

MEMORANDUM



304 12th Street, Suite 2A
Oakland, CA 94607
(510) 540-5008
www.altaplanning.com

To: Nate Baird, City of Mountain View

From: Otto Melara and Mike Sellinger, Alta Planning + Design

Date: 10/17/2019

Re: Mountain View Bike Share Survey Study

Introduction

Overview of Dockless Pilot

The City of Mountain View's dockless bike share pilot program ran from May of 2018 to April of 2019 with the goal of encouraging residents and visitors to use bicycles and embrace sustainable living. Two private bike share companies participated in the program: ofo and Lime. Both vendors chose to withdraw from the program due to changes in organizational and financial priorities. Spin and JUMP also applied to operate bike share in Mountain View, but did not carry through to deployment.

While the ofo and Lime bike share systems were in operation in Mountain View, staff undertook a field survey, obtained operational data, and tracked social media input in order to understand the performance and public perceptions of the program, including a survey of users and residents, as well as focus groups with operators.

Project Overview

At the conclusion of the pilot program, the project team began the process of analyzing system performance and community perceptions of dockless bike share. The system analysis process has been multifold, including the examination of data provided by the bike share vendors, data collected through a user and perceptions survey, and interviews with bike share operators. This memo contains the survey results, an overview of bike share service options, and lessons learned from the operator interviews.

Key Findings

Dockless bike share in Mountain View was favorably viewed by a majority of those who tried the system. Should bike share be implemented again in the future, respondents identified key system improvements, including: electric assist options, the ability to ride between cities, and easy and reliable transfer to transit options. Survey results also indicated broad support for expanding the city's network of dedicated bike facilities.

Dockless bike share providers are unlikely to re-enter Mountain View in the near future. Bike share providers interviewed by the project team emphasized that expanding the City's market through regional partnerships could be key to improving the financial sustainability of dockless operations in Mountain View. In order to

bring bike share back to Mountain View in the current market, the City would likely need to pursue a paid bike share model. Turnkey operators provide a scalable model of bike share than be launched along a quick timeline if funding for bike share is secured.

Bike Share Survey Results

Key Takeaways

- People who used bike share in Mountain View see it as a useful way to get around and think it provides a multitude of benefits.
- Opinions of bike share were split between those who did and did not try it. Those who did not try the system generally had less favorable views of bike share.
- There is broad demand for more trails and protected bike lanes.
- Most people did not have concerns about how the system functioned.
- Bike share parking requirements were generally clear, but less so in Downtown Mountain View.
- Two-thirds of users reported using bike share to replace car trips (either driving alone or using Uber/Lyft/Taxis).
- Over half of users reported using bike share to connect to Caltrain.
- Overall, people that used the system reported high satisfaction.
- The top elements that people stated would make them more likely to use bike share were:
 - Electric assist bicycles
 - Ability to ride between cities
 - Easy and reliable connections to transit
- Half of survey respondents would like to see e-scooters in Mountain View.

Detailed Results

This user and perception survey was open to community members from late August to mid-September, gauging public opinion on topics including:

- Respondent travel behavior
- Respondent perceptions of how well bike share performed in Mountain View
- Barriers to bike share usage and access
- Whether dockless bike share produced undesirable externalities, such as obstructed sidewalks or unsafe roadway conditions
- Improvements that would support or incentivize more bike share usage

As indicated in Figure 1, the survey received a total of 41 responses, 23 (56%) of which were from people who participated in the pilot.

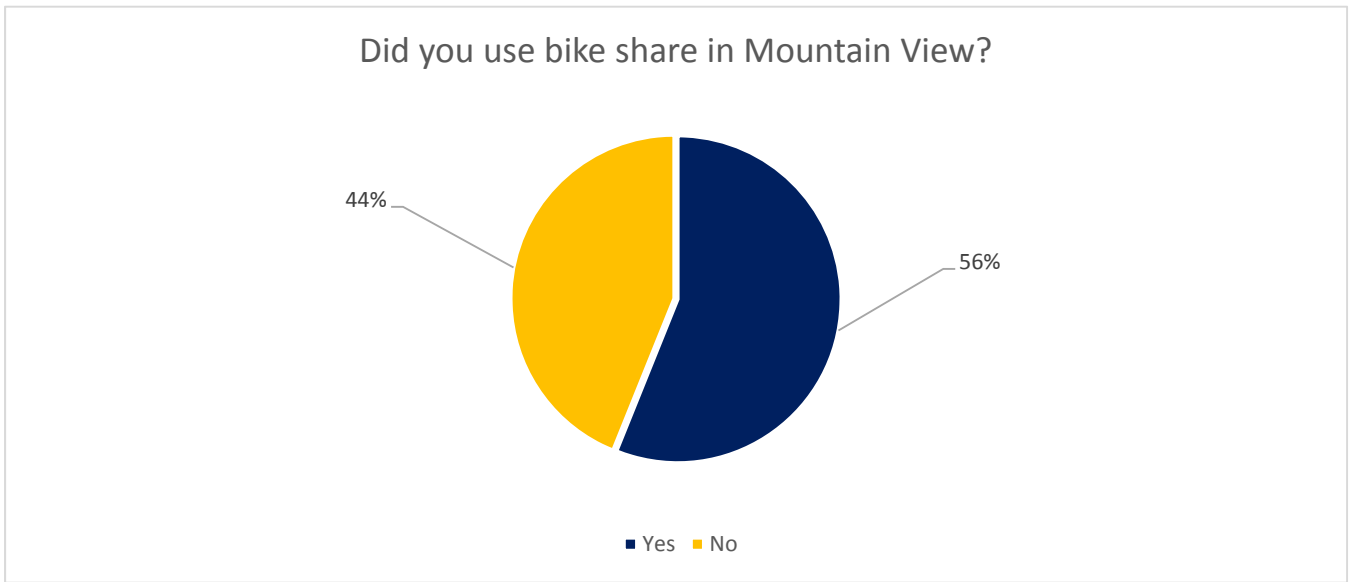
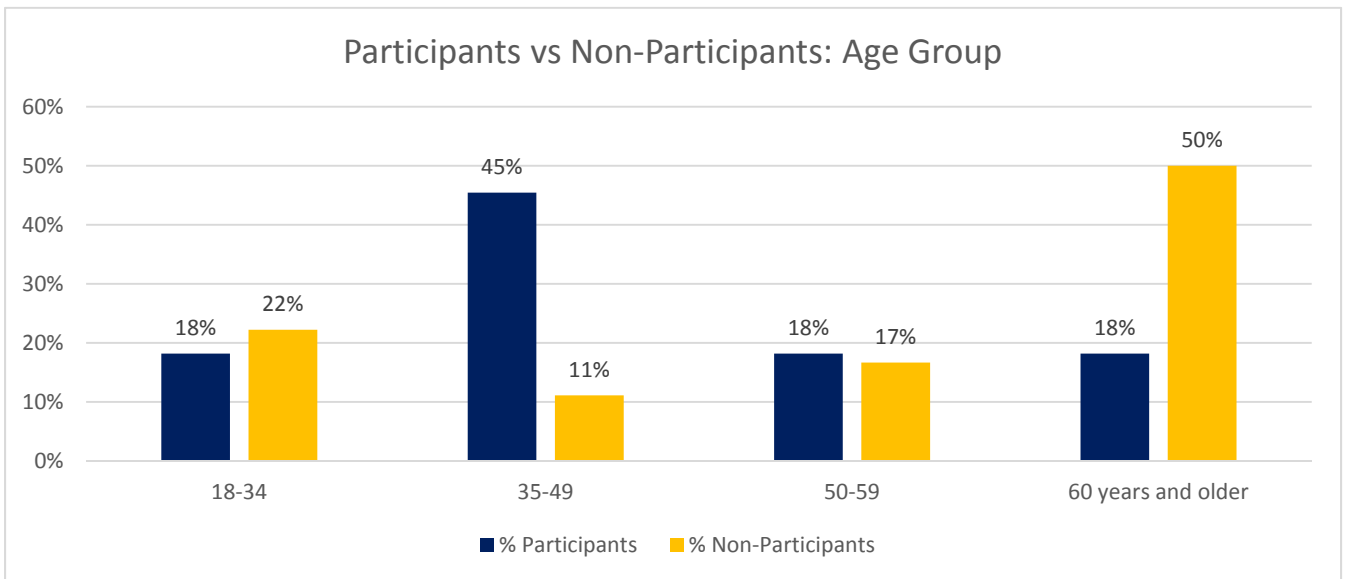


Figure 1:

Survey Demographics

Figure 2:



Survey data (as seen in Figure 2) indicates that bike share reached a diverse age demographic. While respondents most frequently came from the 35-49 age category, 36% were 50 years of age or older. Riders in the 18-34 age category were least represented, though 18% of surveyed participants fit this description.

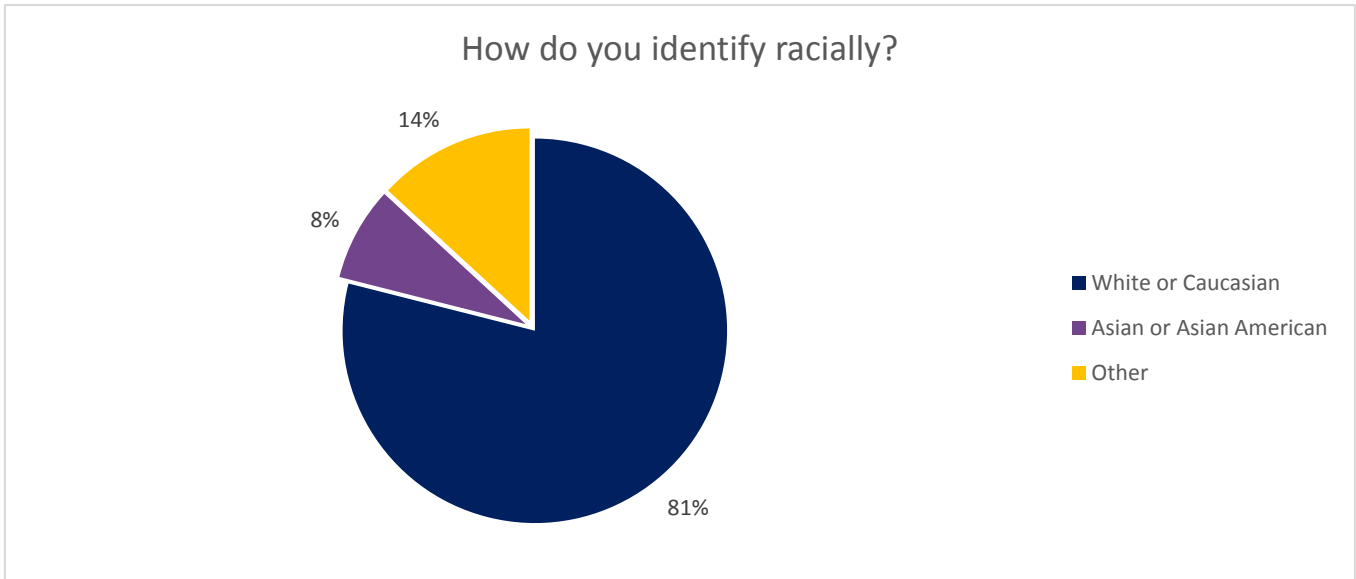
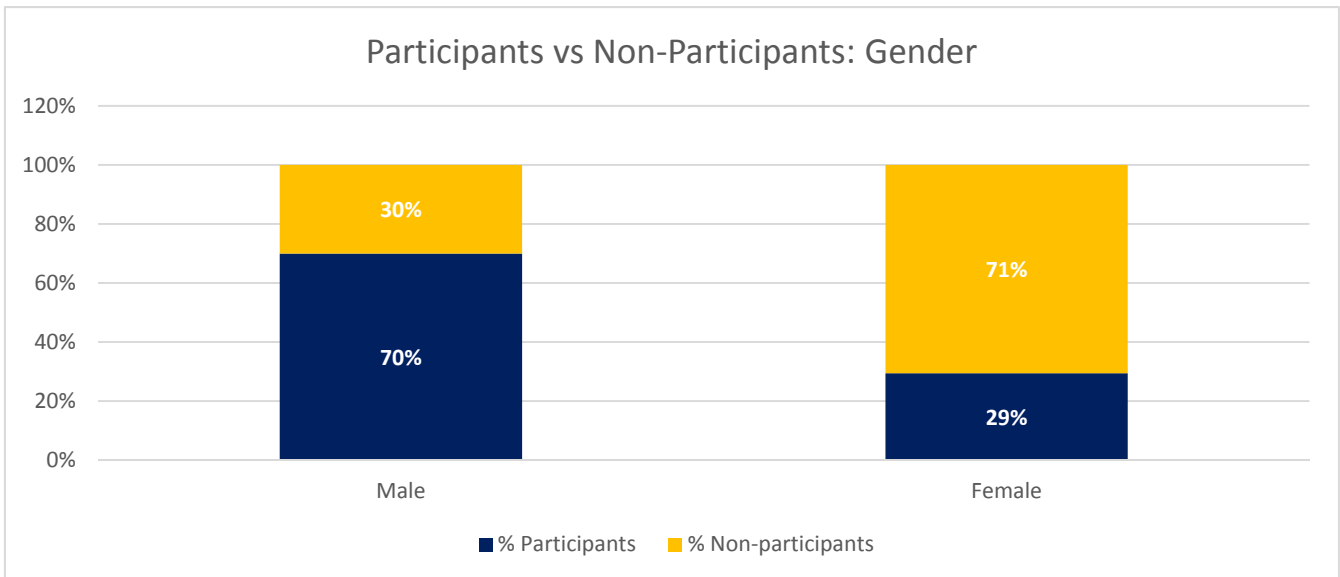


Figure 3:

The overall survey respondent pool was less racially and ethnically diverse than the broader Mountain View community (as seen in Figure 3). United States Census Bureau 2017 ACS 5-year estimates project that 57% of the City’s population is White or Caucasian alone, opposed to 81% of survey respondents (one of which additionally identified as Hispanic or Latino). Insufficient representation of community members of color in the survey sample size yields inconclusive results regarding the racial/ethnic demographic breakdown of pilot participants versus non-participants.

Figure 4:



Survey respondents who tried the bike share pilot program were far more likely to be male than the overall survey respondent pool (as seen in Figure 4). Approximately 70% of male respondents participated in the program, while 29% of female respondents participated in the program.

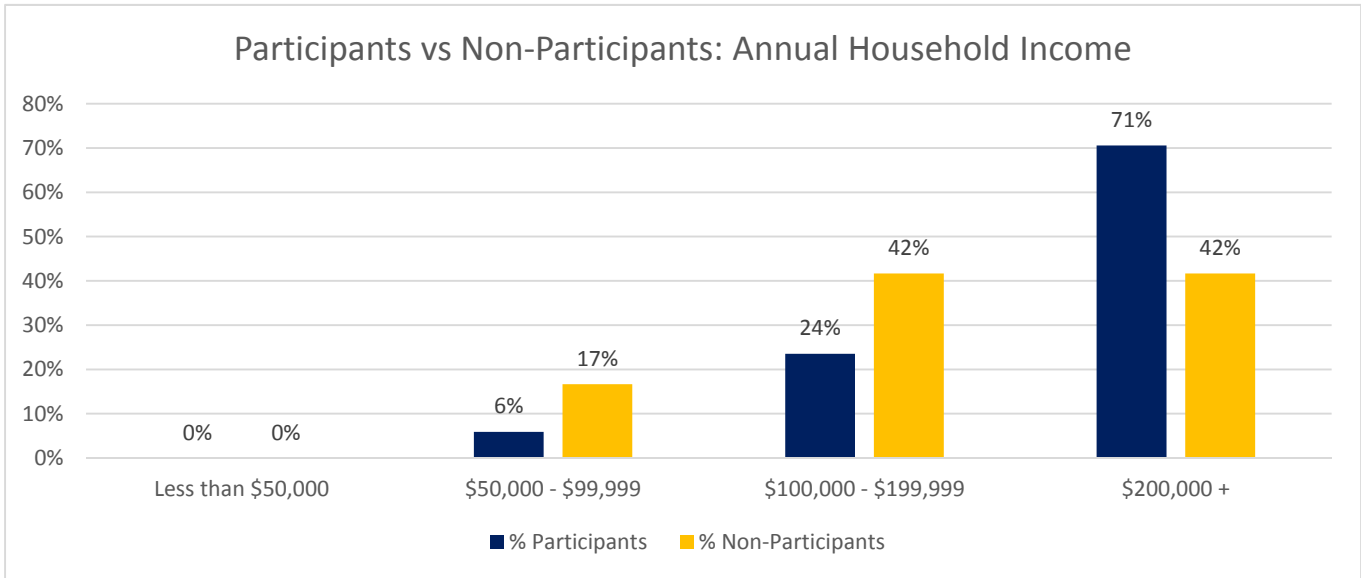
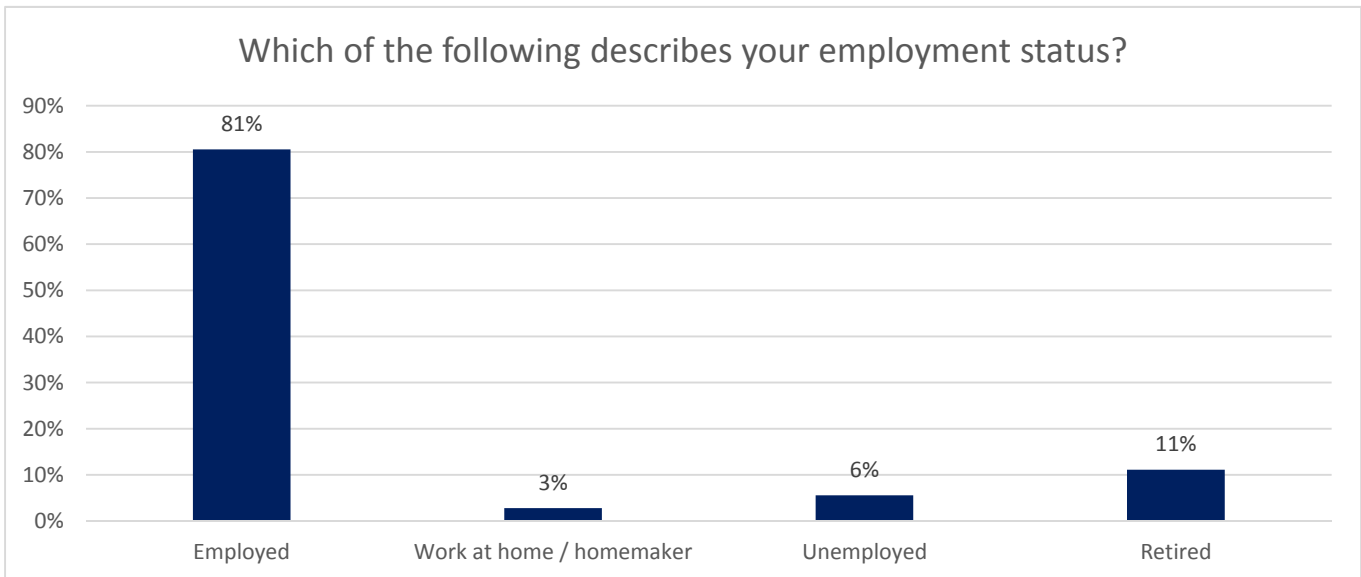


Figure 5:

Survey data indicates that bike share participants are more likely to come from higher income households (as seen in Figure 5). Approximately 71% of bike share pilot participants surveyed report household incomes at or exceeding \$200,000 annually. It is, however, important to note that survey respondents as a whole represent higher income households than the broader community. While Mountain View is a higher income area, with the median household income reaching just over \$120,000, 26% of households earn \$200,000 or more per year according to the United States Census Bureau 2017 5-year estimates. This suggests that the travel behaviors and opinions of lower income community members are not adequately represented in the findings of the survey.

Figure 6:



As Figure 6 indicates, survey respondents were generally employed. There was not a notable difference in the employment status of program participants versus non-participants.

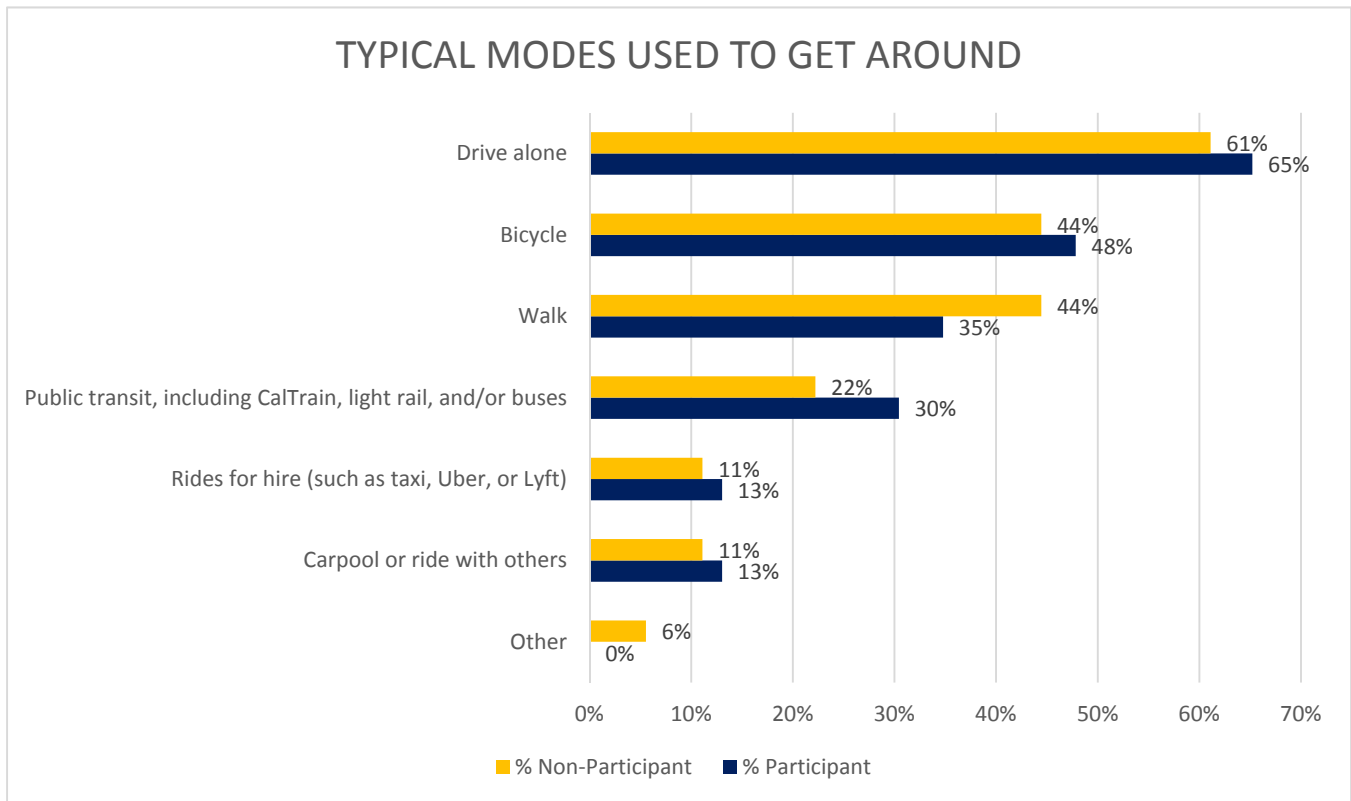


Figure 7:

Survey respondents who participated in the program were more likely to report using a multitude of travel options, including:

- Bicycling
- Riding public transit
- Using rides for hire (such as a taxi, Uber, or Lyft)
- Driving alone
- Carpooling with others

Participants were more likely to use public transit and less likely to walk than non-participants. Use of the remaining modes was similar between participants and non-participants.

Survey respondents who did not participate in the program were more likely to report walking and “other” travel options as typical modes used to access destinations.

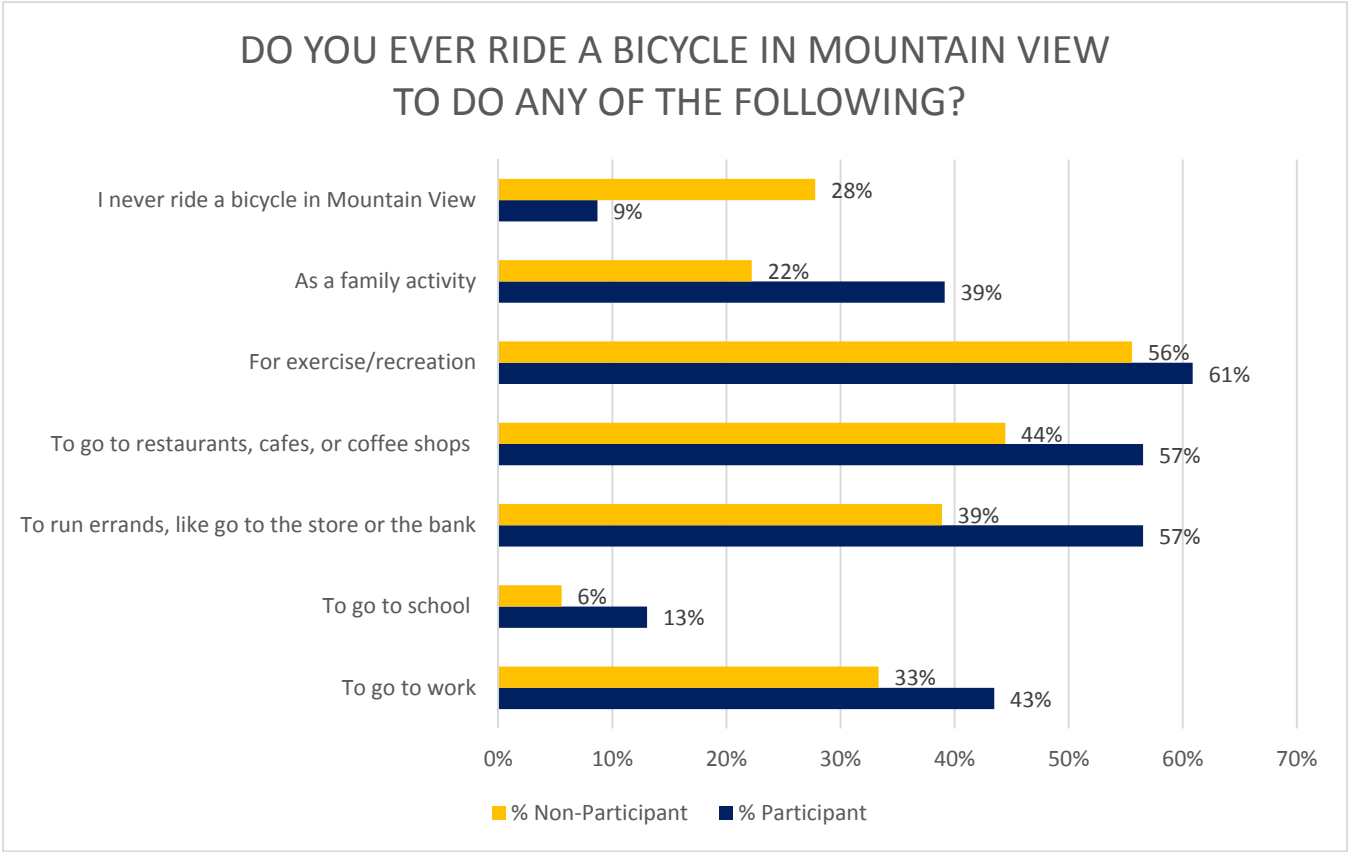
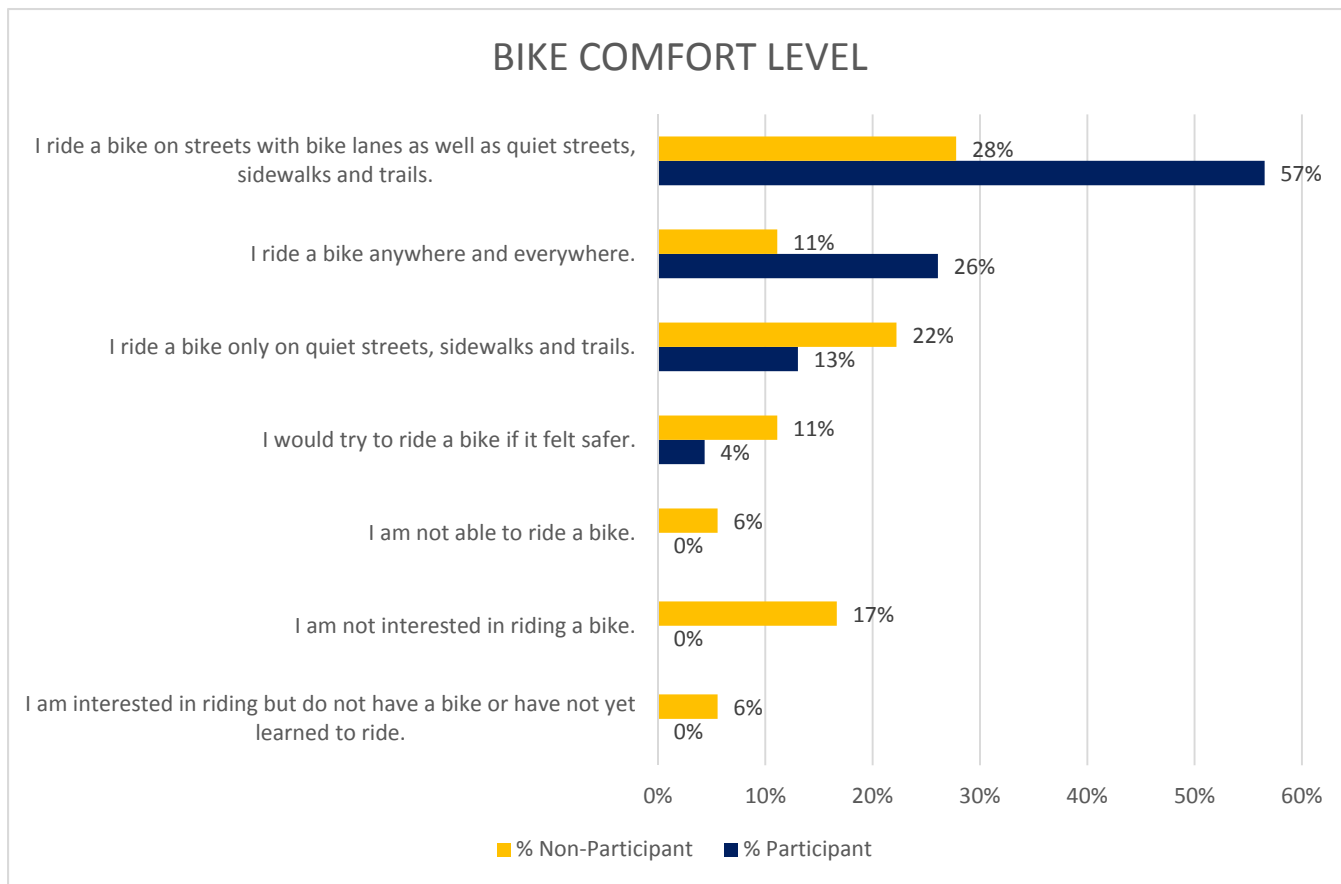


Figure 8: Both pilot program participants and non-participants cited recreation/exercise, errands, and visiting restaurants/cafes/coffee shops as common reasons they ride bicycles in Mountain View. Non-participants were more than three times as likely to state that they never ride a bicycle in Mountain View.

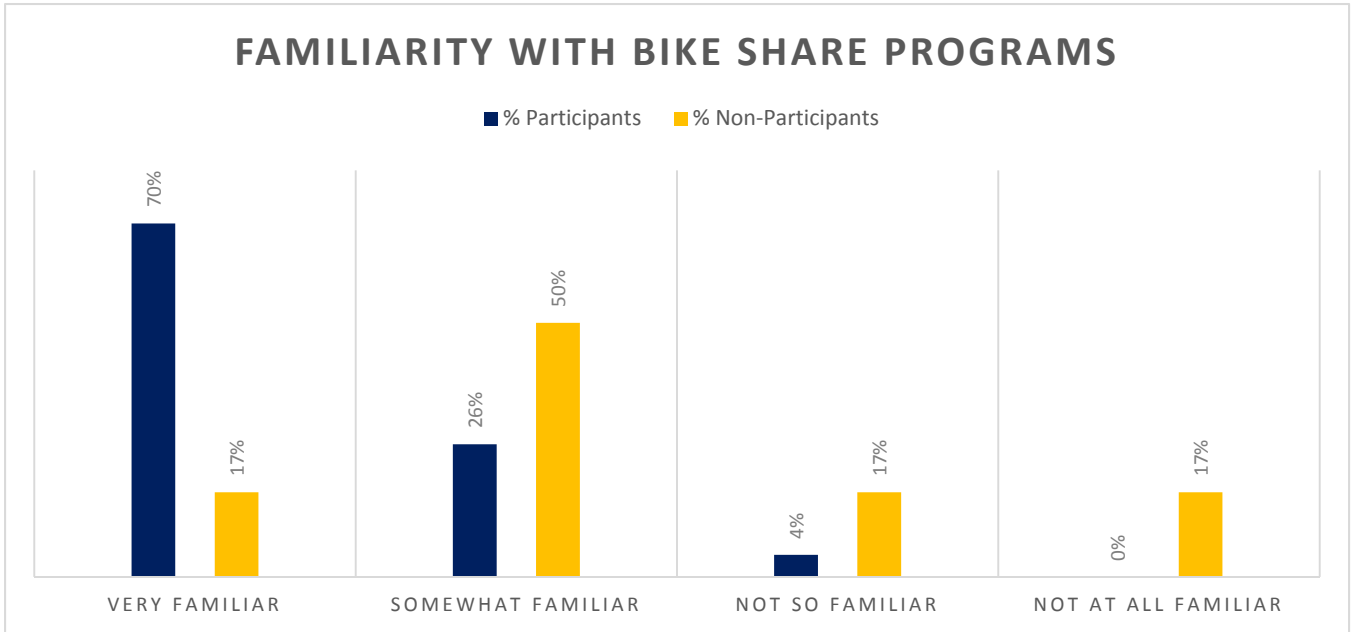
Figure 9:



Survey results suggest that a majority of program participants are only comfortable riding in certain conditions, including: on streets with dedicated bike facilities, on quiet streets, and on sidewalks/trails. Approximately 26% of surveyed pilot program participants indicated that they ride bikes anywhere and everywhere, regardless of the facilities available. A majority of survey respondents who did not participate in the program also indicated a preference for these facilities. Non-participants were also more likely to express that they were not interested, were not able, or did not know how to ride a bike. Approximately 11% of survey respondents that did not participate in the program suggested that they would try riding a bike if it felt safer. An additional 22% of non-program participants indicated that they would only be willing to ride a bike on quiet streets, sidewalks, or trails.

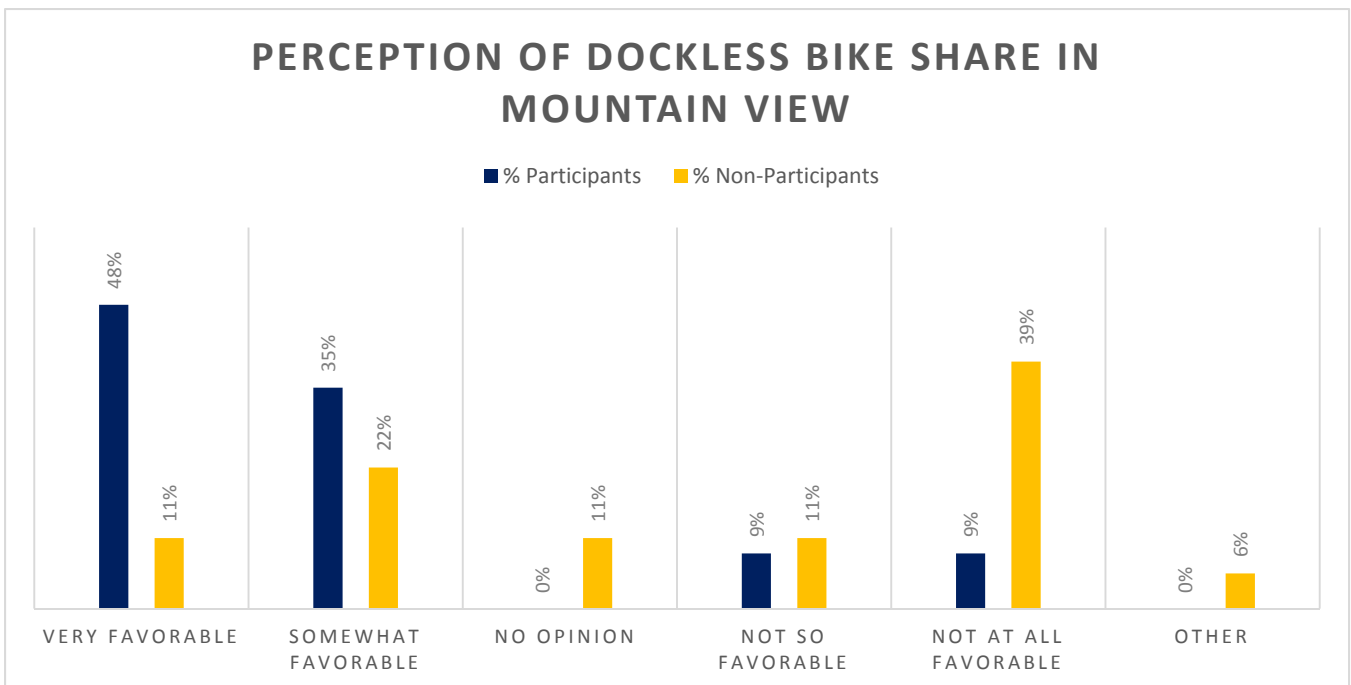
Perceptions of Bike Share

Figure 10



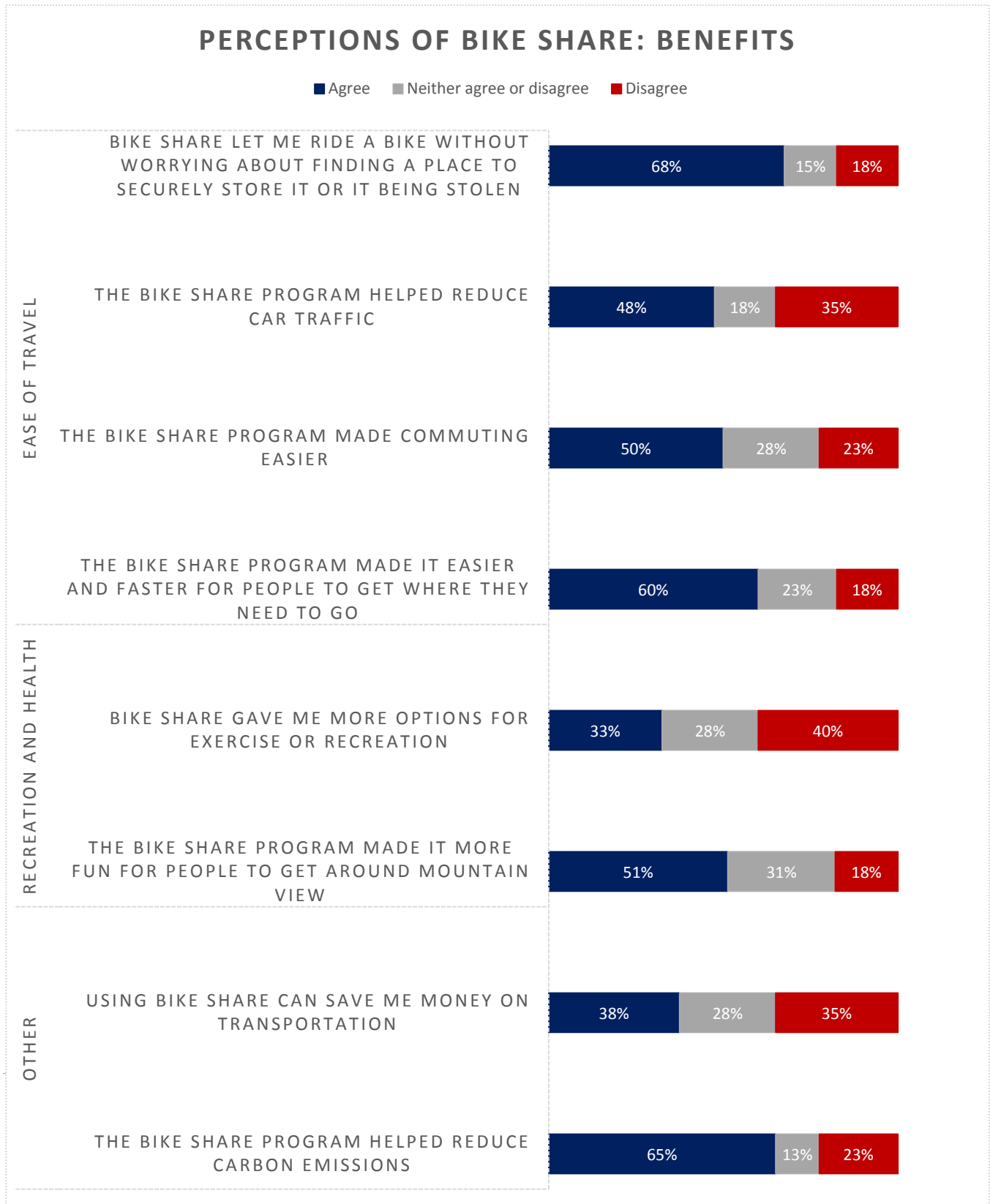
Approximately 96% of surveyed program participants reported that they were very familiar or somewhat familiar with bike share programs, in comparison to 67% of surveyed non-participants.

Figure 11:



As shown in Figure 11, program participants were far more likely to hold favorable perceptions of dockless bike share in Mountain View than non-program participants. Roughly 83% of participants surveyed held favorable perceptions of the system, while 33% of non-participants held favorable perceptions. Conversely, approximately 50% of non-participants held unfavorable perceptions, while 18% of pilot program participants held unfavorable perceptions.

Figure 12:



Benefits

As Figure 12 illustrates, survey respondents held a diversity of views on the benefits of bike share in Mountain View. Program participants provided valuable insight of program benefits based on their perceptions and experience, while non-participants based their responses on perceptions.

Survey respondents generally recognized that bike share service increased ease of travel throughout the community, with:

- 60% agreeing that bike share made it easier and faster for people to get where they needed to go
- 50% agreeing that bike share made commuting easier
- 48% agreeing that bike share helped reduce car traffic
- 68% agreeing that bike share allowed them to bike without worrying about secure bike parking or theft

Additionally, 40% of respondents disagreed that bike share expanded their recreations options, reinforcing its role as a transportation option.

By in large, survey respondents felt that bike share provided ease of travel in Mountain View. However, the following topics describe the fairly different views between pilot program participants and non-participants.

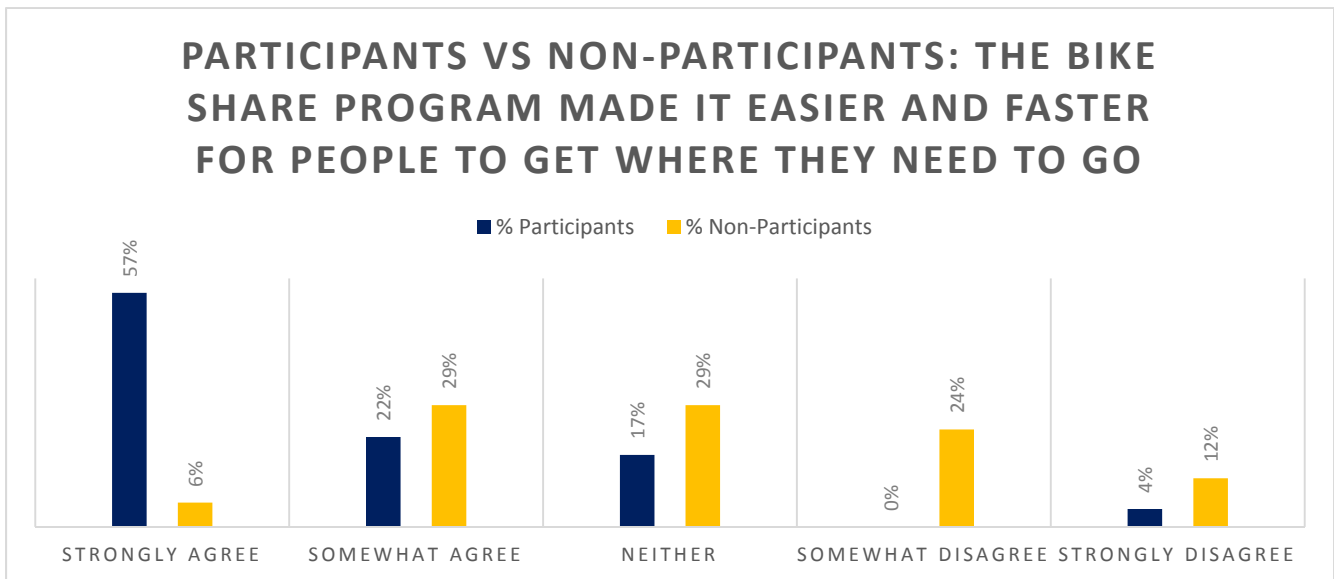
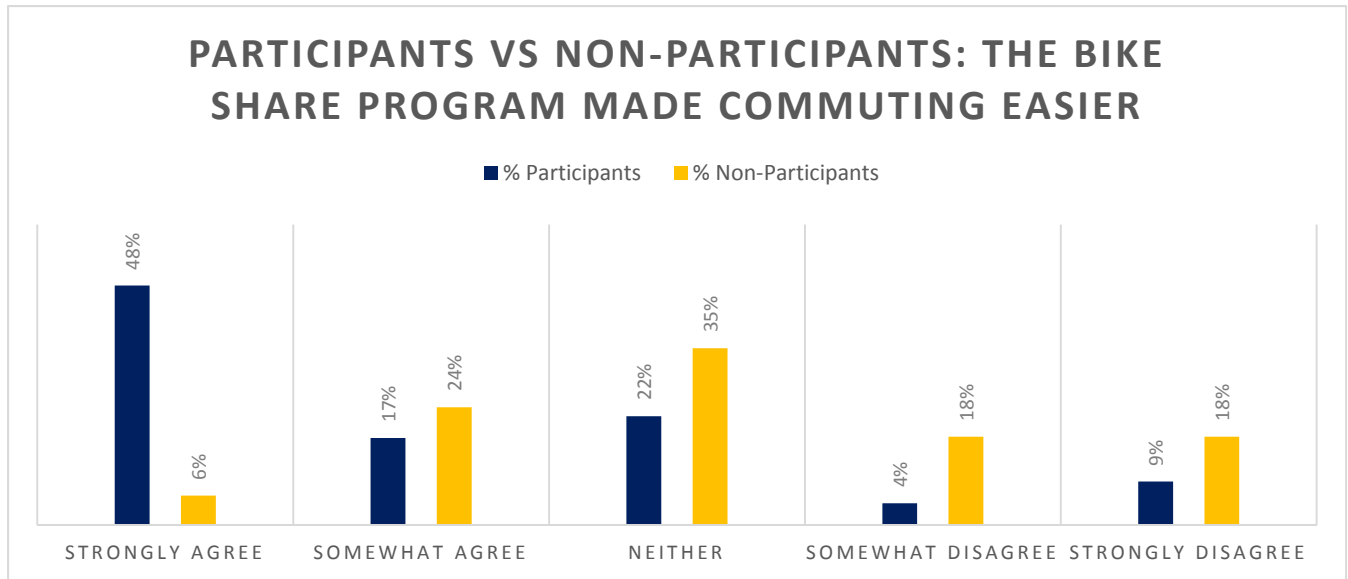


Figure 13:

Figure 13 highlights difference in opinion on whether bike share made traveling easier and faster. Around 79% of survey respondents that participated in the pilot reported agreeing that bike share held these improvements, while 35% of non-participants agreed.

Figure 14:



Similarly, 65% of program participants represented in the survey reported that bike share made commuting easier, while 30% of non-participants shared the belief.

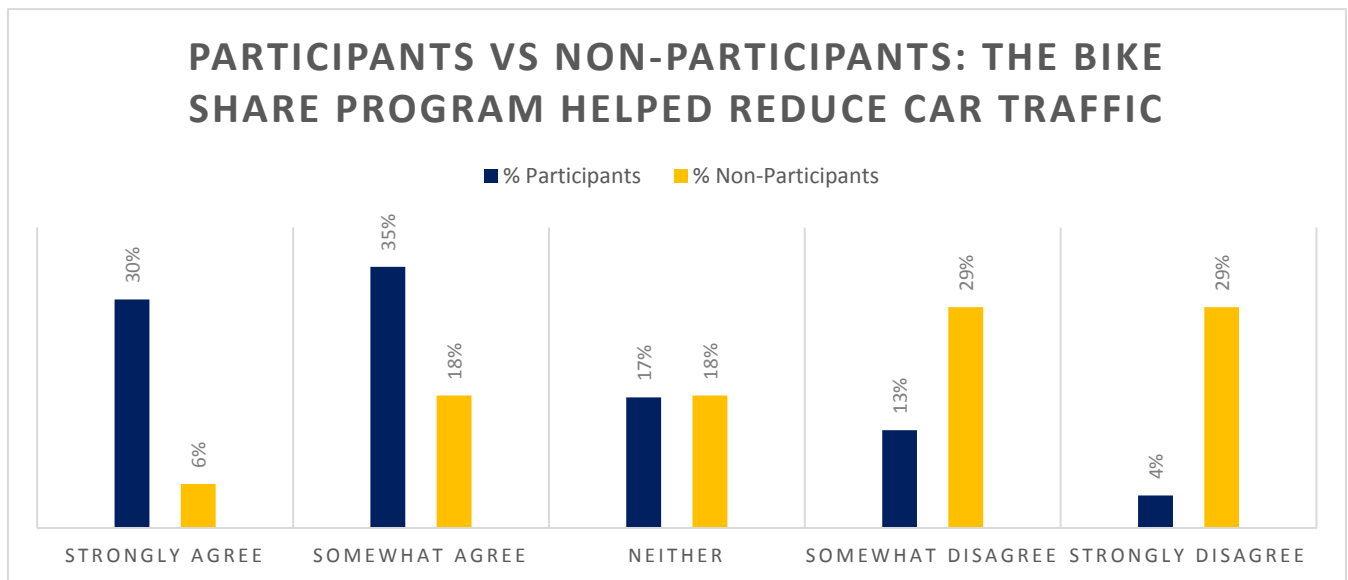


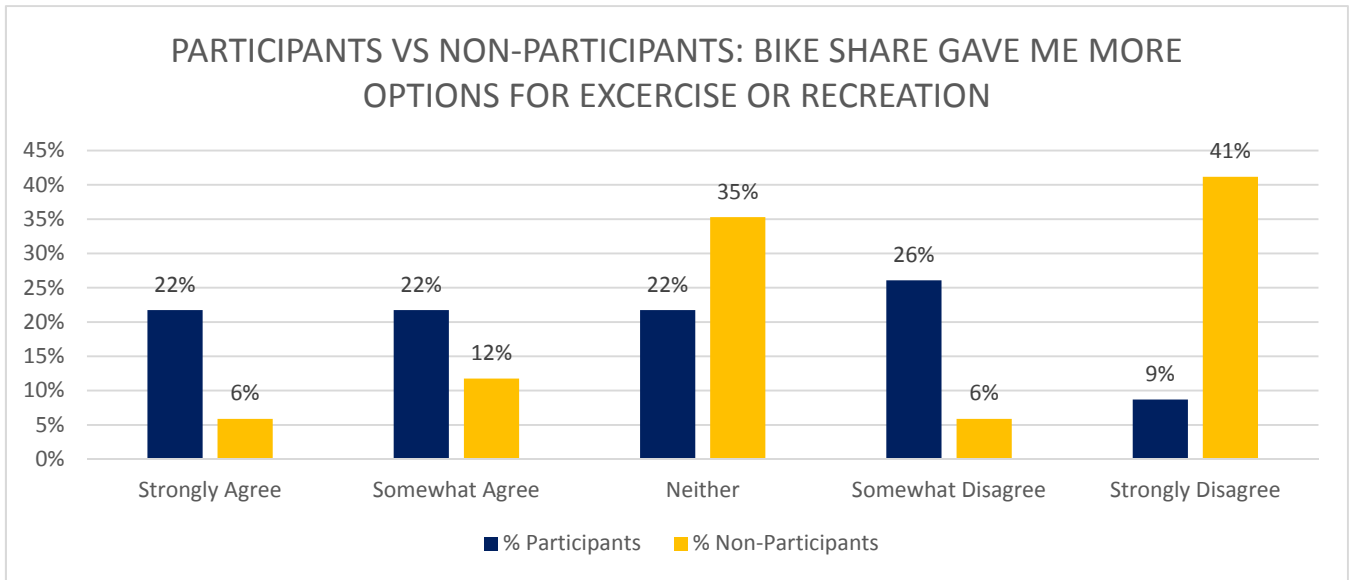
Figure 15:

Survey respondents also exhibited a wide difference of opinions on whether bike share helped reduce vehicle traffic. In total, 65% of surveyed program participants reported believing bike share reduced vehicle traffic, while 58% of non-participants reported that the program did not reduce car traffic.

Recreation and Health

As Figure 15 indicates, survey respondents held mixed views on the recreation and health impacts of bike share in Mountain View. While 51% reported thinking bike share made traveling more fun for people around Mountain View, 33% reported thinking that bike share expanded their personal opportunities for exercise and recreation.

Figure 16:



For example, non-participants represented in the survey were far more likely to disagree that bike share gave them personally more options for exercise or recreation, with 47% disagreeing and 35% holding neutral opinions. Pilot program participants held scattered perceptions of the topic, but 44% agreed that bike share did expand their exercise and recreation options.

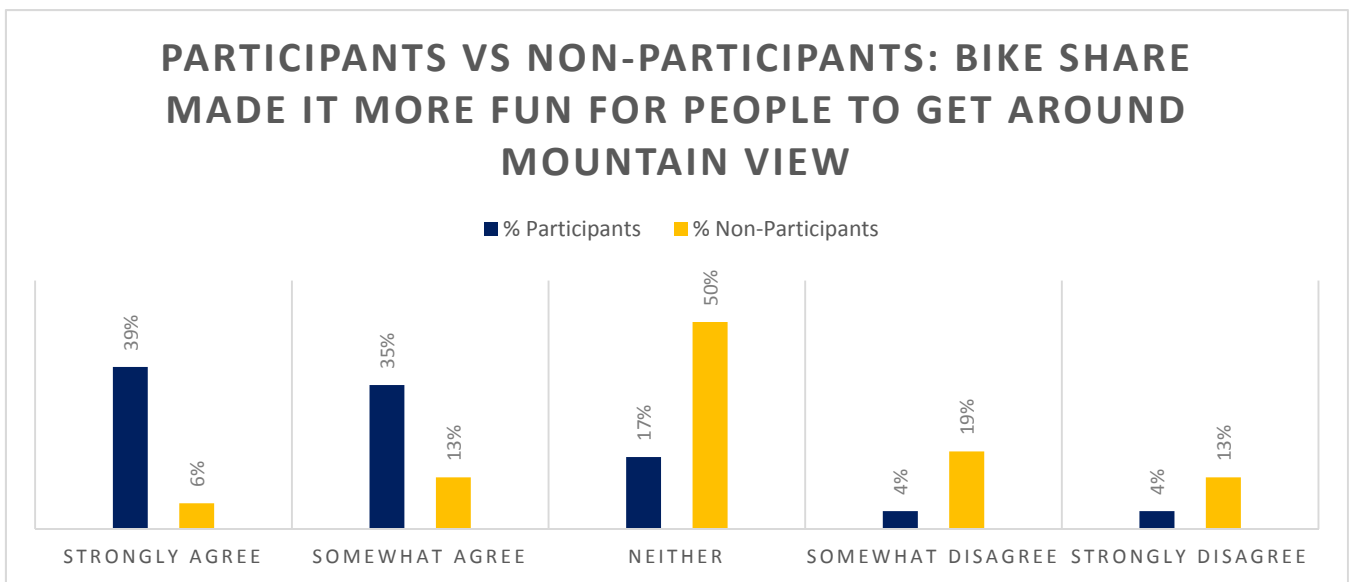


Figure 17:

Similarly, pilot program participants were more likely to report that bike share made traveling more fun for the broader community, with 74% agreeing. Approximately half of non-participants expressed they neither agreed or disagreed that bike share made traveling more fun for the community, though 32% disagreed and 19% agreed with the statement.

Other

The survey also examined the financial and environmental benefits of the system. Overall, 65% of survey respondents generally recognized bike share as a tool for reducing carbon emissions. However, program participants and non-participants held diverging opinions on bike share’s impact.

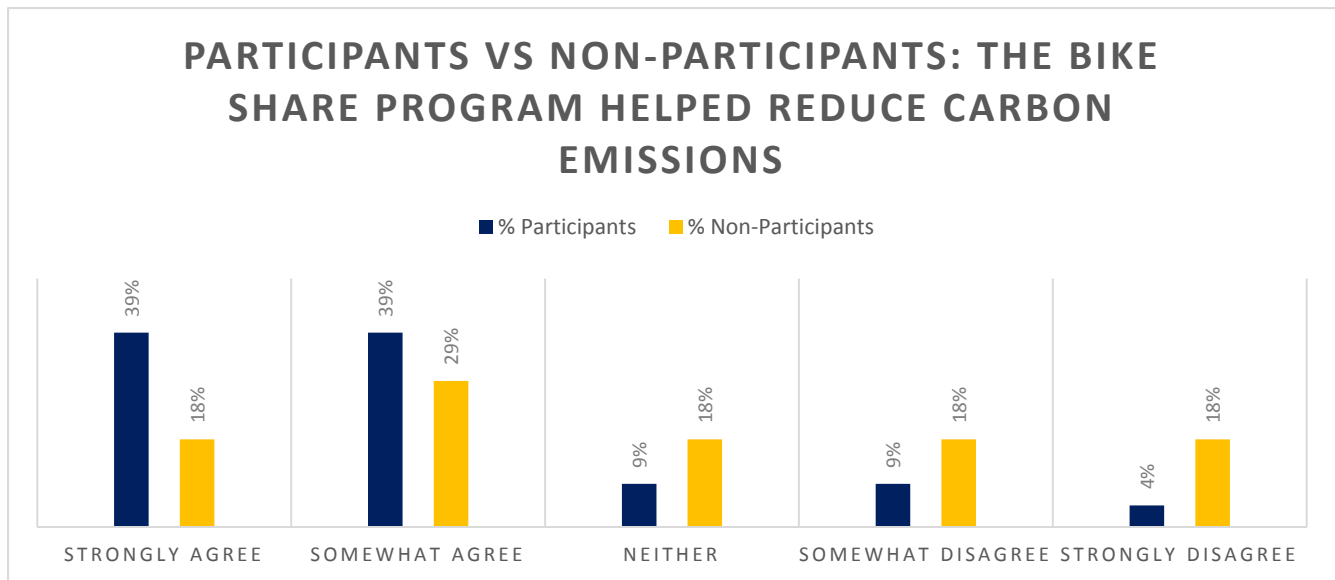
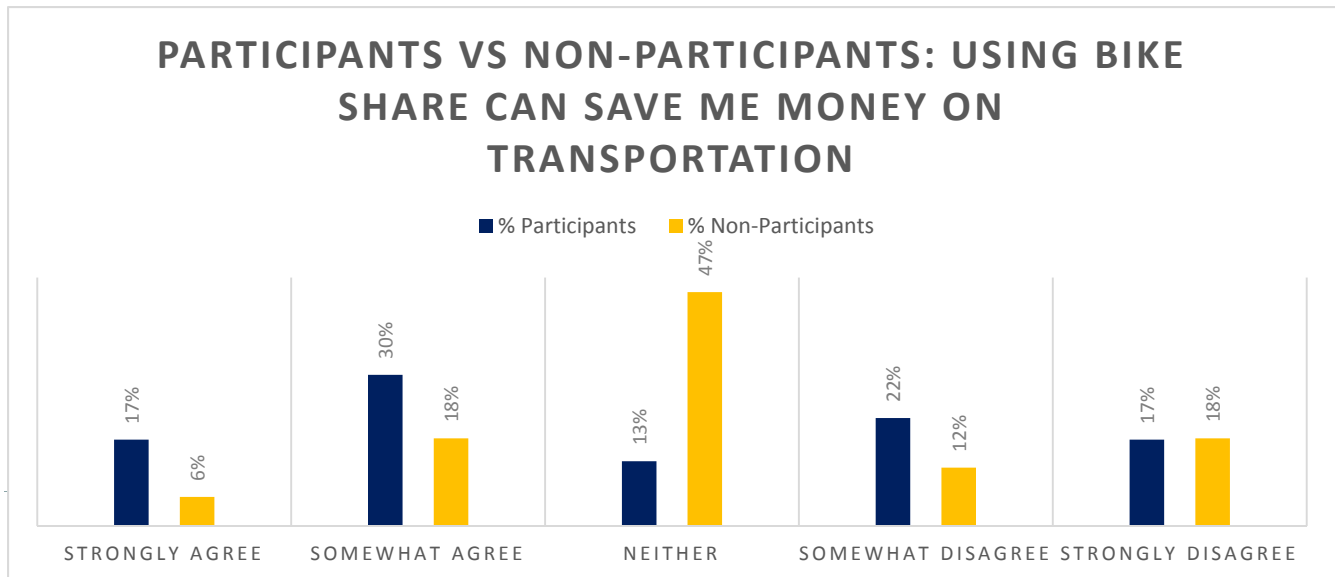


Figure 18:

Approximately 78% of surveyed program participants characterized bike share as helping reduce carbon emissions, compared to 47% of non-participants. Conversely, 36% of non-participants disagreed that bike share helped reduce carbon emissions, compared to 13% of program participants.

Figure 19:



Perceptions of bike share’s financial benefits were more evenly distributed. Overall, 38% of survey respondents agreed that bike share can save them money on transportation, while 35% disagreed. Program participants were more likely to agree with the financial benefits of bike share, with 47% believing that using bike share can save them money. On the other hand, just under half of non-participants held neutral opinions on the topic. An additional 30% of non-participants disagreed that using bike share would save them money and 24% agreed that using bike share could potentially save them money.

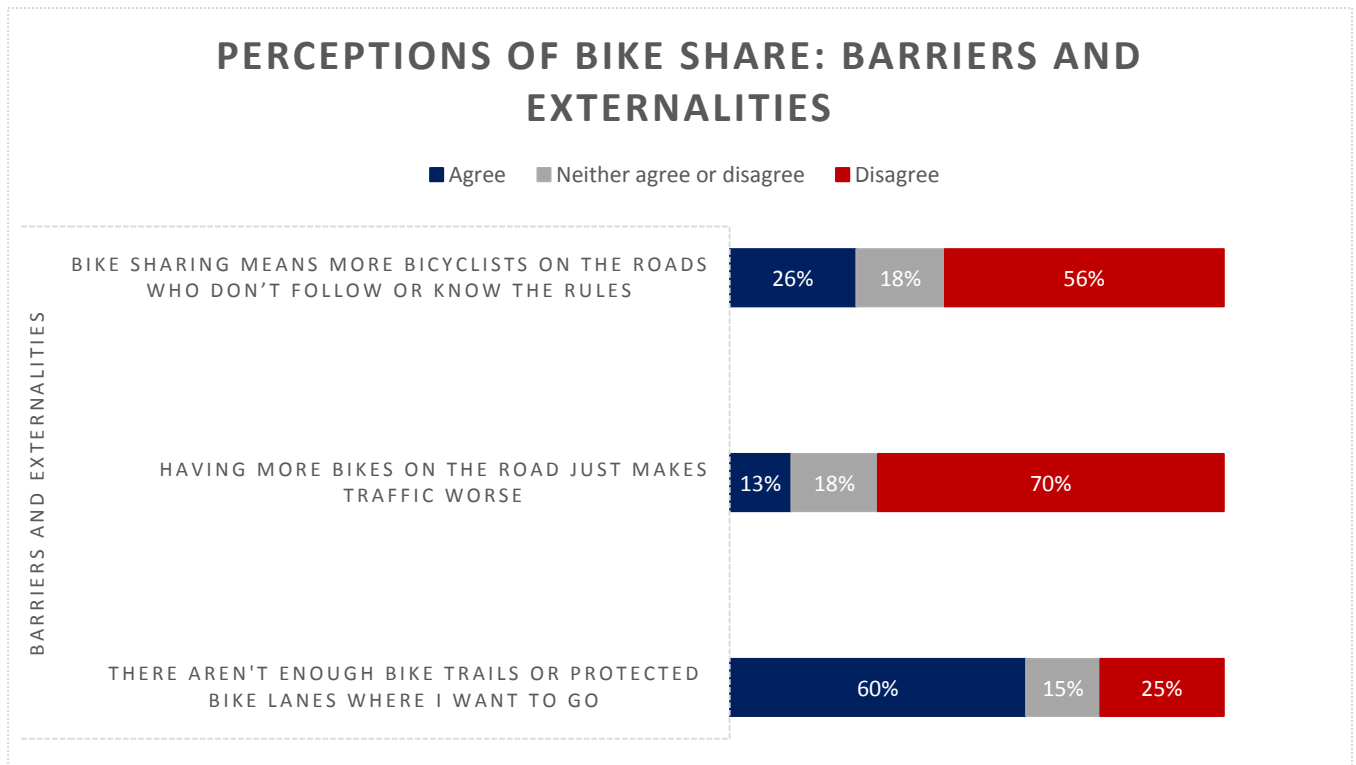


Figure 20

Survey results indicate that the general survey pool disagrees that bike share produced negative externalities for roadway traffic safety and congestion. For example, 13% of respondents reported that more bikes on the road contributes to traffic congestion. Additionally, 56% rejected the notion that bike share contributed to more cyclists without proper traffic safety education riding. Additionally, 60% of survey respondents agreed that there are not enough bike trails or protected bike lanes connecting to desirable locations.

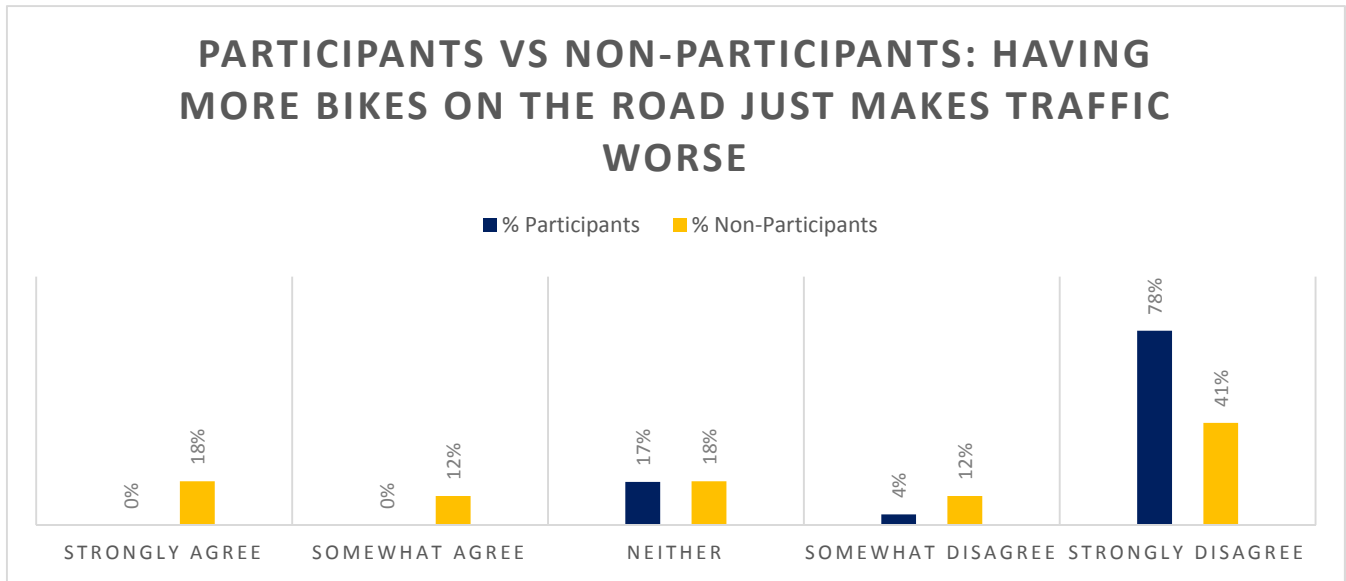
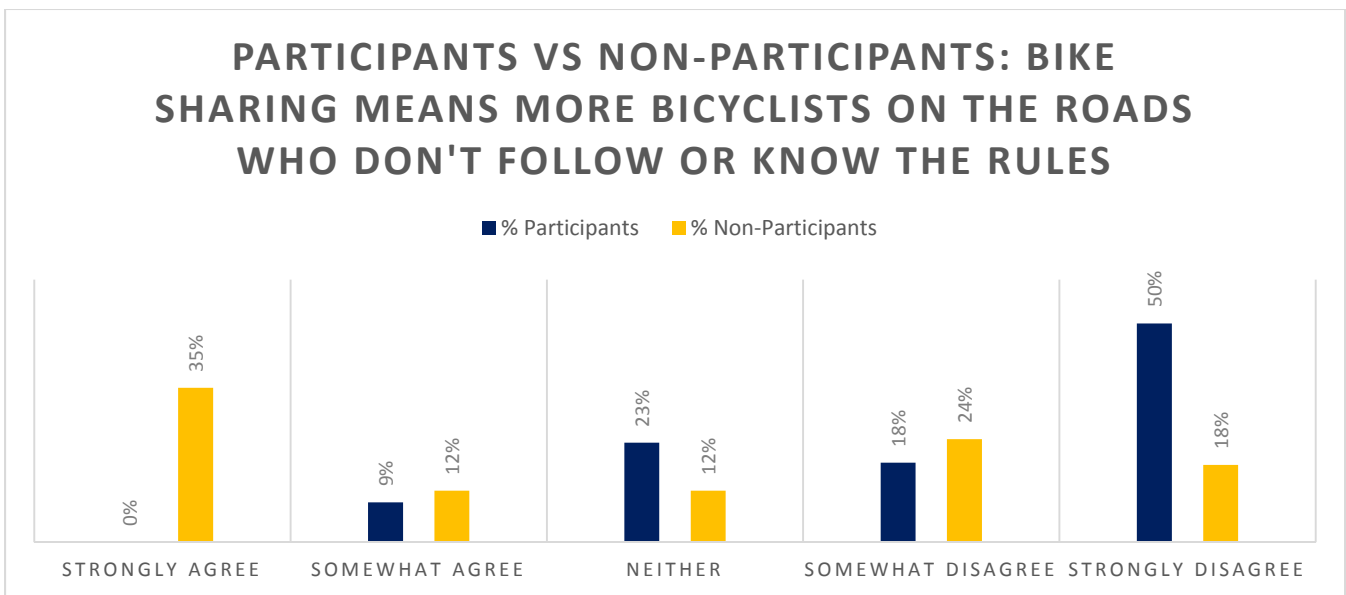


Figure 21:

Program participants were least likely to agree with the statement above, with 82% disagreeing and 17% neither agreeing or disagreeing. A majority of non-participants (53%) also disagreed that bikes contribute to congestion. Approximately 28% of non-participants reported believing that bikes worsen traffic.

Figure 22:



Sixty-eight percent of survey respondents who participated in the program disagreed with the idea that bike share increased the number of cyclists riding with insufficient knowledge of traffic laws and safety. On the other hand, 47% of survey respondents that did not participate in the program agreed with the statement.

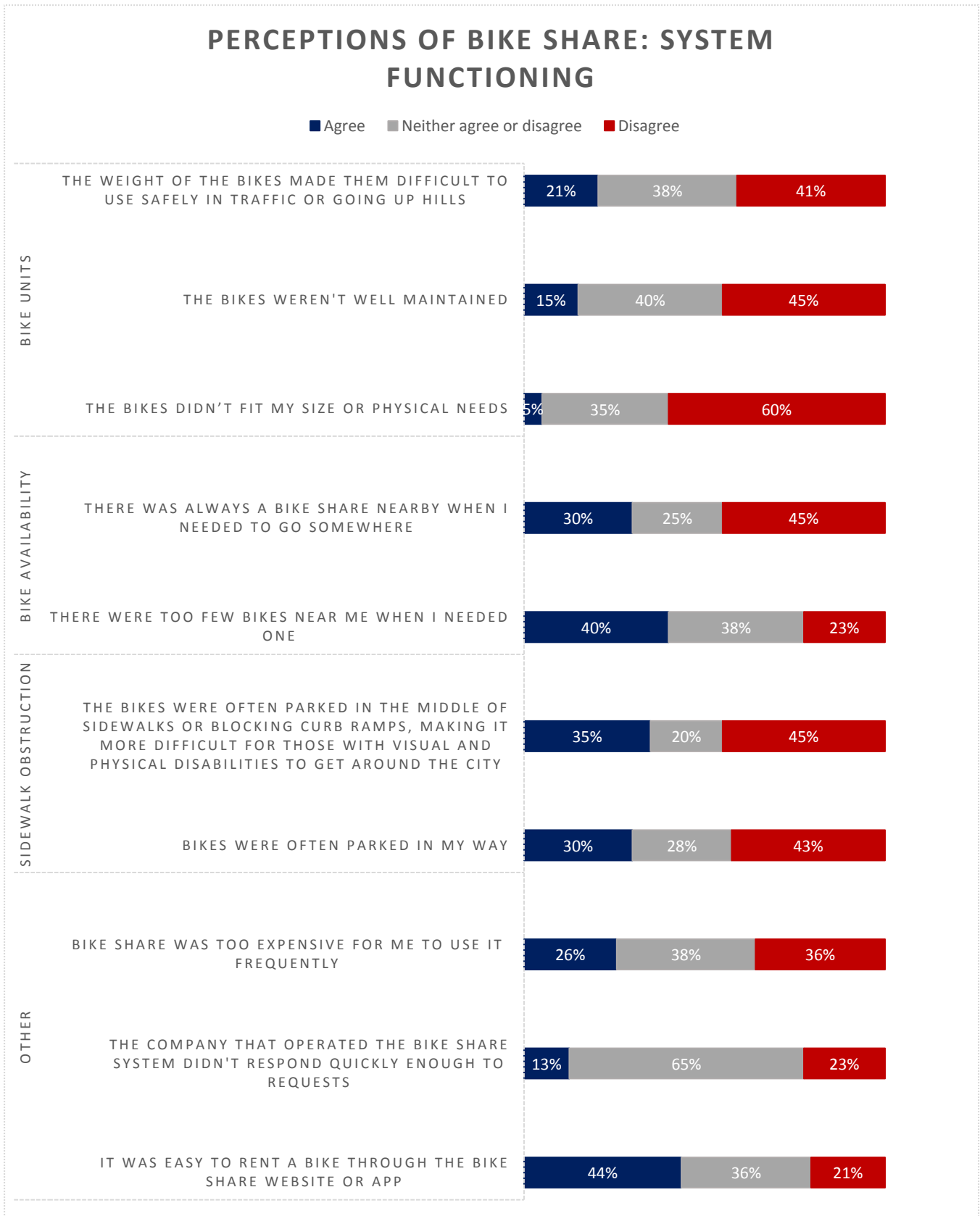


Figure 23:

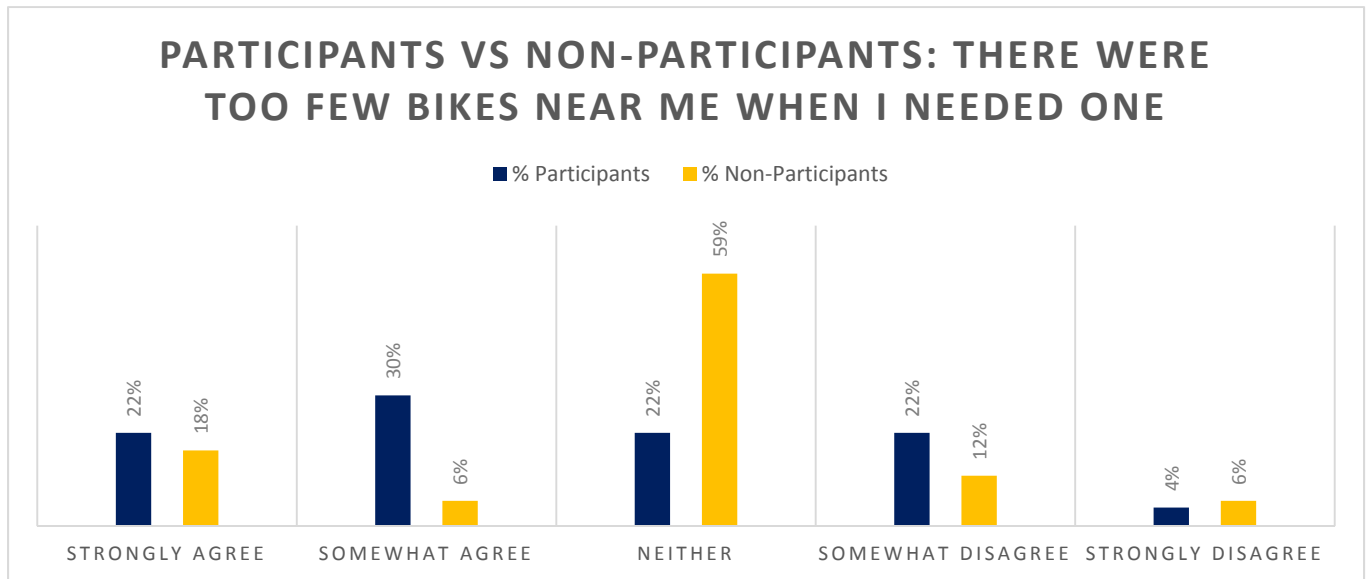
Survey data on traveler perceptions of the dockless bike share reveal that respondents generally held favorable or neutral perceptions of the design and condition of the bike share bicycles. This is suggested by multiple data trends, including:

- 15% of respondents characterizing the bikes as being poorly maintained
- 21% reporting the weight of the bikes posed challenges for getting up hills
- 5% characterizing the bikes as being ill suited for their size or physical needs

Additionally, respondents held mixed opinions on whether an appropriate number and geographic dispersion of bicycles were available.

- 45% of respondents disagreed that units were available near them when they needed to go somewhere
- 40% of respondents agreed that there were too few units near them when they needed one

Figure 24:

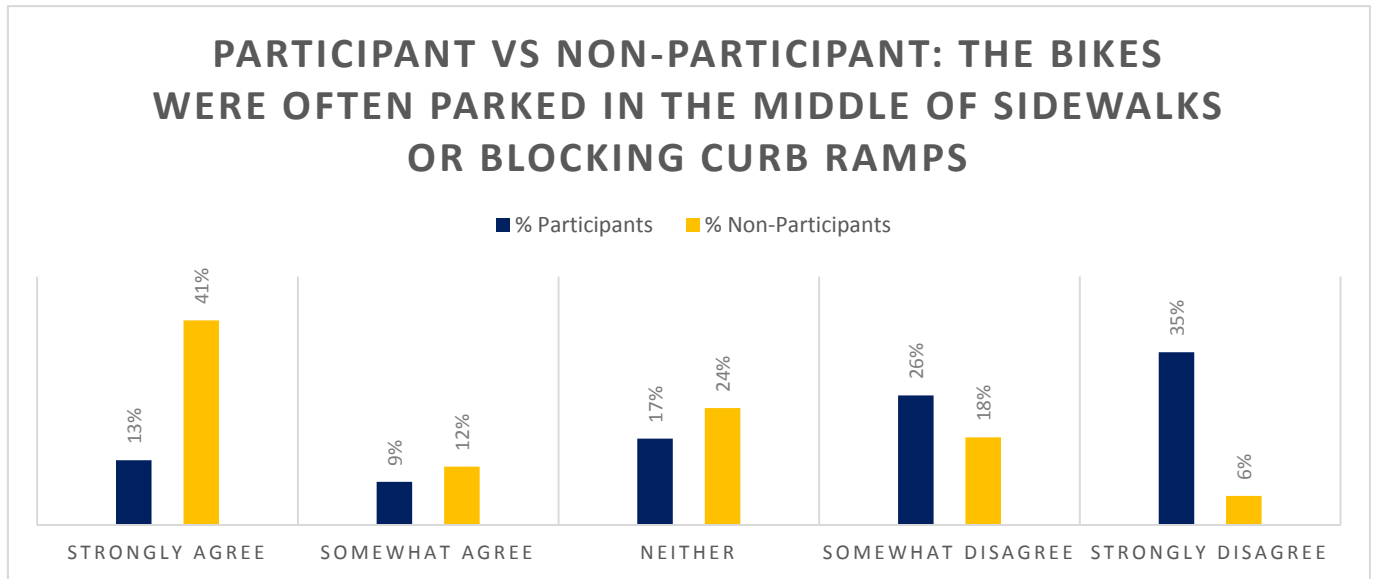


Survey respondents that did not participate in the pilot program were most likely to express that they neither agreed or disagreed with the availability of bicycles. Program participants, on the other hand, were more likely to report bike share units were near them when they needed to travel somewhere, with 52% strongly or somewhat agreeing.

Some respondents reported that sidewalk obstruction was an issue within the program, including:

- 30% who found dockless bikes were often parked in their way
- 35% who found dockless bikes were often obstructing sidewalks or curb ramps, creating an environment that was not navigable to pedestrians with visual and physical disabilities

Figure 25:

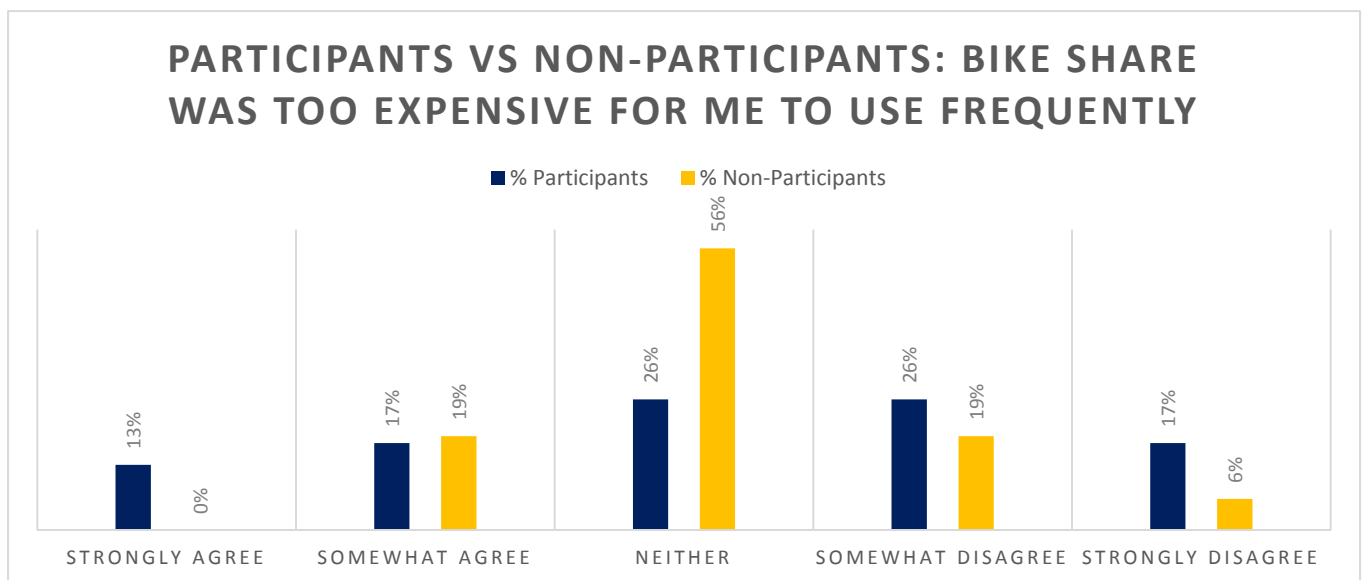


Program participants and non-participants held conflicting opinions about the frequency and extent of improper parking. 53% of non-participants expressed that they often found bikes obstructing sidewalks and curb ramps, while 61% of survey participants disagreed with the statement.

Other opinions generally expressed include:

- Neutral perceptions of response time to customer requests
- 44% reported renting a bike through the website or app was easy
- 36% disagreed and 38% were neutral when asked if they believed bike share was too expensive for them to use frequently

Figure 26:



Survey data indicates that expense was not a barrier preventing non-participants trying the system. On the other hand, 30% of surveyed program participants did report that the system was too expensive to use frequently.

System Wants

Respondents were surveyed on system improvements that may have encouraged or allowed them to use bike share on a more frequent basis. These prospective improvements included alterations to the bike share units, payment options, geographic coverage of the system, and the possible inclusion of electric and disability adaptive micromobility devices in any future iterations of the program.

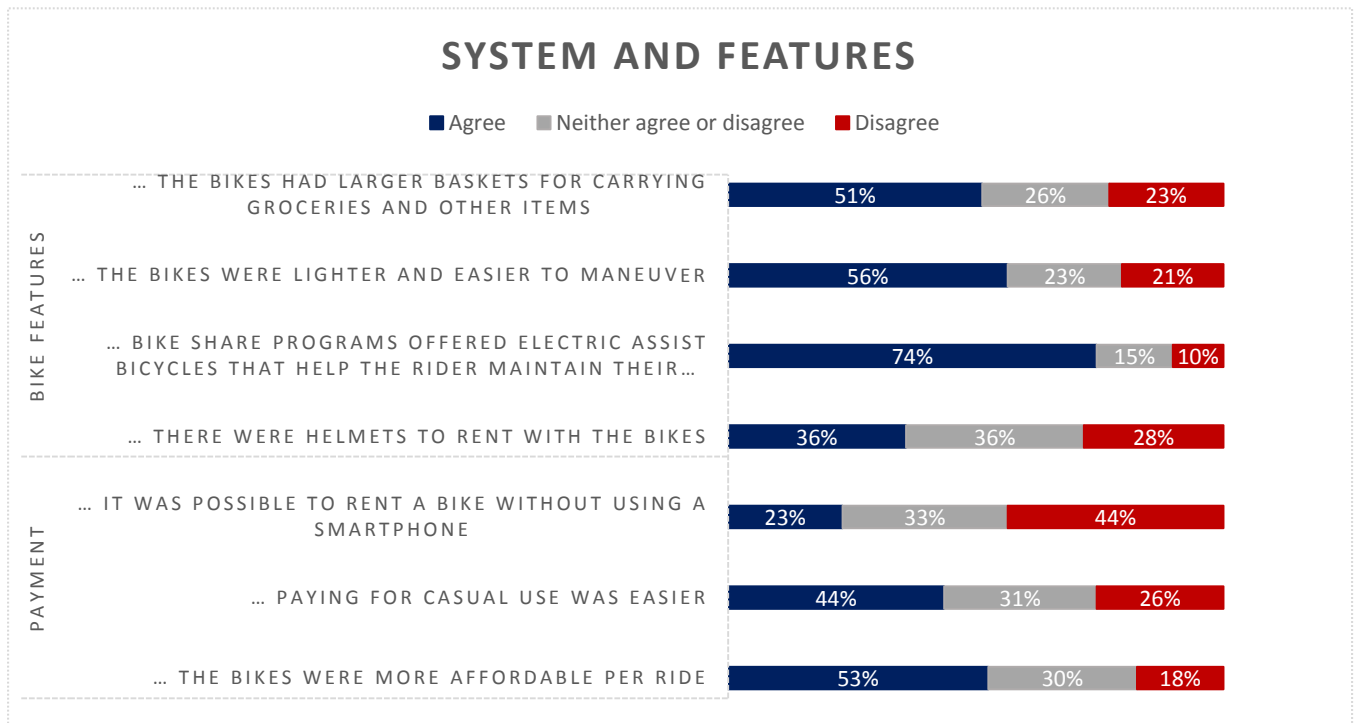


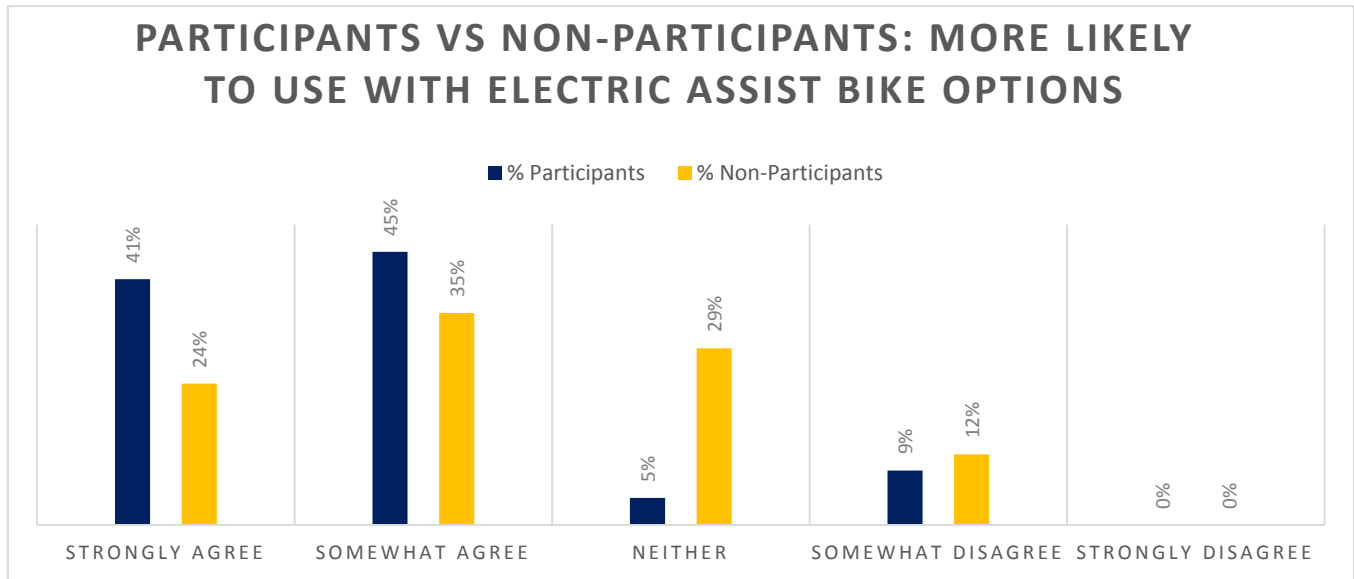
Figure 27:

Prospective changes to the bike share units were largely well received by survey respondents, including:

- 74% who reported they would be more likely to use bike share if electric assist bike were available
- 56% who reported they would be more likely to ride if the bikes were lighter and easier to maneuver
- 51% who reported larger baskets for cargo would encourage them to ride more often

The option of including rental helmets with the bikes was comparatively less popular, with 36% agreeing it might encourage them to use bike share.

Figure 28:



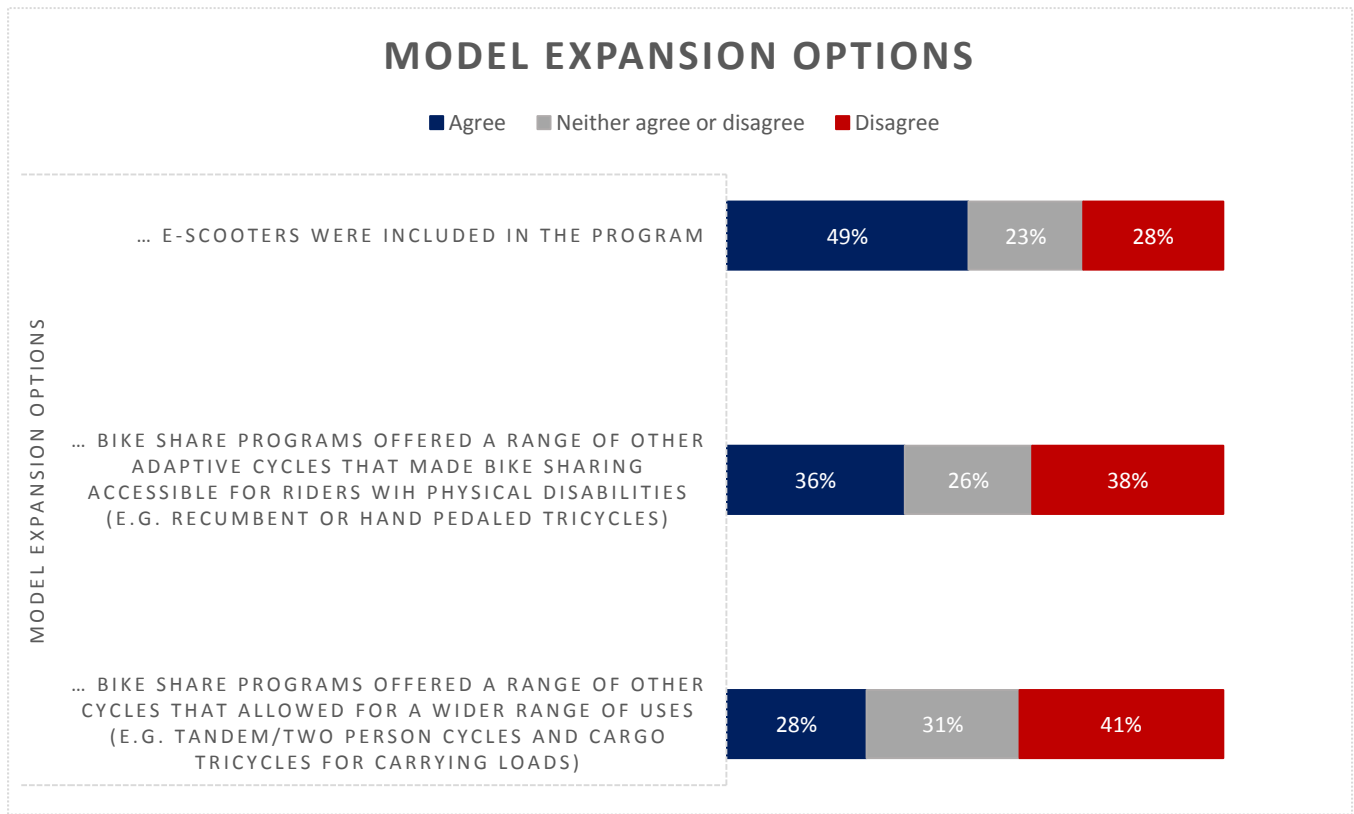
Program participants and non-participants both cited electric bike share options as an improvement that would encourage them to ride more frequently. 86% of participants and 59% of non-participants reported they would be more likely to use electric units.

Certain changes to payment options were also popular among survey respondents, including:

- 53% who reported they would be more likely to ride if bike share was more affordable per ride
- 44% who expressed that easier options for payment for casual users would encourage them to ride more often

Approximately 23% of survey respondents reported that having the ability to use bike share without a smart phone would encourage them to use the system.

Figure 29:

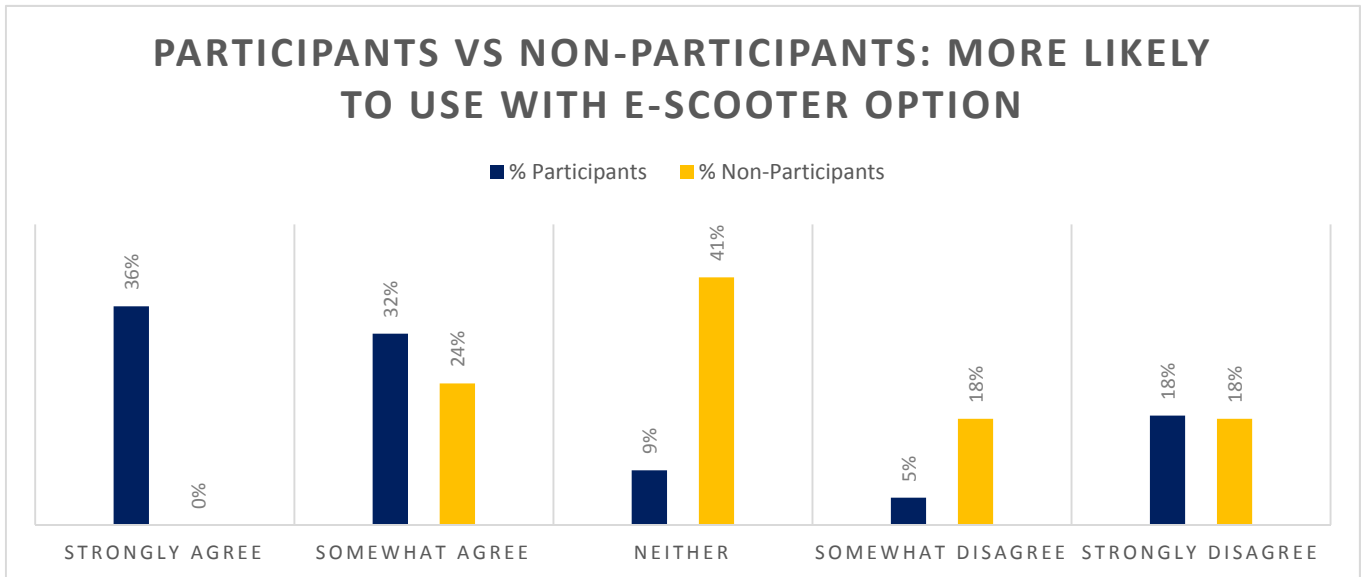


Some respondents indicated that expansion of the pilot program model to include other types of devices would encourage them to utilize the system more often. This includes:

- 49% of respondents who identified e-scooters as a desirable expansion
- 36% who identified adaptive cycles as an option that would encourage them to use bike share more often
- 28% who reported a wider range of cycles, including tandem or cargo units, would encourage them to use the system

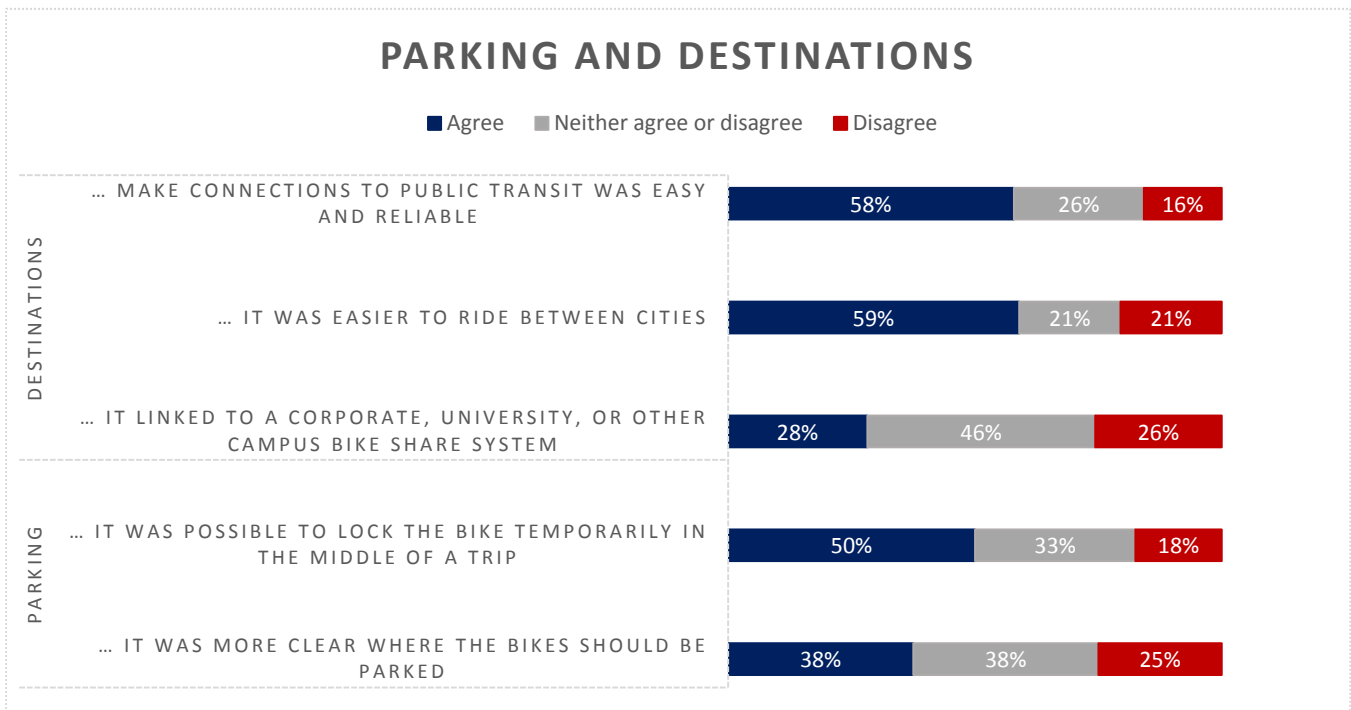
Participants and non-participants held notably different opinions on e-scooters.

Figure 30:



Survey respondents that participated in the pilot were far more likely to express interest in scooter share than non-participants. 68% of pilot program participants believe e-scooter options would increase their use of the system, while 24% of non-participants agreed with the same statement. Non-participants were most likely to hold neutral opinions on scooter share, with 41% neither agreeing or disagreeing that they would utilize the system if e-scooters were deployed.

Figure 31:



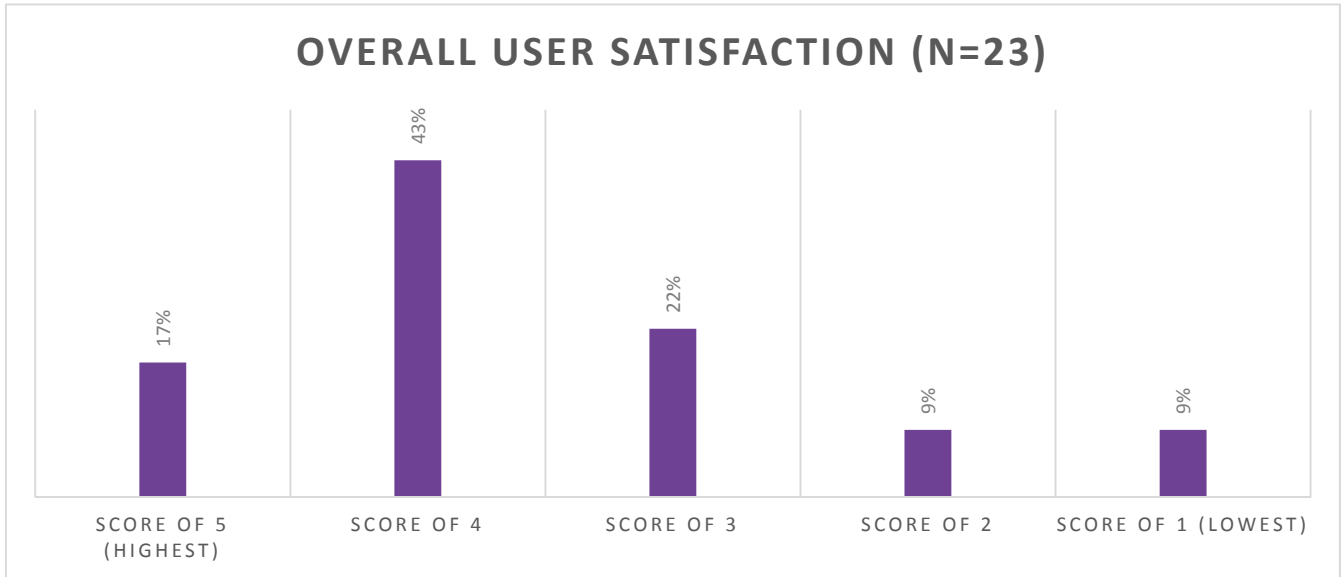
Respondents generally agreed that increasing access to transit and regional destinations would be an important step in increasing ridership, with 59% of respondents indicating that the ability to easily ride

between cities would encourage them to ride more and 58% indicating that easy and reliable connections to public transit would increase their bike share use. Approximately 28% reported that linking into corporate or university bike share systems would increase their use of bike share.

Respondents also provided their opinions on changes to bike share parking rules. Approximately 25% of respondents reported that it was unclear where bike share units should be parked, and 50% agreed that they wanted to be able to lock bike share units temporarily in the middle of a trip.

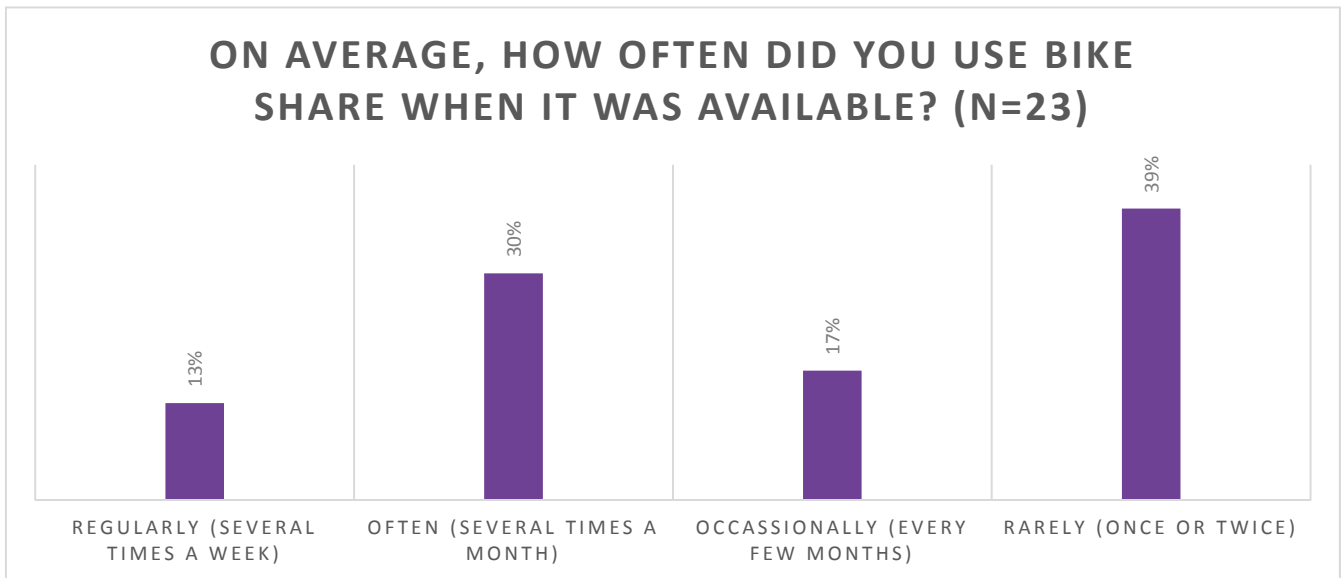
Bike Share Use in Mountain View

Figure 32:



When asked to rate their satisfaction with Mountain View’s Bike Share pilot overall, 60% of respondents gave the program a positive score.

Figure 33:



Approximately 56% of respondents that participated in the program were occasional or rare riders and 43% rode regularly or often.

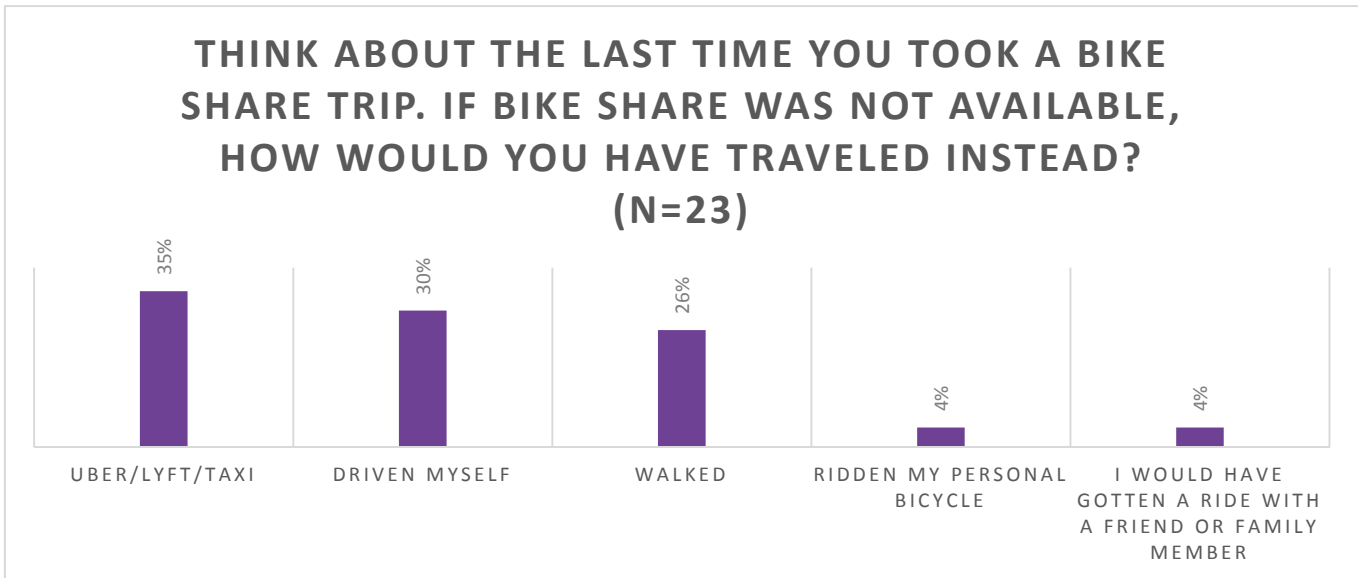


Figure 34:

Bike share trips represented in the survey most often replaced motorized trips, including:

- 35% of represented trips that replaced Uber, Lyft, or taxi rides
- 30% of represented trips that replace single occupancy vehicle trips

An additional 26% of bike share trips captured by the survey would have been achieved by walking.

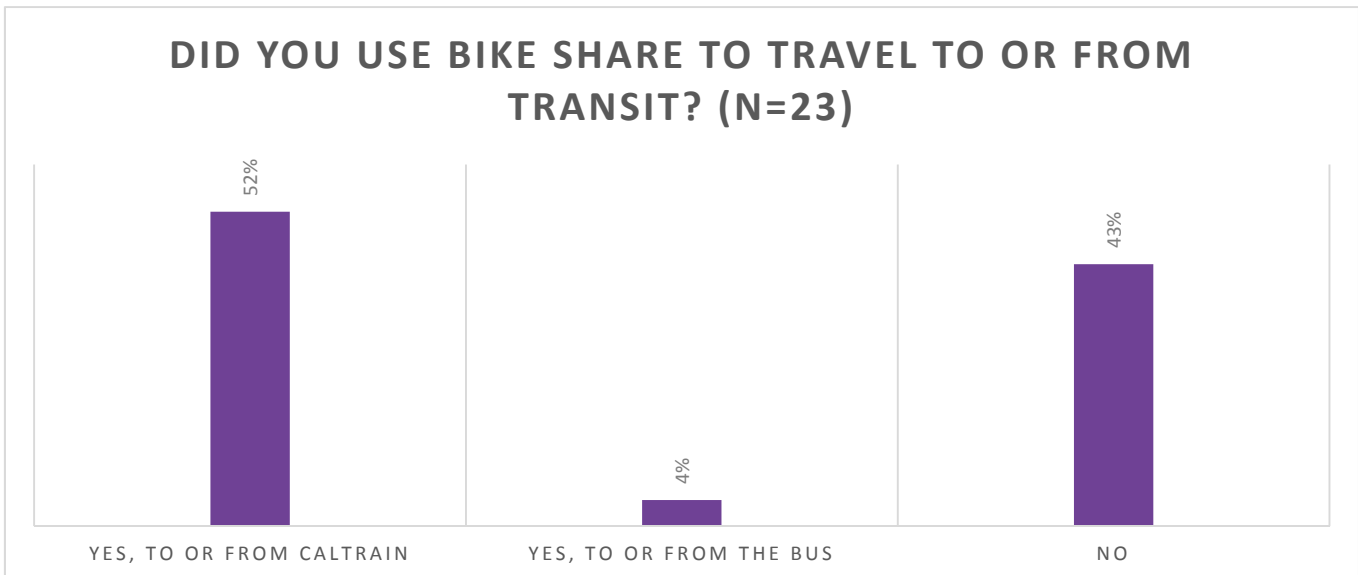


Figure 35:

52% of respondents reported that they had used bike share to connect to Caltrain, compared to 4% that used bike share to connect to the bus. 43% indicated that they had not used bike share to connect to transit.

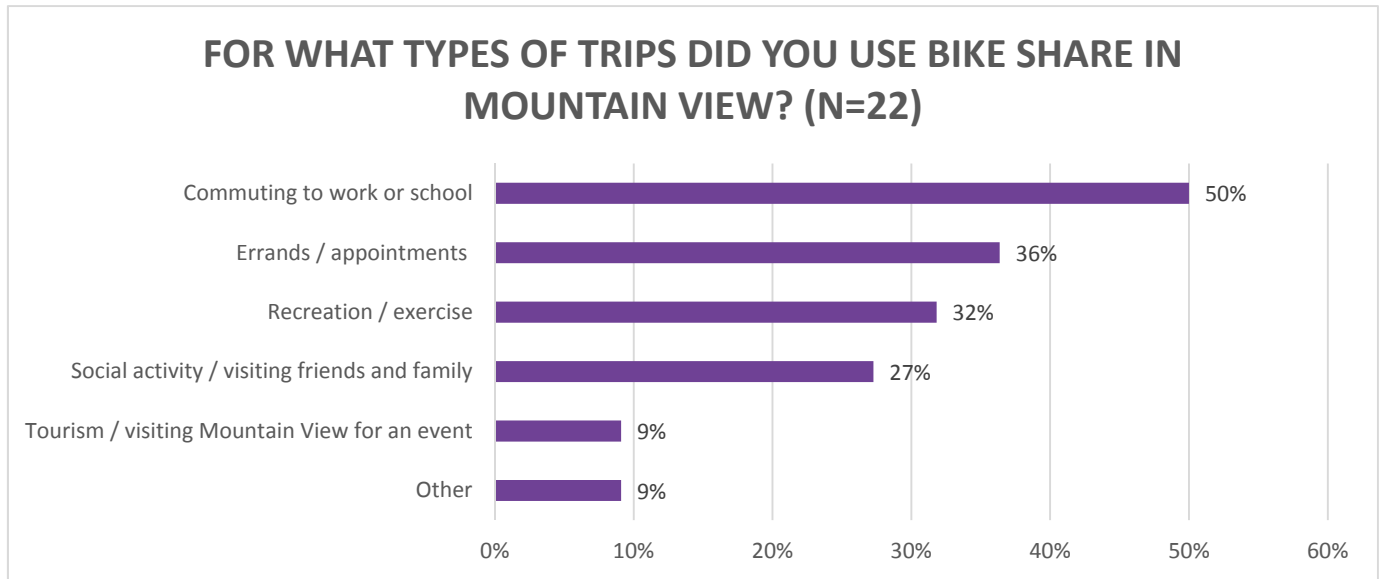
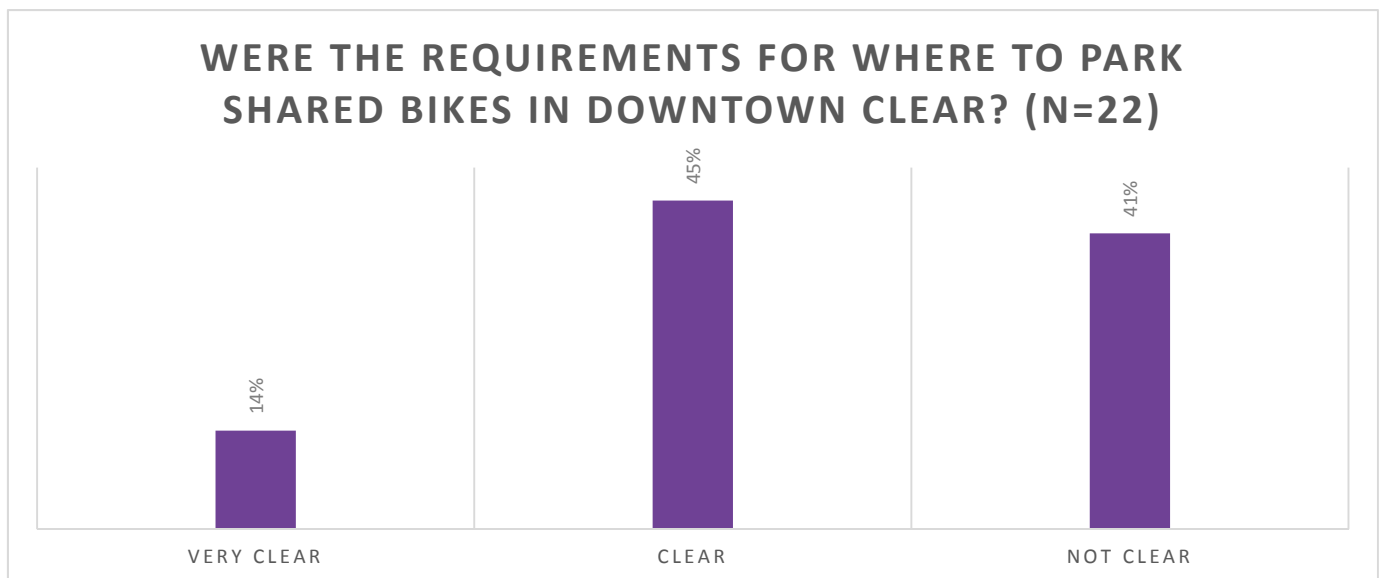


Figure 36:

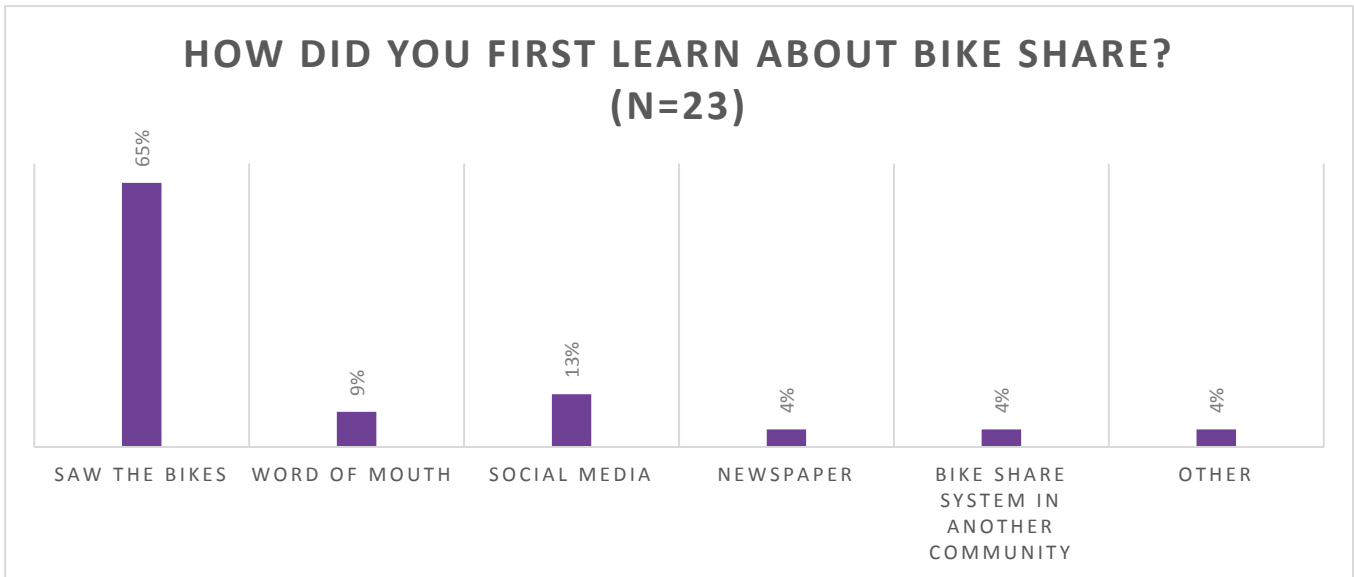
Approximately 50% of survey respondents indicated that they had used Mountain View's bike share program to commute to work or school. Other frequent trip types included errands/appointments, recreation/exercise, and social activity/visiting friends or family.

Figure 37



While 78% thought the overall parking requirements were clear or very clear, 61% thought the parking requirements for the Downtown area were clear.

Figure 38:



A large majority of respondents reported that they first learned about the bike share program by encountering bike share units during their normal travel.

Bike Share Service Options

Dock-Based Equipment

Also referred to as “smart dock” systems, this bike share system type is based on powered stations with docks that securely lock a bike and kiosks for user payment transactions and information. At the kiosk, casual users can purchase a short-term membership on demand. Bike share bikes must be retrieved from and returned to a station. Because the equipment is relatively expensive, most U.S. cities use federal transportation grants and large corporate sponsorship deals to cover the capital and operations costs.

Dock-based bike share systems offer a number of advantages that other bike share models do not. Most notably, the ability to select station placement gives cities control over bike locations and parking in the public right-of-way. Stations also make bike locations predictable for recurring users, which is particularly



Dock-based bike share station in Madison, WI

valuable for commuters and transit riders. Additionally, stations serve as advertising to prospective riders. The role stations play as a tangible infrastructure investment in bike share also creates a perception of permanence among prospective customers and stakeholders. Because bicycles within a dock-based system must be secured at a station, station density and visibility are critical to success. This also makes rebalancing a major element of successful operations.

Dock-based bike share also comes with some unique challenges that other bike share models do not present. The planning of station locations, purchase/installation of station hardware, and maintenance of station infrastructure requires more upfront time and resource investments, as well as higher on-going operations costs. As many dock-based bike share systems are largely owned by public agencies, supplementing bike share system budgets with grant funding or sponsorships often lead to financial reliance on unsustainable sources. Concentration of bike share units at stations also creates a lack of flexibility that limits the geographic reach and access to destinations for users.

Dockless Bike Share

Dockless bike share systems are fleets of self-locking bikes without any fixed stations, docks, or kiosks. Users retrieve or park bikes anywhere within the service area using a smart phone app. They offer an appealing level of flexibility and are generally permitted to operate in cities rather than procured.

Dockless Bike Share offers financial and flexibility benefits that other bike share models do not. Compared to hybrid and docked, dockless systems provide more flexibility for users and requires no time and budget station planning/design. As privately owned and operated companies, dockless bike share systems can be launched more quickly than other forms of bike share with little to no public funding. These savings can sometimes result in more affordable rides for single-trip, casual users.



Dockless smart-bikes from Durham's pilot program

Cities generally have much less control over dockless bike share systems compared to other system types, including less control over bike locations, pricing, and level of service. Cities that represents large markets have more negotiating power during the application and permitting process, however, smaller cities may find themselves with less bargaining power. Because dockless bike share systems self-lock, they can also lead to inappropriate parking practices that leave bike obstructing sidewalks, curb ramps, and parking spaces. Self-locking also makes the bikes more prone to vandalism and theft.

Hybrid Bike Share Systems

Also referred to as a "smart bike" system, this approach registers transactions on the bike rather than at a station. Stations, also called hubs, consist of branded racks for parking bike share bikes. Though stations are available, the program does not require that a bike be left at a station and it is permitted to be



"Lock-to" smart-bikes parked at a station in Orlando

parked anywhere within the service area. The racks have no software or technology features (different than the dock-based “smart-docks”). Hybrid systems typically charge a fee to park outside of the stations or offer an incentive to park at the stations to encourage users to use the docks.

In many respects, hybrid bike share systems offer the reliability and visibility of docked systems with the flexibility of dockless systems. The presence of stations in a hybrid system allows cities some degree of control over bike locations and parking, while offering riders predictability over where to locate a pod of bikes. Riders also benefit from the flexibility of being able to park their bike share rental at a standard bike rack if there isn’t a convenient hub location to dock near their destination. As with dock-based bike share, the installation of hub infrastructure creates a perception of program permanence and reliability.

While hardware and software costs necessary for hybrid bike share are lower than dock-based bike share, they are still a larger upfront investment than dockless systems. The installation of hubs may also require permits and negotiation with adjacent land owners. Additionally, operations will require time and funding to rebalance bikes, which may be improperly parked.

Turnkey Bike Share Systems

To implement a turnkey bike share system, a city hires a company such as Zagster or VeoRide to provide “bike share as a service” for a defined amount of time. Instead of purchasing a full fleet of bikes and designing stations, a city rents equipment and contracts with the company for the full range of operations support, including: installation, operations, sponsorship, customer service, and maintenance. This allows cities to implement bike share with limited staff capacity and capital investment, while maintaining a higher degree of control than most dockless systems offer. Cities using this model can also select a mixed fleet that incorporates hybrid bikes, e-bikes, fat bikes, and other micromobility devices. Service providers can provide parking options and/or be charged annual fees to establish funding for similar improvements.

Despite having some degree of control, local jurisdictions do not own turnkey systems as they would in many dock-based or hybrid systems. This means that under certain circumstances, service may not be long lasting if the provider goes out of business or decides to withdraw from the jurisdiction. This also means that funding sourced from service fees and prices for users can be unpredictable over time.

Operator Interviews

Summaries

The project team interviewed a representative from Lyft to understand their perspective on operating a bike share system in Mountain View. Lyft expressed that they are not currently interested in operating in Mountain View. Their focus over the next couple of years is:

- Growing and expanding within their current markets
- Focusing on the largest markets
- Upgrading bikes to e-assist

Other than the size of the market, Lyft did not see any other barriers to operating in Mountain View. However, they did note that they believe more and better bike infrastructure creates more opportunity or success.

The project team also interviewed Zagster, a turnkey bike share operator that operates primarily in smaller cities and on campuses. Cities typically pay a per station annual fee for their services which includes all of the necessary hardware, software, and operations for a bike share system.

Zagster also noted that there has been growth in the paid bike share model as the number of privately operated dockless systems has dropped dramatically over the last year.

Lessons Learned

The largest barrier to operating in Mountain View from Lyft's perspective is the size of the market. We discussed two possible ways that Mountain View could combat this and become more attractive to operators like Lyft:

- Pursue regional partnerships: Working with neighboring jurisdictions and/or corporations with sizable campuses could increase the market beyond Mountain View's city limits and public right-of-way.
- Partner with Caltrain: Lyft would potentially be interested in operating first/last mile service along the Caltrain spine. While this option would not provide bike share to all of Mountain View, it would increase access to transit and could help build support for a larger bike share system.

Here are the key takeaways from the project team's interview with Zagster:

- Would operate in Mountain View
- Typical cost is \$10,000 per station (with five bikes) per year
- Pricing and branding can be off-the-shelf (branded as the Pace network), or custom developed in collaboration with client
- Can launch in as little as 60 days after an agreement is executed
- The system can be fully station-based or a hybrid system
- Can partner with scooter companies, if desired