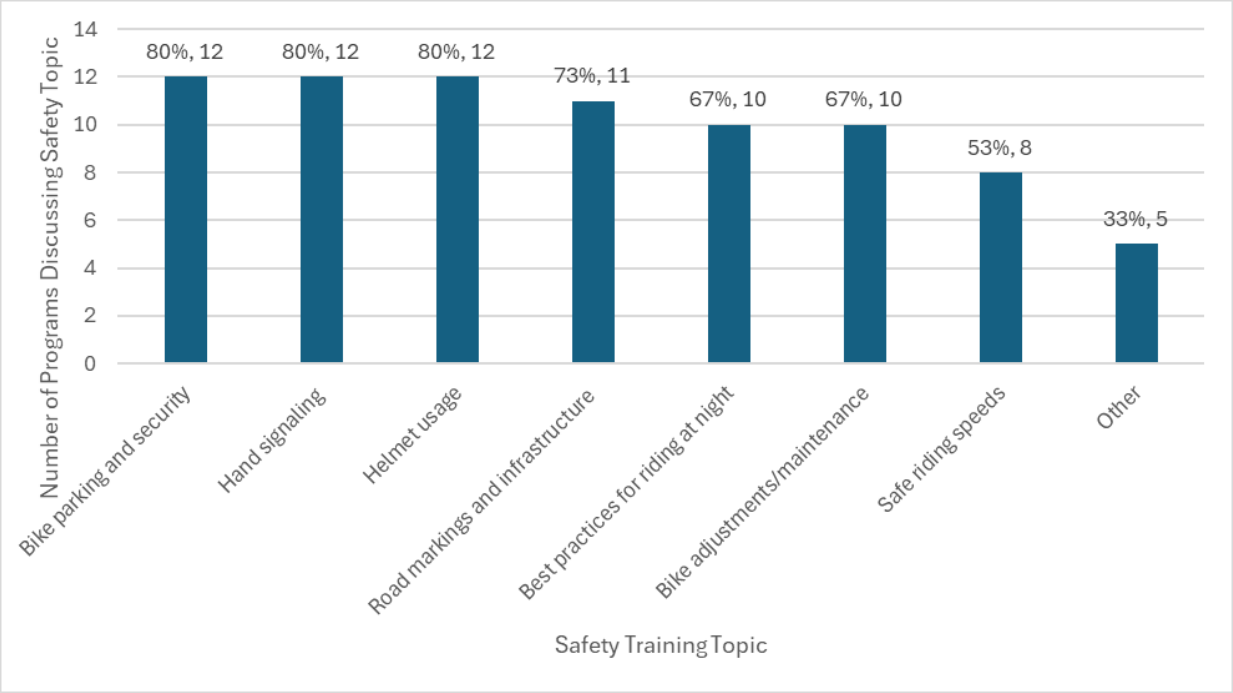

Figure 13. Safety Training Topics (n=15)

Impacts of Bike Lending

The research team also investigated the impacts of bike lending through the survey by asking operators if they collect data on the following four metrics: 1) bike mileage, 2) usage of the bike (i.e., trip types), 3) mode shift (i.e., increase or decrease in driving a personal vehicle, and 4) bike purchase after participating in the program. Due to small sample sizes, this report only provides analysis on the data associated with participants purchasing a bike after participating in the bike lending program.

Ten respondents provided insight on participants purchasing a bike after participating in the bike lending program. Six respondents indicated participants typically are looking to purchase a bike following participation in the bike lending program, either directly through the bike lending program (if applicable) or through a partnering bike shop. It is important to note that the two responses in the "other" category also indicated that participants typically would like to obtain bikes. One response specified that participants are able to volunteer their time and earn a bike for free. Another suggested their program has a goal of maintaining at least a 30% post-lending purchase rate that they measure by surveying participants. Notably, one respondent indicated that most participants of their program cannot afford the purchase of their own bike, highlighting the transportation equity role of that program. Table 5 below summarizes the response from the

operators reporting on participants purchasing a bike after participating in their bike lending program.

Table 5. Bike Purchase After Participating in Bike Lending Program

Bike Purchase Status	Count (n=10)	Percentage
Yes, and participants are able to purchase their own bike from us or a partnering bike shop.	4	40%
Yes, however, we do not have any bikes for sale.	2	20%
No, most participants of this program utilize but then can't afford to purchase their own bike.	1	10%
No, most participants do not have a desire to purchase a bike.	0	0%
Other	2	20%
I am not sure	1	10%

Challenges and Opportunities

All survey respondents were asked a series of three questions to get a better understanding of the challenges and opportunities associated with operating a bike lending program. First, participants were asked what the greatest challenges are in operating the program, followed by the greatest benefits for users of the bike lending program. Respondents were asked to select the top three choices for each of these questions. Lastly, respondents were asked to identify what resources are necessary to support the operations of a bike lending program, for which they were able to select all options that apply. It is important to note, 30 respondents responded to this series of questions and some respondents may not have utilized all three choices when applicable.

Based on the survey results, the most frequently selected benefit among the respondents was the physical health benefits (63%, n=19/30), followed by mental health benefits (50%, n=15/30). Other notable benefits include: access to essential services (33%, n=10/30), economic opportunity (30%, n=9/30), and social equity impacts (30%, n=9/30). The remaining benefits were selected by eight (27%) respondents or less. Figure 14 below displays the frequency of responses for the greatest benefits provided to users of bike lending programs.

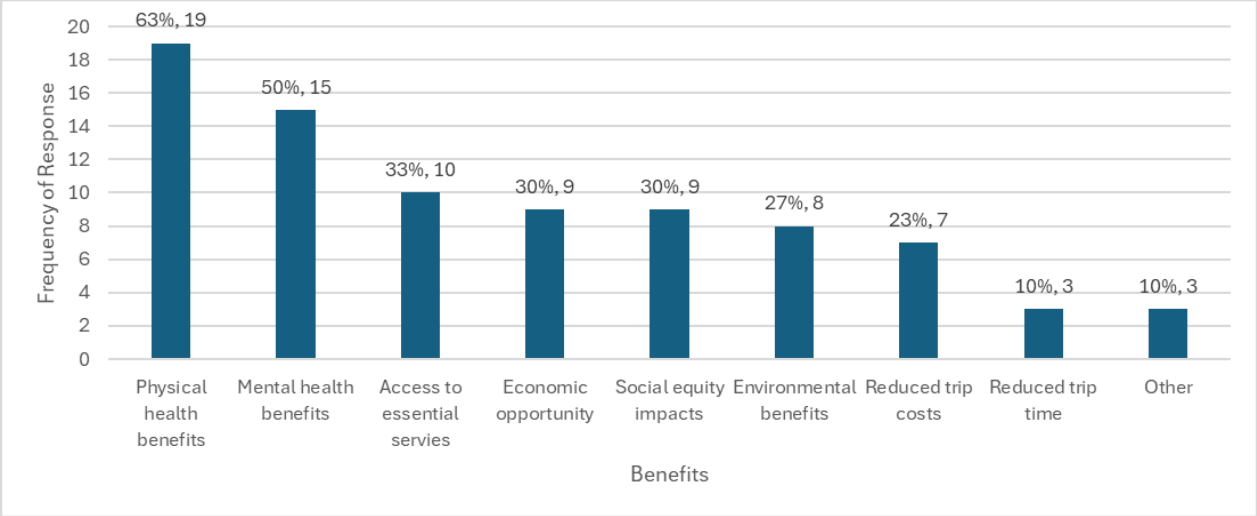

Figure 14. Greatest Benefits Provided to Bike Lending Program Users (n=30)

In addition to the expert interview responses surrounding the greatest challenges of operating a bike lending program, the survey asked a similar question, and allowed the research team to better quantify challenges relative to each other. The survey responses indicate that lack of supportive infrastructure (60%, n=18/30), lack of funding (57%, n=17/30), and concerns about the bikes being damaged or stolen while on loan (47%, n=14/30), represent the most commonly reported challenges. The remaining challenges were selected by eight (27%) or fewer respondents. Some notable responses in the "Other" category include: challenges associated with volunteers supporting the program (n=2) and storage space for the bikes (n=2). Figure 15 below summarizes frequency of response and percent of responses for each challenge in operating a bike lending program.

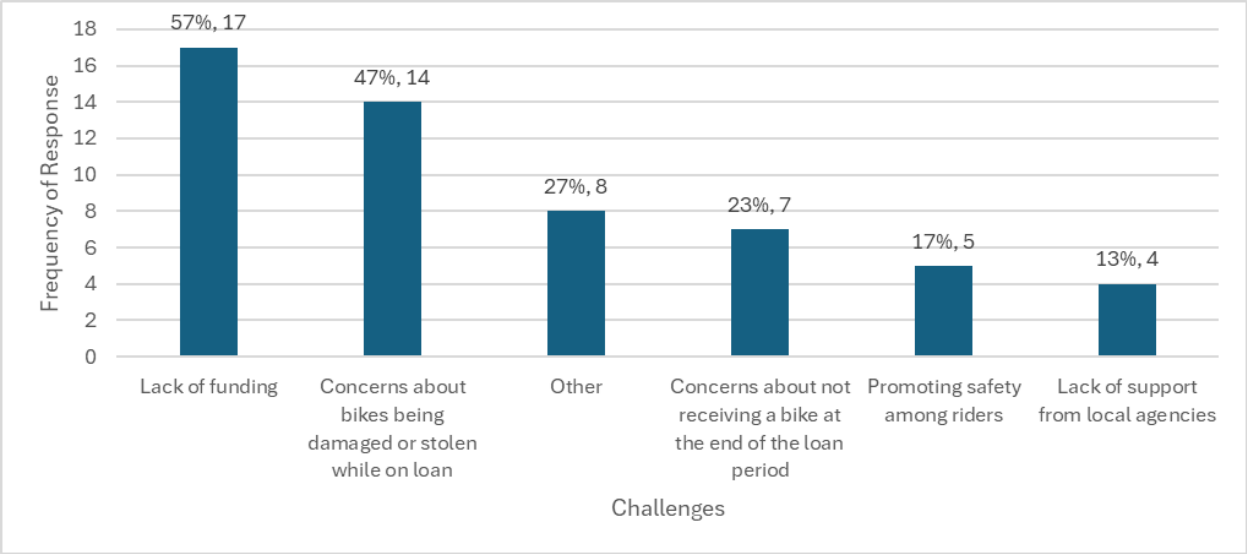

Figure 15. Greatest Challenges Operating a Bike Lending Program (n=30)

The greatest challenges in operating a bike lending program, in tandem with the resources needed to support a bike lending program, provide greater insight to the research team on what recommendations can be made to support these programs. Reflecting the most frequently identified challenges to operating a bike lending program (lack of supportive infrastructure), 83% (n=25/30) of respondents also indicated that bike-friendly infrastructure is a resource needed to support bike lending programs. Other notable resources include a need for local funding (80%, n=24/30), public sector partnerships (47%, n=14/30), and private sector partnerships (43%, n=13/30). These three resources were indicated more frequently than other sources of funding, such as state funding (40%, n=12/30), regional funding (40%, n=12/30), and federal funding (30%, n=9/30). A few notable responses in the "other" category include, community champions, individuals with bike knowledge, or people to staff the program in general (n=3) and storage for the bike (n=1). Figure 16 below provides an overview of the distribution of response regarding resources needed to support bike lending programs.

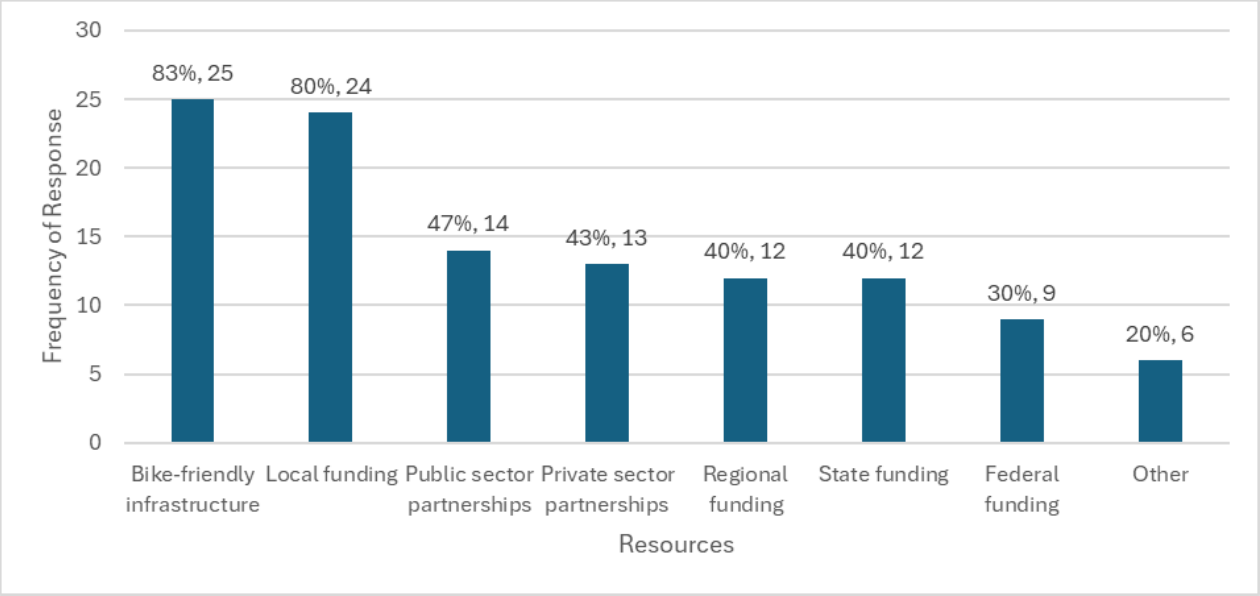

Figure 16. Resources Needed to Support Bike Lending Programs (n=30)

Focus Groups

Two focus groups (n=12 participants total) were conducted in April 2024. The focus groups allowed the research team to gain insights on two different bike lending programs, from the participant perspective. The focus group questions focused on four key topics: 1) bike lending experience, 2) bike lending safety, 3) improving bike safety, and 4) impacts of bike lending. The following subsections summarize the findings across the two focus groups in the four topic areas.

Bike Lending Experience

To begin, focus group participants were asked general questions to characterize their general experience with bikes and their participation in the bike lending program. These questions helped the research team understand motivations for participating in the program, how participants used the bike they borrowed from the program, and general concerns participants may have had while participating in the program. The focus groups began by asking participants what their favorite thing is about riding a bike. Some participants provided multiple answers with the most commonly cited responses as follows: exploring or going new places on the bike (n=4), a feeling of freedom or independence while riding (n=3), it provides a convenient transportation mode (n=3), exercise or health benefits (n=2), feeling like a kid while riding (n=2), and it allows them to get outside (n=2). Participants were also asked how they learned about the bike lending program prior to their participation. A majority of the participants indicated that they learned about the bike lending program that they participated in either by word of mouth (n=5) or saw the program in person (n=5). The remaining participants indicated that they saw an advertisement (n=2) that made them interested in participating. Most participants indicated that they did not have any concerns about participating in the program (n=7). Some participants noted that being provided with a helmet and

lock, knowing that they have a safe space to store the bike (i.e., garage), and understanding the lending terms made it so that they did not have any concerns. Four participants expressed concerns prior to participating in the bike lending programs with reasons related to the available bike selection, keeping the bike safe when not using it, and their personal safety. Despite these concerns, the participants generally described a good experience after participating in the program.

The focus group participants were asked what kind of trips they took with the bike or how they used the bike they borrowed from the program. The most reported use of the bike included recreation (n=3) and commute to work (n=2). Other reported uses include: taking a child to daycare and getting groceries. One participant also explained that the main reason for their participation was to help decide if they would like to purchase their own e-bike and determined this through various recreational rides over the course of a few days. Additionally, participants were asked how far they are willing to ride on a bike. The participants reported a wide variety of distances with a lower bound of about six miles and an upper bound of about 60 miles. It is also important to note that these distances were reported by both e-bike users and pedal bike users. There did not appear to be a trend in distance associated with bike type, instead many participants indicated that the distance they are willing to travel has more to do with comfort level. For example, participants that are less comfortable riding on the road with vehicles are less likely to make longer trips, as they often require some portion of the trip to be on the road with vehicles. Two participants suggested that they will feel more comfortable making longer trips as they ride more or suggested they would feel more comfortable on bike trails. One participant noted that when riding an e-bike, they felt more confident riding with cars because they are able to more closely match the speed of the cars. However, one participant noted that they are able to travel further on their personal pedal bike because they do not have to worry about the e-bike battery running out of charge. Additional factors that influence comfort levels and the participants' perception of safety will be discussed in the following section.

Bike Lending Safety

To get a better understanding of the safety concerns and considerations of bike lending participants, a series of questions were asked to characterize riding behavior and how the built environment may have influenced riders' feelings of comfort and safety. Four participants explicitly expressed discomfort or that they feel unsafe sharing the road with cars. Six participants expressed that they try to avoid traveling on busy roads and attempt to travel along less busy roads (i.e., through neighborhoods, backroads), to avoid encounters with vehicles. The three participants from the U.S. also discussed how they take safety precautions to improve their visibility to drivers (i.e., wearing bright colored clothing and helmets, additional lights on their bike), to help promote safe riding. Many participants suggested that having more designated or separated bike lanes and paths would make them feel more comfortable riding (n=6). One participant also noted that they feel safer when signals are present in areas where bike paths cross streets. Two participants also expressed concerns about a lack of bicycle parking infrastructure and how that may limit desires to ride a bike if people do not have a safe space to store their bike when they reach their destination.

A few safety concerns were expressed that were specific to e-bikes. For example, e-bike users noted how the operation of an e-bike played a role in the perception of safety. More specifically, the increased size, weight, and speed of an e-bike can take some time getting used to, in terms of operating and maneuvering the bike (n=4). However, two participants noted that when they are using an e-bike they feel safer on shared roads because they can better match the speed of the cars traveling on the same road. As discussed above, with the exception of a few participants, both e-bike users and pedal bike users shared similar concerns about a lack of dedicated infrastructure for cyclists.

Improving Bike Safety

In light of the various safety concerns associated with biking in North America, the focus group participants were asked about various strategies to help improve safety while participating in the bike lending program and when cycling in general. When asked about what can be done to improve safety when participating in the bike lending programs, the responses diverged between the Canadian participants and the U.S. participants. Four of the Canadian participants indicated that they would like more instruction or warnings of what to expect before they take the bikes, especially for e-bikes. Other suggestions included providing insurance or an emergency contact number. Alternatively, the three participants from the U.S. bike lending program were more interested in having access to more accessories that promote safety (i.e., mirrors, additional lighting).

Participants also discussed a variety of strategies to address safety concerns while they are cycling. For example, the participants from the U.S. discussed the importance of visibility, including both the driver seeing a cyclist ahead and a cyclist seeing a driver approaching. They suggested that cyclists can help improve their on-road safety by having mirrors, flashing lights, bright clothing, and using hand signals. Both focus groups also discussed strategies for drivers to improve the safety of cyclists. Four participants suggested that they would like drivers to share the road or maintain more space between their vehicle and cyclists. Similarly, one participant noted that it can be difficult for drivers and cyclists to share the road when they are not given enough space, supporting the need for dedicated cycling infrastructure. Participants also suggested an increase in education or awareness surrounding on-road bike safety (i.e., local safety campaigns, public service announcements, including bike safety on driver's license tests) (n=5). Participants noted that such educational efforts may support a culture shift in which drivers are more accepting of cyclists or remind drivers in car-dominated areas that they need to be aware of cyclists. Three participants across both focus groups also indicated that enforcement may play a role in supporting the existing rules that promote bike safety (i.e., drivers maintain a certain distance when passing a cyclist). The participants from the U.S. also noted it would be helpful if highway crews filled in ditches on the side of the road and cleaned bike lanes that are often covered with debris. Another participant indicated that they would like information on who to contact to indicate that there needs to be a better presence in maintaining and cleaning the existing bike lanes and paths.

Another topic that was discussed with the focus group participants was how an increase in the number of cyclists may increase on-road safety. Four participants suggested that if there are more cyclists, it may lead to more awareness and support for cycling, and may be better for cyclists in the long term. A few participants agreed with this, however, some also mentioned that it is important that there is also an increase in infrastructure appropriate for cycling or it may cause additional challenges (i.e., more congestion, frustrated drivers). Two participants suggested that it would be less safe due to concerns about drivers and the potential need for cyclists to pass each other. A few participants were unsure of how an increase in cyclists would make cycling safer or indicated that they would not feel any change in safety if they were cycling in a group (n=3). The general sentiment among participants was that a combination of infrastructure and education is needed to help improve the safety for cyclists while they are on the road. Figure 17 provides a summary of the concerns, precautions, and suggested improvements associated with the safety of bike lending programs.

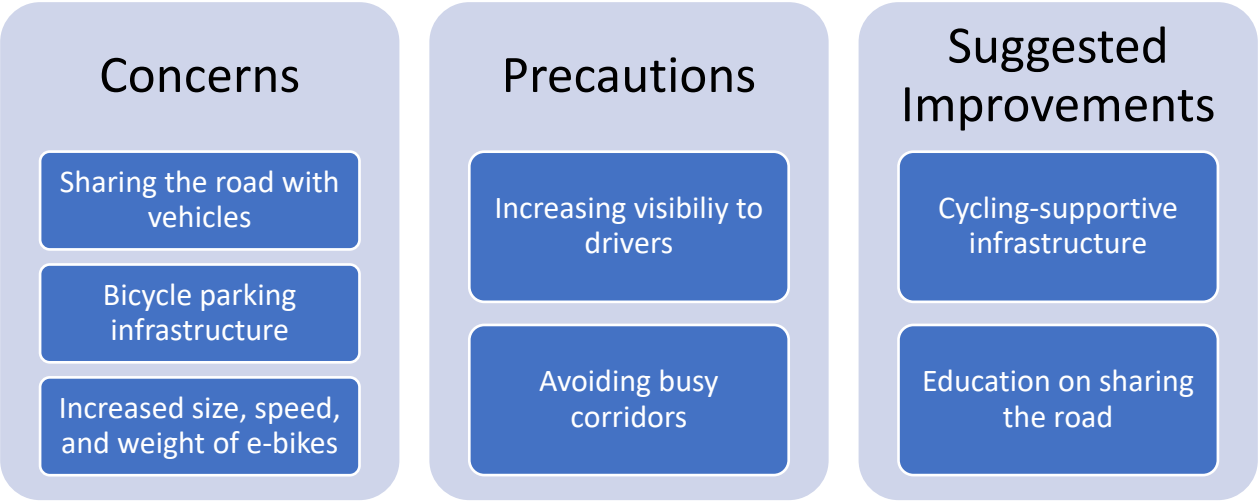

Figure 17. Summary of Bike Lending Safety Focus Group Findings

Impacts of Bike Lending

The focus group participants were asked a series of questions to better understand the impacts of their participation in the bike lending programs. First, participants were asked how participation may have changed their perception of cycling as a transportation mode. Some participants noted modal shifts such as using an e-bike instead of taking the bus (n=1) or biking to a destination when they otherwise would have walked (n=1). Two participants explicitly stated that they still drive most of the time and opt to use bikes for recreational purposes. Participants also noted that participation in the bike lending program led them to engage in educational activities (i.e., seminars, clinics) to learn about bike maintenance or laws surrounding bikes (n=2). Specifically, participants who borrowed e-bikes indicated that they are able to travel further and faster on an e-bike (n=4). Another notable response included a participant who noted that they would not be biking if it were not for the electric assistance capabilities provided by the e-bike. Generally, the

participants thought positively of their experience on a bike, however, few have adopted cycling for use cases beyond recreational.

Participants were also asked about any new opportunities and experiences or challenges and barriers they faced as a result of their participation in the bike lending programs. Four participants expressed that the bike lending program allowed them to discover a new trail and see new scenery. A participant further explained that when traveling by car you may be traveling too fast to take in the scenery, while walking may be too slow. Alternatively, biking allows one to reach new destinations and take in the scenery. Two participants indicated that with an e-bike they were no longer concerned about biking up hills. Two participants commented generally how experiencing an e-bike was new to them and the program allowed them to become more comfortable riding one. Another participant also noted that they were able to experience what it was like to get groceries via bike, a trip that she typically would have completed via car. The participants also described a variety of challenges including: finding a car-mounted rack suitable for an e-bike (n=3), storage of the bike (n=2), and the weight of an e-bike (n=2). Participants also indicated that bike maintenance, theft prevention, and the installation of a child seat were also new challenges that they faced with a bike. Specific to e-bikes, one participant also expressed their concern about battery fires and they learned to pick an e-bike with a reliable battery, even though it was more expensive.

Lastly, participants were asked if their participation in the program has made them want to purchase their own bike. Seven participants indicated they have purchased either an e-bike (n=3) or pedal bike (n=2) since they participated in the bike lending program. One participant noted that they have purchased both an e-bike and three pedal bikes and another did not specify what kind of bike they purchased. Additionally, four participants indicated they are in the process of determining what bike to purchase or expressed interest in buying a personal bike in the future. A few participants (n=4) specifically indicated that the bike lending program was an opportunity for them to try different bikes or provided an educational opportunity to help inform their personal bike purchase.

Discussion

Based on the accumulation of data from the census, expert interviews, operator survey, and focus groups, the research team identified themes for which key findings can be categorized. The sections that follow provide further discussion of the results in the context of two themes: 1) bike lending operations and 2) bike safety and supportive infrastructure.

Bike Lending Operations

Across all the methods utilized for this research, it is evident that bike lending program operations vary in many aspects. Table 6 below summarizes the key findings from the census, expert interviews, survey, and focus groups that relate to bike lending goals or missions, bike types and fleet size, and funding bike lending programs.

Table 6. Key Findings - Bike Lending Operations

Topic	Census Findings	Expert Interview Findings	Survey Findings	Focus Group Findings
Bike Lending Program Goals or Missions	Goals and missions were not explored in the census	Bike lending programs have varying goals or missions in areas related to providing access to bikes to underserved populations and promoting bike adoption, environmental sustainability, and health initiatives	Physical health benefits, mental health benefits, and access to essential services were indicated among operators as three most commonly selected benefits provided by bike lending programs	Participants described a variety of trips types and uses of the bike including recreation, commuting, testing a bike before purchase, and taking a child to daycare
Bike Types and Fleet Size	Bike lending programs have widely varying fleets sizes with most programs offering different types of bikes	Bike lending fleets range from two to hundreds of bikes often including various bike types	Fleet sizes range from two to hundreds of bikes with at least five programs offering at least one of the ten specified bike types; the most commonly offered bike being an e-bike	Participants described having used different types of bikes within the same lending programs
Funding Bike Lending Programs	Program funding was discovered in the survey and expert interviews	Bike lending programs are funded through a variety of mechanisms including government funding, grants, participant donations, and sponsorships	Lack of funding and various types of funding were the second most commonly cited challenge in operating a bike and resource needed to support bike lending programs	Program funding was not explored in the focus groups with participants

Bike Safety and Supportive Infrastructure

In addition to operational characteristics of bike lending programs, bike safety and infrastructure was explored to gain insights on user acceptance and different factors that influence safety among riders. Table 7 below summarizes the key findings from the census, expert interviews, survey, and focus groups that relate to pre-lending safety training, providing participants with accessories, bike lending program insurance, and the need for more supportive infrastructure.

Table 7. Key Findings - Bike Safety and Supportive Infrastructure

Topic	Census Findings	Expert Interview Findings	Survey Findings	Focus Group Findings
Pre-Lending Safety Training	Few programs mandate or require safety training prior to participating in lending program	Volunteers or program staff often discuss safety tips and operational instructions prior to lending, especially programs with e-bikes	About half the programs offer optional or require safety training, all of the programs that require safety training offer e-bikes and/or e-cargo bikes	Participants expressed that the operating an e-bike may be difficult, due to the increased size and weight of the bike, as well as getting used to the electric assistance
Providing Participants with Accessories to Promote Safety	Bike locks and helmets are the most commonly provided accessory, often at no cost to the participant	Helmets are often provided to prompt participant safety while bike locks are provided to promote security of the bike	The most commonly offered accessories are bike locks, helmets, a bell, and lights	Some participants expressed that the provision of helmet and bike lock made them feel more comfortable, while others suggested additional accessories
Developing More Supportive Infrastructure	Supportive infrastructure was not explored during the census of bike lending programs	Most experts suggested that improved and dedicated infrastructure to promote cycling would help increase program participation and ridership in general	Lack of supportive infrastructure was the most commonly cited challenge and in operating a bike lending program and resource needed to support bike lending programs	Many participants advocated for more improved cycling infrastructure, even those who feel more comfortable riding on shared roads

Conclusions and Recommendations

Bike lending programs present a growing model for providing individuals with low-barrier access to bikes. To identify and characterize the current state of bike lending in North America, the research team completed a literature review, census of bike lending programs, expert interviews (n=24), a survey of operators (n=31), and focus groups with bike lending participants (n=12) from January 2024 to April 2024. Key findings throughout the research (i.e., interviews, operator survey, and focus groups) suggest that bike lending programs need more robust funding opportunities to support long-term operations and improved infrastructure is needed to support participation in bike lending programs and further adoption of cycling.

The findings from this research provide many insights on the general operations of bike lending programs. Aggregating the findings across all locations, it is evident that bike lending programs have varying goals including addressing environmental concerns, promoting physical health, providing the opportunity to try a bike before purchasing, or supporting transportation equity. Bike lending programs are often accessible to participants at little to no cost and may be funded through various mechanisms (e.g., donations, traffic safety funding, local or regional funding programs, etc.). Additionally, bike lending programs tend to be operated by non-profit organizations or are publicly funded and operated. The bike lending programs were also found to be housed in a variety of venues, including but not limited to traditional book libraries, community centers, and bike shops. The identified bike lending programs were found to have a wide variety of fleet sizes (two to 200 bikes) and lending periods (a few hours to multiple months). Many bike lending programs offered different types of bikes, such as e-bikes, children's bikes, and commuter bikes. However, the census indicated that the most commonly offered bike is an e-bike. The operators also provided key insights on the challenges associated with running a bike lending program. For example, some programs expressed challenges associated with funding, physical space constraints, staffing, and obtaining insurance. Many operators expressed desires to expand their respective bike lending programs, however, operational challenges such as the aforementioned, were often barriers.

The research also revealed insights about bike safety and supportive infrastructure. To begin, many bike lending programs offer accessories to enhance the experience, most commonly a helmet and lock to promote safety for the participant and security of the bike. Other accessories that may be offered by bike lending programs and support safe riding include lights, mirrors, and bells, among other accessories. Based on the survey, some bike lending programs, particularly those that offer e-bikes or e-cargo bikes, may require participants to complete safety training prior to taking a bike. Other programs may offer optional programming that participants may opt to join if they would like additional resources surrounding cycling and bike maintenance. These trainings typically covered topics such as hand signaling, helmet usage, bike parking, and bike-specific road markings and infrastructure. The other half of the programs do not require any safety training for program participants. This research also explored the perceptions surrounding bike safety and desired infrastructure to support cycling. Through the survey, it was evident that infrastructure is an important piece of bike lending programs as a lack of infrastructure was the most highly cited

challenge and bike-friendly infrastructure was the most highly resource needed to support bike lending. Through the expert interviews and focus groups, the research fielded a variety of strategies to help improve bike safety. Many experts emphasized the need for improved infrastructure to support cycling, in addition to maintaining existing infrastructure for cyclists, and supporting year-round usage of cycling infrastructure. The focus group participants discussed various strategies including enhancing their visibility (i.e., by wearing reflective clothing, lighting), the need for bike-dedicated infrastructure, and education campaigns that educate drivers on sharing the road with cyclists. Together, the various engagements provided insights on safety issues that exist among bike lending programs, as well as the built environment.

Given the limited existing documentation on bike lending programs, there is a need for continued research in this space. As one of the limitations of this research, additional research is needed to characterize bike lending programs in Mexico. Building upon findings of this research, future research may also explore how the existence of bike lending programs may influence the development of more supportive and safe infrastructure for cyclists. Additional research is needed to better understand the demographics of participants, as well as those who are not using bike lending programs. In the absence of a direct user survey, it is difficult to understand who uses bike lending programs. Other research may focus on assessing the effectiveness of bike lending programs in terms of reaching various goals, such as those related to transportation equity (e.g., enhancing mobility among underserved populations) and environmental goals (e.g., reducing vehicle miles traveled and greenhouse gas emissions). The operational challenges and limited existence of documentation on bike lending also suggests that this space may benefit from research that produces toolkits and other resources on how to design bike lending programs for financial sustainability, build right-sized fleets to optimize community benefit, and overcome other commonly faced challenges that may be experienced in bike lending programs. Future research may also include insights from a greater sample of bike lending participants and a greater sample of bike lending program operators as more programs begin operations.

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Appendix A

Bike Lending Expert Interview Protocol

Thank you so much for joining us today to discuss bike lending initiatives in North America.

Introduction

1. Can you describe your role at your organization?
2. What is the goal or mission of your bike lending program?
3. When did the bike lending program first start?

Operational Details

1. Is your bike lending operation targeted to reach a certain population?
    1. Do you collect demographic or behavioral information from the lendees?
    2. What kind of trips do people make with the bikes (i.e., job access, recreational, etc.)?
    3. Do you think the lendees act differently than other bicyclists (i.e., those that own their bike)?
2. How is the bike lending program funded?
3. How do you acquire the bikes?
4. How many bikes are in your fleet?
5. What type of bikes do you have to offer (i.e., e-bike, road bike, recumbent, bikes for children, cargo bikes, etc.)?
6. How do you source the bikes?
7. Do you offer any bike accessories (i.e, baskets, locks, helmets, etc.)?
8. What process must a lendee go through to be able to use the bikes?
9. Are lendees limited to using the bike within a certain geographical area?
    1. Are there other terms and conditions for bike lending?
10. What happens if a bike is not returned?
11. Are you looking to expand your bike lending operations, if so how?

Bike Safety

1. Are there helmet laws where your program operates?
2. Do you require riders who participate in the program to wear helmets?
3. Are participants required to complete a safety training prior to being able to use a bike?
    1. What is covered in the safety training?
4. Have there been any accidents among people using the bikes in your program?
    1. How were these situations handled?
5. What type of insurance does your program have (e.g., general/commercial, liability, etc.)? What does it cover?
    1. Do you know the coverage limit?
6. Are participants required to sign a liability waiver?

7. What do you think are the biggest causes of bicyclist crashes/accidents?
8. Is theft and vandalism a problem for the bike lending program in your areas?
9. Is there any support for lendees who face challenges while they have the bike (i.e., flat tire, accident, stolen bike, etc.)?

Bike Infrastructure

1. Can you describe the current state of bike infrastructure in your area?
    1. Is there infrastructure that promotes bike safety (i.e., designated bike lanes)?
    2. Is there any infrastructure that deters bike safety (i.e., certain traffic signals, round-abouts)?
2. Are there any infrastructure elements that you think could be added in your area to promote cycling?
3. Do lendees plan their trips to take advantage of supportive bicycle infrastructure?

Support and Resources

1. What do you think is the greatest benefit provided by the bike lending program?
2. What are the greatest challenges that you face in your bike lending initiative?
3. What kind of support or resources (i.e., financial, policy, etc.) do you think is needed to increase participation in the bike lending program?
4. What kind of support or resources (i.e., financial, policy, etc.) do you think is needed to increase bike ridership and safety in your area?

Wrap Up

1. Is there anything else you would like to add?
2. Are there any resources you suggest we look into?
3. Is there anyone else you suggest we speak with?
4. Can we reach out with any follow up questions?
5. If Applicable: Would you be interested in taking part in a survey on bike lending operations in North America?

Appendix B

Bike Lending Operator Survey

Introduction

1. On behalf of the University of California (UC), Berkeley's Transportation Sustainability Research Center we appreciate your time and effort in taking this survey. Your participation in this study is completely voluntary, and you may discontinue taking the survey at any time without penalty. You may choose to skip any questions that you do not want to answer.

   The findings from this survey will not be attributed to any individual or organization but will instead inform a general state of the industry report.

   Per UC Berkeley requirements, you must be 18 years of age or older to take this survey. By clicking "I agree to take this survey," you confirm that you are 18 years of age or older and consent to participate in this research.

   If you have questions about the survey or the procedures, you may email brooke.schmidt@berkeley.edu.
   a. I agree to take this survey.

Screener Questions

1. Do you work for or does your work relate to a bike library or bike lending program?
   1. Yes
   2. No

End survey if no, if yes:

2. Please select the description that best describes the bike lending program.
   1. Non-profit
   2. Publicly owned and operated program (i.e., public agency or local government)
   3. Privately owned and operated program
   4. Publicly owned and privately operated
   5. Owned and operated by bike manufacturer
   6. Other, please specify:
3. Please select the position that most closely corresponds to your role within your organization. Please select all that apply.
   1. Bike Mechanic
   2. Grant Writer
   3. Outreach Coordinator
   4. Program Manager
   5. Other, please specify:

Operational Details

1. How many bikes do you have in your fleet of the following types? Please indicate for all that apply.
    1. Cargo bikes (non-electric): _____
    2. Childrens' bikes: _____
    3. E-bikes: _____
    4. E-Cargo bikes:
    5. Folding bikes: _____
    6. Hybrid or commuter bikes: _____
    7. Mountain bikes: _____
    8. Recumbent bikes: _____
    9. Road bikes: _____
    10. Tandem bikes: _____
    11. Other, please specify: _____

2. Approximately how many bike lending transactions occur each month?
    a. Zero
    b. 5
    c. 10
    d. 15
    e. 20
    f. 25
    g. 30
    h. Over 30, please specify:

3. How long do participants get to keep the bike before the bike loan ends or must be renewed?
    a. Less than one day
    b. One day
    c. 2 to 3 days
    d. 4 to 6 days
    e. 1 week
    f. 2 weeks
    g. 3 weeks
    h. 4 weeks
    i. 2 months
    j. 3 months or more
    k. Other, please specify: _____

4. Which accessories do you offer to program participants? Please select all that apply.
    a. We do not offer any accessories to program participants.
    b. Bell
    c. Bike Lock
    d. Front Basket
    e. Helmet
    f. Lights
    g. Mirror
    h. Mounted Child Carrier
    i. Panniers
    j. Trailer
    k. Other, please specify:

5. Does your program focus on serving specific populations within your community?
    a. Yes
    b. No
    c. I am not sure

6. [If "Yes" to the question above] Which (if any) population(s) does your program focus on serving? Select all that apply.
    a. General population
    b. Black, indigenous, and people of color
    c. Immigrants or refugees
    d. Low-income individuals
    e. Unhoused individuals
    f. Youth (Under 18 years old)
    g. Commuters
    h. Other, please specify:_____

7. What is required of bike lending/library participants prior to receiving a bike? Please select all that apply.
    a. Photo ID
    b. Proof of residency
    c. Proof of income
    d. Signed waiver of liability
    e. Signed user agreement
    f. Security deposit
    g. Credit card pre-authorization
    h. Other, please specify:

Bike Safety

1. Are participants required to complete a safety training prior to receiving a bike?
    1. Yes
    2. No
    3. No, but we offer optional safety training/programming

If Yes or No, but we offer optional safety training:

2. What topics are covered in the safety training? Please select all that apply.
    1. Best practices for riding at night
    2. Bike adjustments/maintenance
    3. Bike parking and security
    4. Hand signaling as a biker
    5. Helmet usage
    6. Road markings and infrastructure pertaining to bikes
    7. Safe riding speeds
    8. Other, please specify:

3. Which of the following requirements exist for the use of bike helmets in your area? Please select all that apply.
    1. There are no rules about wearing a helmet when biking
    2. We requires participants to wear a helmet
    3. A city ordinance or code requires bikers under 18 to wear a bike helmet
    4. A city ordinance or code requires all bikers to wear a helmet
    5. A state law requires bikers under 18 to wear a helmet
    6. A state law requires all bikers to wear a helmet
    7. Other, please specify:_____

4. Have any participants of the bike lending program been in an accident or crash on a bike from your program?
    1. Yes
    2. No
    3. I am not sure

If Yes above:

5. Approximately, how often are participants in an accident or crash while riding a bike on loan from the bike lending program? Please select the answer that best describes how often participants are in an accident or crash.
    1. We have never heard of any participants in an accident or crash while riding one of our bikes.
    2. Once a day
    3. Once a week

4. Once a month
5. 2 to 3 times per month
6. Once a year
7. 3 to 5 times per year
8. Other, please specify:
9. I am not sure

If I am not sure or We have never heard of any participants in an accident or crash while riding one of our bikes are NOT selected

6. Please indicate the descriptions that best describe the nature of the crash(s) or accident(s). Select all that apply.
    1. Collision with a pedestrian
    2. Collision with another biker
    3. Collision with a vehicle
    4. Collision with a stationary object or piece of infrastructure
    5. Fall due to poor road or infrastructure conditions (i.e., pot hole, loose gravel, etc.)
    6. Other, please specify:_____
    7. I am not sure - *exclusive*

7. Does the bike lending program have insurance? Please select all that apply.
    1. Yes, the insurance covers bikes
    2. Yes, the insurance covers the bike shop or building that houses the bike lending program
    3. Yes, the insurance covers the user of the bikes
    4. No we do not have insurance - *exclusive*
    5. Other, please specify:

8. Have any bikes been stolen or vandalized while on loan to a participant of the bike lending program?

	Yes	No	I am not sure
Stolen			
Vandalized			

If Stolen - Yes above:

9. Approximately, how often are bikes stolen within the bike lending program? Please select the answer that best describes how often bikes are reported to be stolen from the lending facility and when on loan.

	We have never had any bikes stolen	Once a day	Once a week	Once a month	2 to 3 times per month	Once a year	3 to 5 times per year	Less than once a year	I am not sure
Stolen From Lending Facility									
Stolen From Lendee									

If Vandalized - Yes above:

10. Approximately, how often are bikes vandalized within the bike lending program? Please select the answer that best describes how often bikes are reported to be vandalized from the lending facility and when on loan.

	We have never had any bikes stolen	Once a day	Once a week	Once a month	2 to 3 times per month	Once a year	3 to 5 times per year	Less than once a year	I am not sure
Vandalized At Lending Facility									
Vandalized With Lendee									

Impacts of Bike Lending

1. Do you collect any information or have any insight on the impact that bike lending has on the participants of the bike lending programming in the following areas? Please select all categories that apply.
    1. Bike mileage (i.e., odometer reading)
    2. Usage of bike (i.e., trip type)
    3. Mode shift (i.e., increase or decrease in driving a personal vehicle)
    4. Bike purchase
    5. We do not collect any data or have any insights on the impacts listed above - *exclusive*

If Yes to Bike mileage:

2. What is the average mileage added to the bike during each lending session?
    1. Less than 5 miles
    2. 6 to 10 miles
    3. 11 to 20 miles
    4. 21 to 30 miles
    5. 31 to 40 miles
    6. 41 to 50 miles
    7. 51 to 60 miles
    8. 61 to 70 miles
    9. 71 to 80 miles
    10. 81 to 90 miles
    11. 91 to 100 miles
    12. 101 to 200 miles
    13. Over 200 miles
    14. I am not sure

If Yes to Usage of bike:

3. What destinations or use cases are most commonly accessed with a bike from the bike lending program? Please select all that apply.
    1. Grocery store
    2. Non-grocery shopping or general errands (i.e., clothing retail, post office, bank, etc.)
    3. Gym
    4. Job or place of work
    5. Medical appointments
    6. Recreational/Leisure
    7. Restaurants
    8. School or other place of education
    9. Visiting friends or family
    10. Other, please specify:
    11. I am not sure - *exclusive*

If Yes to Mode shift:

4. Do participants typically report a change in frequency of use of other modes of transportation? Please indicate "increase", "decrease", "no change", or "I am not sure" to indicate the most commonly reported change in frequency of use for each mode of transportation.

	Increase	Decrease	No change	I am not sure
Personal Vehicle				
Uber, Lyft ot other Transportation Network Company				
Taxi				
Shared Micromobility (i.e., bikesharing, scooter sharing)				

If Yes to Bike purchase:

5. Do participants report that the bike lending has made them want to purchase a bike of their own? Please select the best answer to describe how participation in the bike lending program influences their willingness to purchase a bike of their own.
    1. Yes, and participants are able to purchase their own bike from us or a partnering bike shop.
    2. Yes, however, we do not have any bikes for sale.
    3. No, most participants of this program utilize but then can't afford to purchase their own bike.
    4. No, most participants do not have a desire to purchase a bike.
    5. Other, please specify:
    6. I am not sure

Socio-Demographics of Users

The following questions ask about the demographics of your users. Based on your knowledge of the program, please answer them to the best of your ability. Feel free to skip any questions for which you do not have the answer.

1. What gender do you think is most represented by participants of the bike lending program?
    1. Female
    2. Male
    3. Non-binary
    4. Gender expansive
    5. Other, please specify:
    6. I am not sure

2. What is the average age range of participants of your bike lending program?
    1. Under 5 years
    2. 5 to 17 years
    3. 18 to 24 years
    4. 25 to 34 years
    5. 35 to 44 years
    6. 45 to 64 years
    7. 65 to 84 years
    8. 85 years and over
    9. I am not sure

3. What do you think is the most common education level among participants of the bike lending program?
    1. Less than 9th grade
    2. From 9th to 12 grade
    3. High school graduate
    4. Some college, not currently enrolled
    5. Associate's degree or 2-year degree
    6. Currently working toward a Bachelor's degree
    7. Bachelor's degree
    8. Currently working toward a graduate degree
    9. Graduate degree or postgraduate degree
    10. Other, please specify:
    11. I am not sure

4. What is the average household income level of participants of the bike lending program?
    1. Less than $24,999
    2. $25,000 to $49,999
    3. $50,000 to $74,999
    4. $75,000 to $99,999
    5. $100,000 to $149,999
    6. $150,000 to $199,999
    7. $200,000 or more
    8. I am not sure

5. What are the most common two (2) races/ethnicities that are represented by participants of the bike lending program? Please select up to two responses.
    1. Black or African American
    2. White
    3. Hispanic or Latino
    4. Asian
    5. Indigenous America, Native American, or Alaskan Native

6. Native Hawaiian or Pacific Islander
7. Other, please specify:
8. I am not sure

6. Do you collect socio-demographic data of participants through a survey?
    1. Yes
    2. No
    3. I am not sure

Support and Resources

1. What are the top 3 greatest challenges of operating a bike library or lending program?
    1. Concerns about not receiving a bike at the end of the loan period
    2. Concerns about bikes being damaged or stolen while on loan
    3. Lack of funding
    4. Lack of public support or negative public perception
    5. Lack of support from local agencies
    6. Lack of supportive infrastructure
    7. Promoting safety among riders
    8. Other, please specify:

2. What are the top 3 greatest benefits for users of a bike library or lending program?
    1. Access to essential services (i.e., doctors appointments, grocery stores, etc.)
    2. Economic opportunity (i.e., job access)
    3. Environmental benefits
    4. Mental health benefits
    5. Physical health benefits
    6. Reduced trip costs (i.e., compared to driving or other modes)
    7. Reduced trip time (i.e., compared to driving or other modes)
    8. Social equity impacts
    9. Other, please specify:

3. What resources do you think are necessary to support the implementation of a bike library or lending program? Select all that apply.
    1. Bike-friendly infrastructure
    2. Local funding
    3. Regional funding
    4. State funding
    5. Federal funding
    6. Public sector partnerships
    7. Private sector partnerships
    8. Other, please specify:

Wrap Up Questions

For all respondents

1. Please indicate the city, state, and country you primarily work in.
    1. City:
    2. State:
    3. Country:

2. Are there any bike lending resources you suggest the research team reviews?
    1. Yes, please specify: _____
    2. No

3. Are there any research topics you would like to see pursued in the area of bike lending?
    1. Yes, please specify: _____
    2. No

4. Thank you for your time. Is there anything else you would like to add?
    1. *Text response*

Appendix C

Bike Lending Focus Group Protocol

Thank you so much for joining us today to discuss your experience with bike lending programs.

Introduction

1. Ice Breaker: What is your favorite thing about riding a bike?
2. How did you learn about the bike lending program?
3. What made you decide to participate in the bike lending program (i.e., affordability, trial run before purchasing your own bike)?
4. Did you have any concerns about being responsible for the bike?
5. What kind of trips do you use the bike from the bike lending program for (i.e., recreational purposes, job access, errands, etc.)?
6. How far are you willing to bike (i.e., distance or time)?

Experience with Bike Lending and Safety

1. How safe do you feel while cycling in the area?
2. Do you feel more safe, less safe, or no difference when riding with other cyclists?
3. If you have ever borrowed an e-bike, do you feel more safe, less safe, or no difference compared to riding a non-e-bike?
4. Do you adjust your behavior when you are biking on a road shared with cars compared to a designated bike lane or path?
5. Are there any infrastructure elements or behaviors from other road users that make you feel more safe when you are riding a bike?
6. Are there any infrastructure elements or behaviors from other road users that make you feel less safe when you are riding a bike?

Improving Bike Safety

1. Is there anything that the bike lending program can do to make you feel more safe when using their bikes?
2. Is there anything that bicyclists can do to improve their own safety in relation to drivers?
3. Is there anything that drivers can do to improve bicycle safety?
4. Is there anything that local governments or law enforcement can do to improve bicycle safety?
5. Do you think an increase in cyclists would make road use more safe, less safe, or no difference in safety?

Impacts of Bike Lending

1. Has the presence of the bike lending program changed your perception of cycling as a transportation mode?
2. Has access to a bike allowed you to take advantage of new opportunities or experiences that were inaccessible before you had a bike?
3. Has access to a bike led to any new challenges or barriers that you did not have before taking part in the bike lending program?
4. Has participating in the bike lending program made you want to purchase your own bike? Why?

Wrap Up

1. Are there any other topics related to bike lending that you think we should explore?
2. Is there anything else that you would like to add about bike lending?