ACT4ALL

ACCELERATING CLEAN TRANSPORTATION FOR ALL

E-BIKES FOR ENVIRONMENTAL JUSTICE FINAL REPORT

***ACT4ALL** IN THE PIONEER VALLEY*

MASSACHUSETTS CLEAN ENERGY CENTER®

CALSTART

Catalyst for Regional Progress PVPC

08.01.2025

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E-BIKES FOR ENVIRONMENTAL JUSTICE

CONTENTS

OVERVIEW

SUMMARY

In April of 2022 the Pioneer Valley Planning Commission (PVPC) launched an e-bike incentive program with funding from the Massachusetts Clean Energy Center (MassCEC) Accelerating Clean Transportation for All program and support from CALSTART, a national clean transportation nonprofit organization. Participation in the pilot project focused on the ValleyBike communities (Amherst, Chicopee, Easthampton, Holyoke, Northampton, South Hadley, Springfield and West Springfield). The goal of the program was to leverage ValleyBike, an existing e-bike share program, to distribute 60 e-bikes to structurally disadvantaged people in the Pioneer Valley region to increase their mobility options, access to opportunity and reduce greenhouse gas emissions. To achieve this goal, PVPC and CALSTART partnered with local community-based organizations to co-design all aspects of the project.

From participant outreach and application process, e-bike vendor selection and data collection, to distribution and maintenance education events, the community-based organizations had input in every aspect of the project. Starting in June, 2023 the first round of e-bikes was distributed, and based on the preliminary success of our work, the MassCEC awarded additional funds to PVPC's team, enabling the distribution of an additional 75 e-bikes starting in March 2024. In all, the project team successfully distributed 134 e-bikes to structurally disadvantaged people, resulting in an estimated 23,905 miles ridden by e-bike recipients from June 2023 to June 2025 and estimated 21,359 kilograms of CO2 emissions reductions. In addition to achieving emissions reductions by replacing car and bus trips with e-bike trips, many participants shared that the e-bikes had a positive impact on their physical and mental health, increased their access to opportunities such as work or school, and provided a new way to build connections with family members and friends.

OVERALL GOAL:

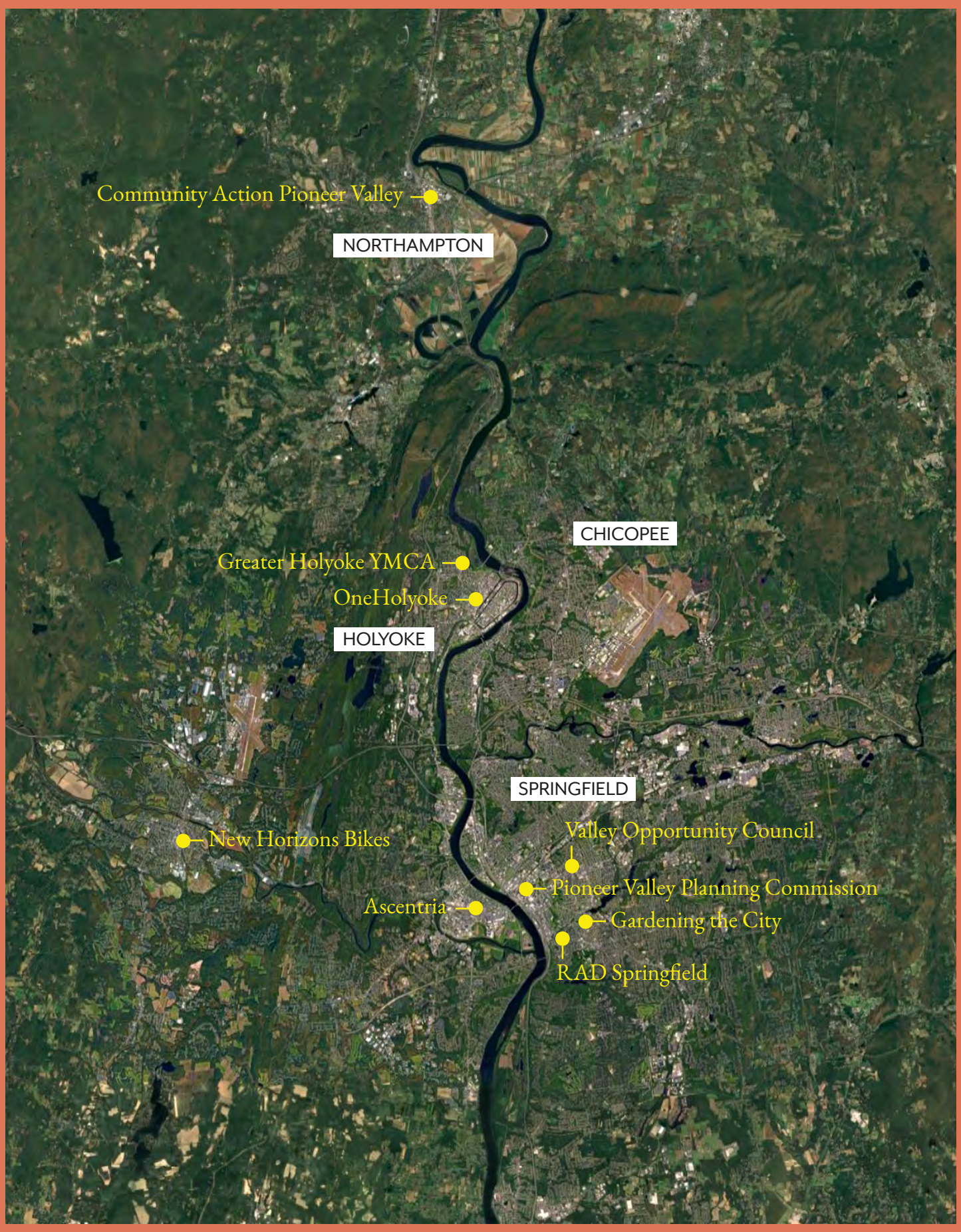
Implement a community-centered e-bike incentive program to increase transportation mobility and accessibility for economically and structurally disadvantaged people and reduce greenhouse gas emissions.

SECONDARY GOALS:

- Implement the program through community based organizations (CBOs) in the Pioneer Valley and compensate them for their time. These organizations are at the center of engaging and identifying structurally and economically disadvantaged people.
- Expand CBOs involvement in climate action work.
- Build on ValleyBike, the Commonwealth's first all-electric regional e-bike share program.
- Strengthen and expand the e-bike infrastructure in Western Mass.

DESIGN PROGRAM

REGIONAL PROGRAM PARTNERS



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the YMCA

New Horizons Bikes

Ascentria CARE ALLIANCE
Empowering People. Strengthening Communities.

RAD

Holyoke Urban HUBS Bike School

Gardening the Community

Valley Opportunity Council

CAPV
COMMUNITY ACTION PIONEER VALLEY
Access • Opportunity • Community

OneHolyoke CDC
Housing • Development • Community

PROGRAM DESIGN

REGIONAL PROGRAM PARTNERS

DESIGN:

The e-bikes for environmental justice pilot program was designed to address systemic structures of racial and economic injustice and reduce GHG emissions by expanding use and ownership of e-bikes by disadvantaged people in the Pioneer Valley region of western Massachusetts. In order to effectively reach people in disadvantaged communities, PVPC collaborated with and financially supported local community based organizations (CBOs) who have existing relationships with target populations in seven ValleyBike communities—including three Gateway cities, two of which are made up of majority Black and Brown residents with documented poor air quality and large Environmental Justice populations.

The team included seven CBOs, the region's planning agency, PVPC, and CALSTART a national organization with 27 years' experience spurring clean transportation innovation.

VALLEYBIKE COMMUNITIES

Amherst
Chicopee
Easthampton
Holyoke
Northampton
South Hadley
Springfield
West Springfield

The program design focused on cities and town active in the region's Valley Bike initiative, the 100% electric regional bike share system catalyzed by the PVPC in the 2010s. Our approach involved two phases of e-bike outreach, education and use. In phase one, six collaborating community-based organizations (CBOs) engaged their constituents to try ValleyBike, promoting availability of no cost annual memberships in ValleyBike as a way to introduce potential e-bike owners to e-bikes and the ease and reliability of using them for transportation.

The project team established a process to distribute e-bike incentives that can be replicated by other regions in the Commonwealth to demonstrate an incentive model to meet the ACT4All program's twin goals of increasing access and reducing burden while also reducing GHG emissions.

Don Podolski, owner New Horizens Bikes

DESIGN PROGRAM PR

REGIONAL PROGRAM PARTNERS

In phase one, the project team focused on strategy and planning, identifying an equipment provider, New Horizons Bike shop based in Westfield, ensuring it could supply the e-bikes under the project parameters in light of pandemic shortages, including providing ongoing maintenance, support and technical service to our e-bike recipients, assuring effective prioritization of incentive funds without undue restrictions or administrative burden for program participants. The project team identified two additional CBO partners to work with New Horizons to provide maintenance and e-bike orientation and support: Rad Springfield and the Holyoke Urban Bike School (HUBS) an initiative catalyzed and supported by the Holyoke YMCA.

COMMUNITY BASED ORGANIZATION PARTNERS

Ascentria

Community Action of the Pioneer Valley

Gardening the Community

Holyoke YMCA

OneHolyoke CDC

Valley Opportunity Council

The CBO partners began assessing and understanding the e-bike needs of the target audience by engaging them directly. After initial discussions, several important considerations surfaced such as;

- Focusing on Class 1 e-bikes for safety and ease of use.
- Including different e-bike options such as commuter, cargo, and folding models to fit the varying needs of program participants.
- Supporting program participants by providing ancillary equipment (e.g., bicycle lights, helmets, panniers, locks, pumps, repair kits).
- Using a passive data tracking solution such as GPS devices so that program participants would not be overly burdened by manual ridership data reporting.

DESIGN PROGRAM PRIORITIES

REGIONAL PROGRAM PARTNERS

Next, CALSTART worked to build the local organizational e-bike 'infrastructure' that was lacking in western Massachusetts, shaping a equipment procurement, distribution, and safety education and distribution process.

The project team tracked various metrics including: number of e-bikes deployed; participant information-age, gender, race, income, language, education level, location, and main transportation option(s); estimated emissions benefits (GHG and air pollution), and e-bike usage and trip information of program participants including frequency of use and trip length.

Phase two of the project was implementation. We successfully delivered 134 e-bikes to constituents of our e-bike partners in addition to providing safety education and maintenance support.

COMMUNITY CO-DESIGN:

Instead of working quickly to pre-select an e-bike supplier, we focused on relationships we established with our CBO partners; these relationships became our pre-selection because to successfully and sustainably introduce e-bikes as primary transportation we needed to have the potential users involved in selection of the products they would eventually use. This work in phase one helped us develop a program that is scalable and has long-term impact for participants. With our CBO partners we came to understand the e-bike needs of our target population and were successfully able to select the right e-bikes while at the same time collaboratively developing local e-bike capacity and organizational infrastructure for recruitment, distribution and maintenance of this new mode of transportation for our region. Deep engagement with priority communities to inform and finalize program design made us successful.

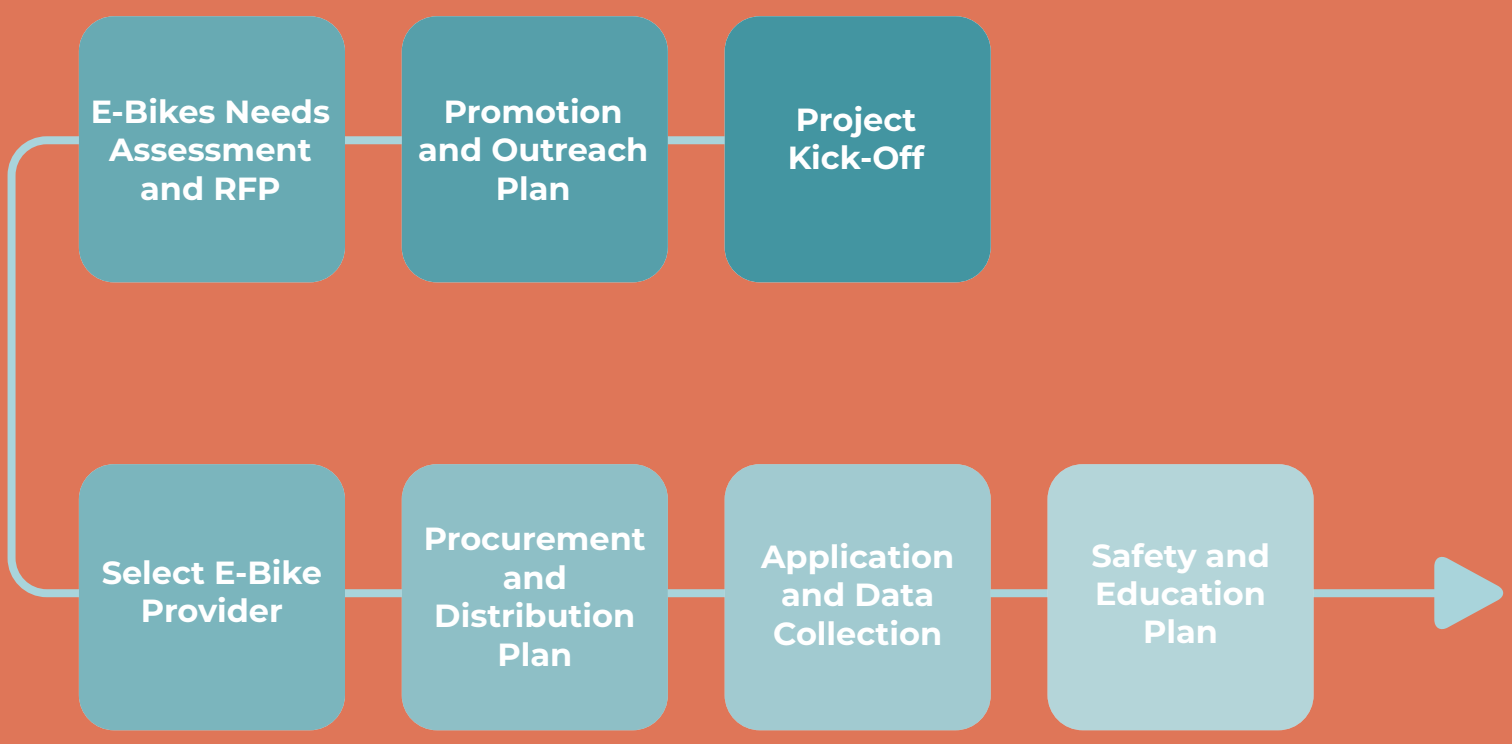
CHALLENGES & OPPORTUNITIES IN THE PIONEER VALLEY:

The Pioneer Valley presents both opportunities and challenges for e-bike mobility that distinguish it from other regions of Massachusetts. The area's varied topography and long distances between population centers such as Springfield, Holyoke, Northampton, and Amherst make e-bikes particularly useful for overcoming hills and extending travel range. However, limited bike infrastructure and gaps in regional connectivity constrain safe and efficient travel Cost also remains a significant barrier: with quality e-bikes typically priced between $1,500 and $3,000, the expense can be prohibitive in communities like Springfield, where the median household income is approximately $51,339, well below the state median. Expanding infrastructure, affordability initiatives, and regional coordination will be essential to making e-bikes a practical and equitable transportation option in the Pioneer Valley.

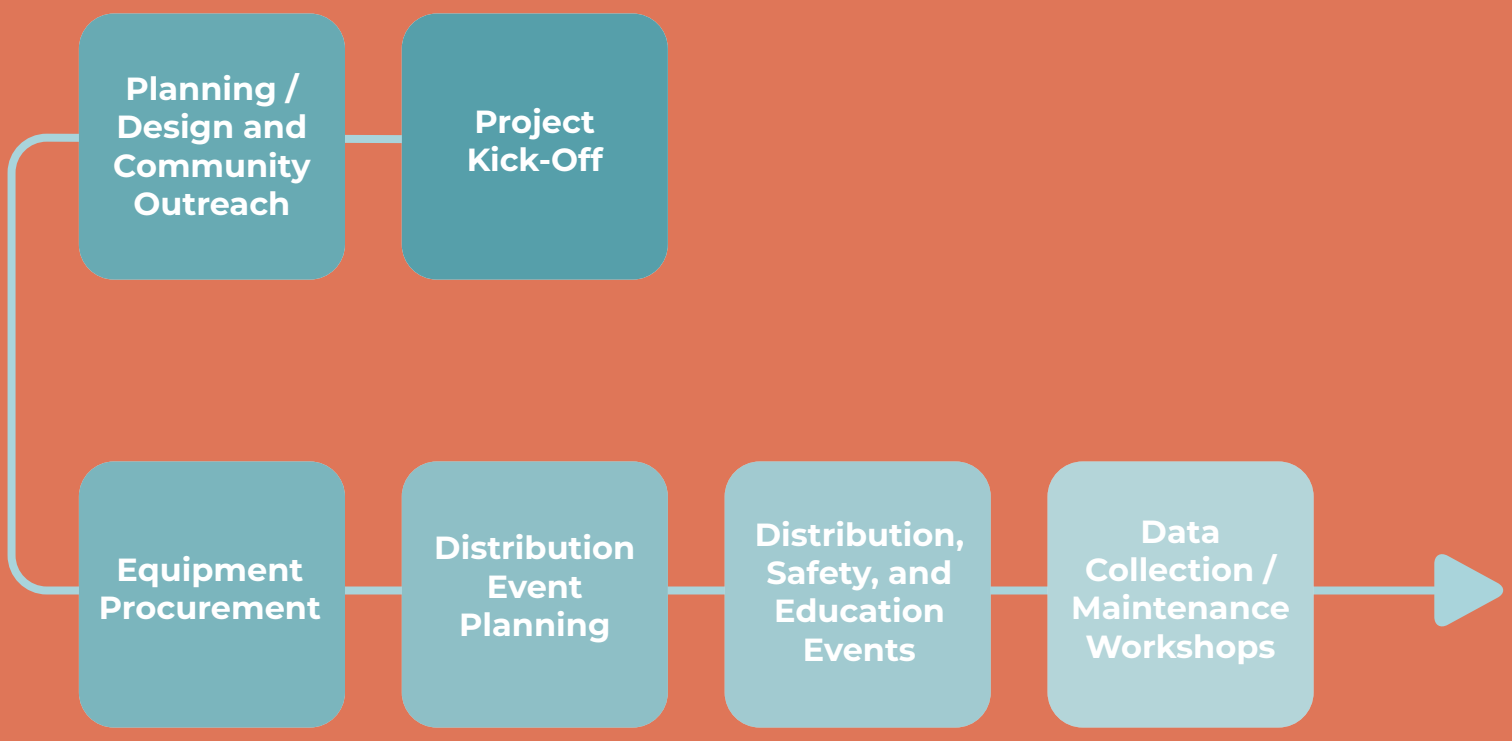
PROGRAM DESIGN

ACT4ALL E-BIKE / PIONEER VALLEY

PROGRAM PLANNING PHASE



PROGRAM DELIVERY TIMELINE



PARTICIPANT VOICES

ACT4ALL E-BIKE / PIONEER VALLEY

Q: How has the E-Bikes for EJ Program changed your ability to get around?

A: Riding my E-bike makes me feel more comfortable exploring the city, you see so much more cycling. It has allowed me to exercise and get around. Exercise was hard for me, and the E-Bike has helped me feel good and makes me feel stronger. Everyone should have one!

Jose Acevedo

Q: How did you feel when you received your e-bike?

A: Really great! I was excited because it was something different and a new way to get exercise. I usually take Zumba class and go to the gym. I can do my things and don't need to look for an uber: I am much more able to get around. I am much more mobile and have an expanded range of activities. The program is great; it has made my life easier and I wouldn't change a thing! Thank you!

A Letter to the Program

To all the people who helped get this e-bike for me:

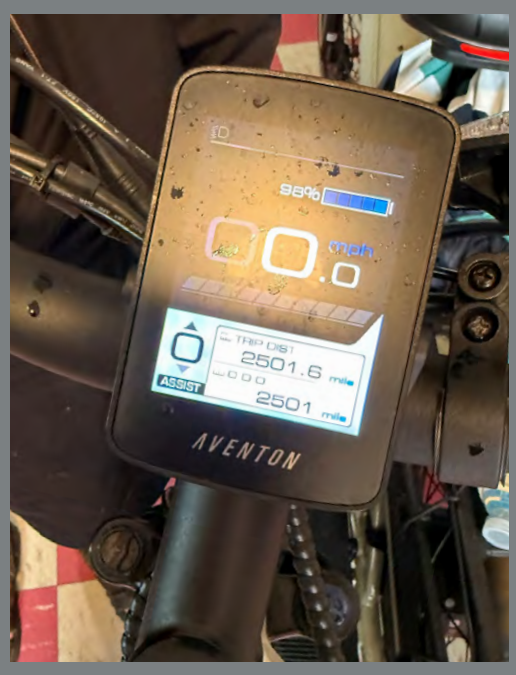
As you might know, on a Sunday you can get by bus to Holyoke but then must walk to Holyoke Community College and that is where the Alzheimer's walk is held.

So for years I just could not go.

I was reminded of it Saturday after I had charged up my e-bike and so I registered.

I planned on being on my way by 8:00 AM but it was more like 8:30AM before I pushed off and was on the road.

But I got there by 9:20 AM or so, in time to get my flower pinwheel in the lost someone color and sit to watch the opening ceremonies and then go with others on the walk. I start at the head and end up in the middle or so these days, just cannot walk as fast as I used to.



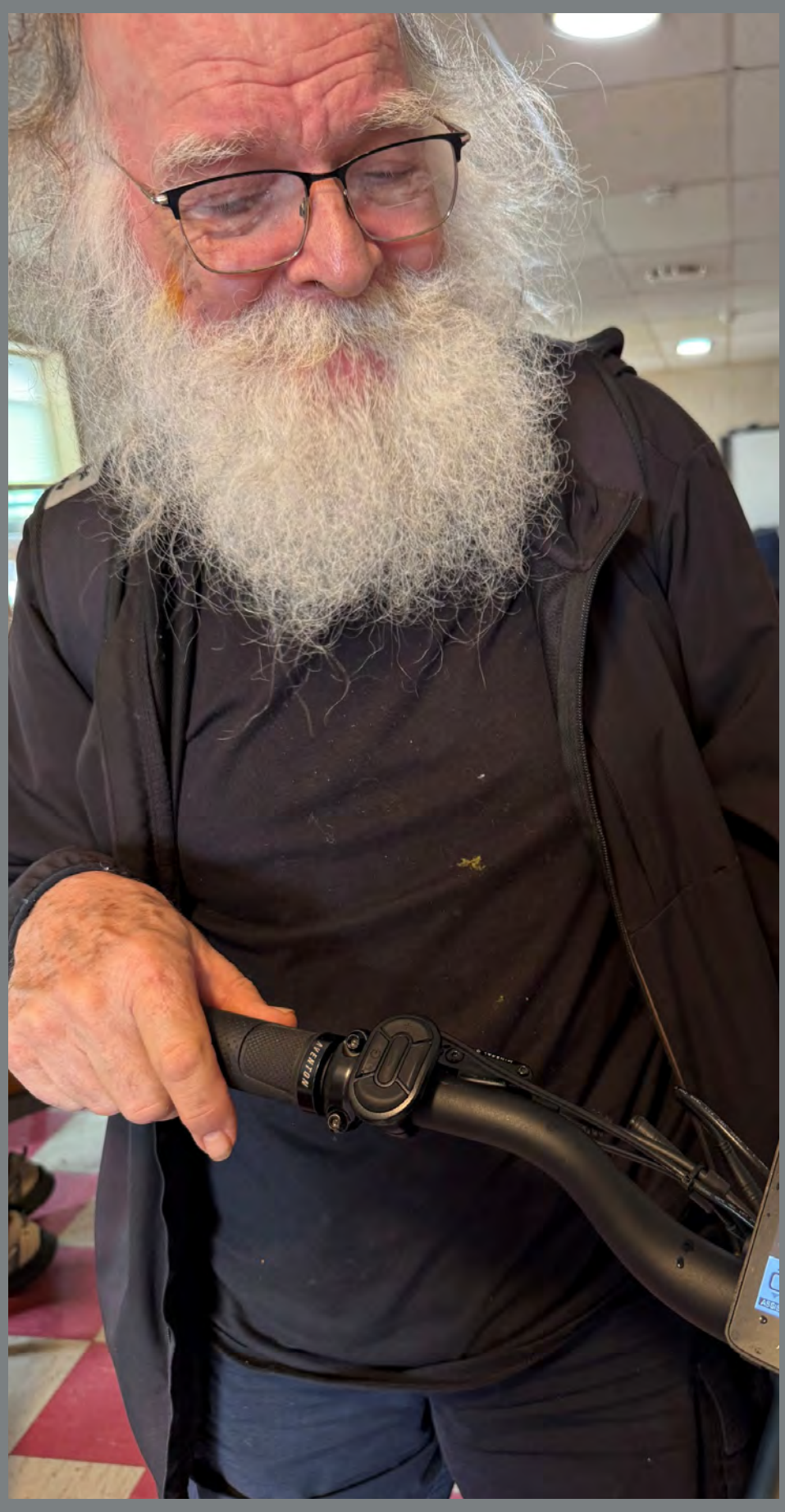
Then it was back to Springfield on the ebike (took route 116 as it has a bike path on much of the route) and then to lay down for a few hours. I then got on the e-bike out to Wilbraham near Stoney Hill Road to return a jacket that was someone's and had been left at one of the lodges I am in. And then back to the apartment and rest.

The trip to HCC was about an hour one way and it is about all my butt can take these days. And I used to be able to bicycle for half of a day at least.

But I want to thank you as I could not do much and this ebike makes it almost as if I was 45 and not 77!

Thank you so much.

Charlie Knight, Springfield



PARTICIPANT VOICES

ACT4ALL E-BIKE / PIONEER VALLEY

Q: How did you hear about the e-bike opportunity?

A: I used to rent Valley Bikes all the time and I saw a brochure and applied to get a no cost e-bike.

This is my first e-bike and I am really excited about it because my daughter has cerebral palsy and I can carry her around on the e-bike and she loves it.

Having this e-bike has brought me closer to my kid.

Louie Nolasco, Holyoke

VOICES

ACT4ALL E-BIKE / PIONEER VALLEY

PARTICIPANT

Helen Gomez Andrews + Christopher Andrews, Holyoke

Q: How has the e-bike changed your daily life?

A: The e-bike has helped me to be able to be active and healthy. It helps me to get around and it's fun to do!

Yami Mercado, Holyoke

Q: How do you use your e-bike?

A: My e-bike was so much fun last summer, this summer has been more challenging to use it. But in a few weeks I am going camping and I can't wait to use it on the trails!

Kayan Foster, Holyoke

Q: How has owning an e-bike changed your daily life?

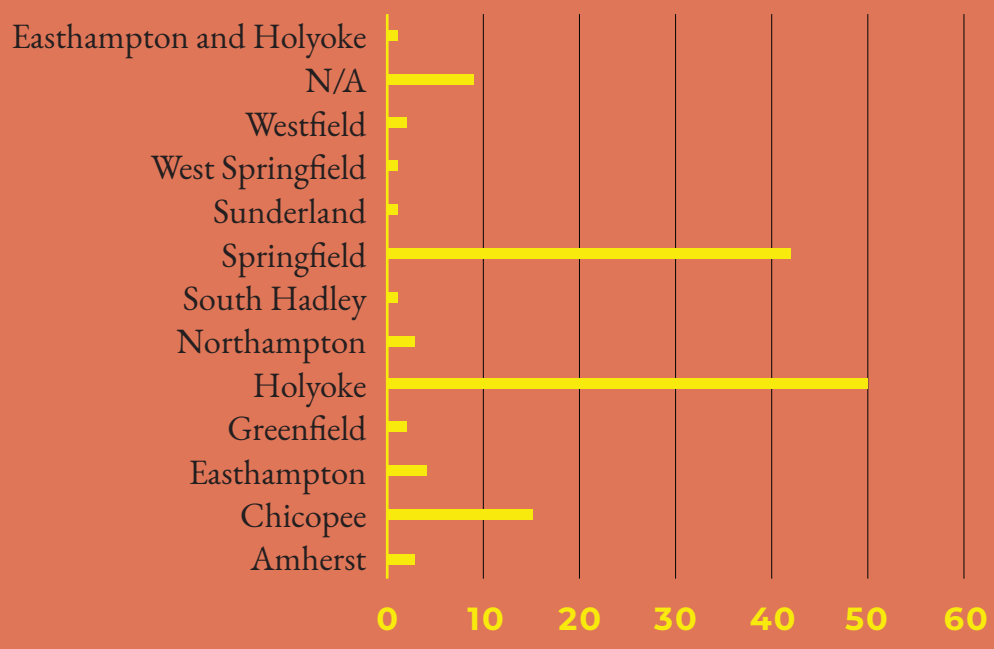
A: Through the E-Bike Program, I was able to obtain an electric bike, which has had a positive impact on both my health and finances. It has encouraged me to get more exercise by biking regularly. Additionally, it has helped me save money on gas by allowing me to use my car less often. I now use the e-bike for short trips around town, including appointments and errands, which has made my daily routine more efficient and sustainable.

Rosanna Mercado, Holyoke

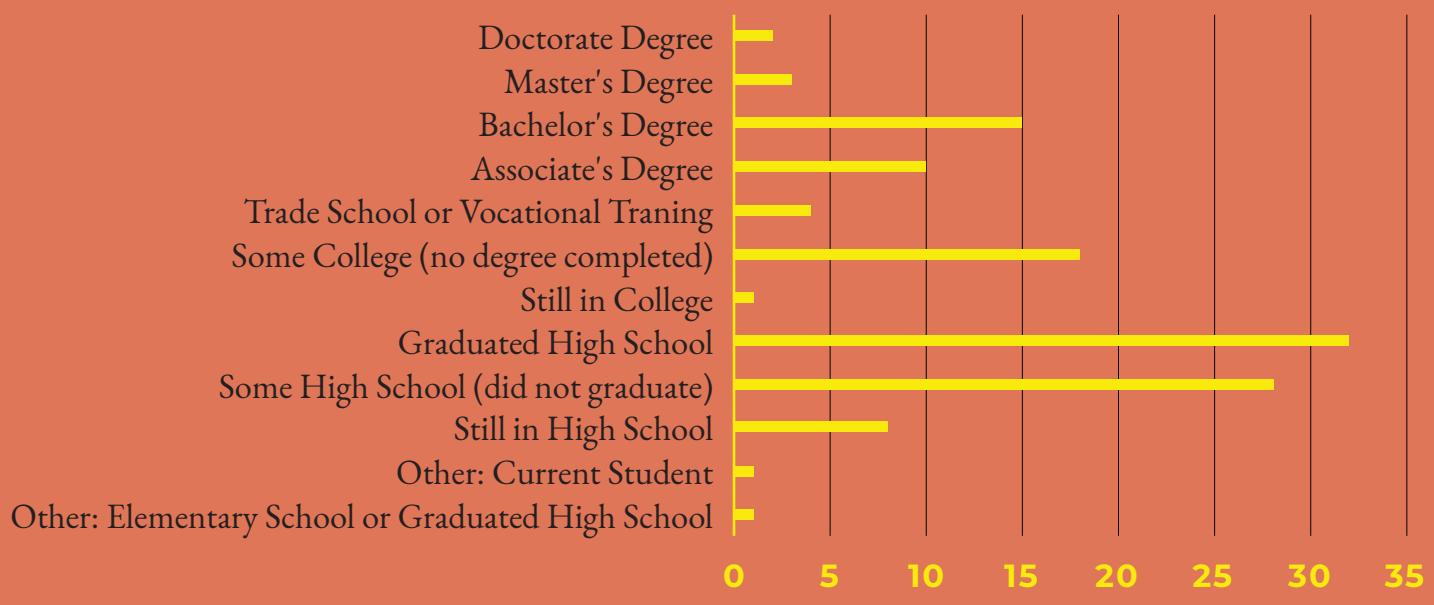
PROGRAM EVALUATION

ACT4ALL FINAL DEMOGRAPHICS

RESIDENCE

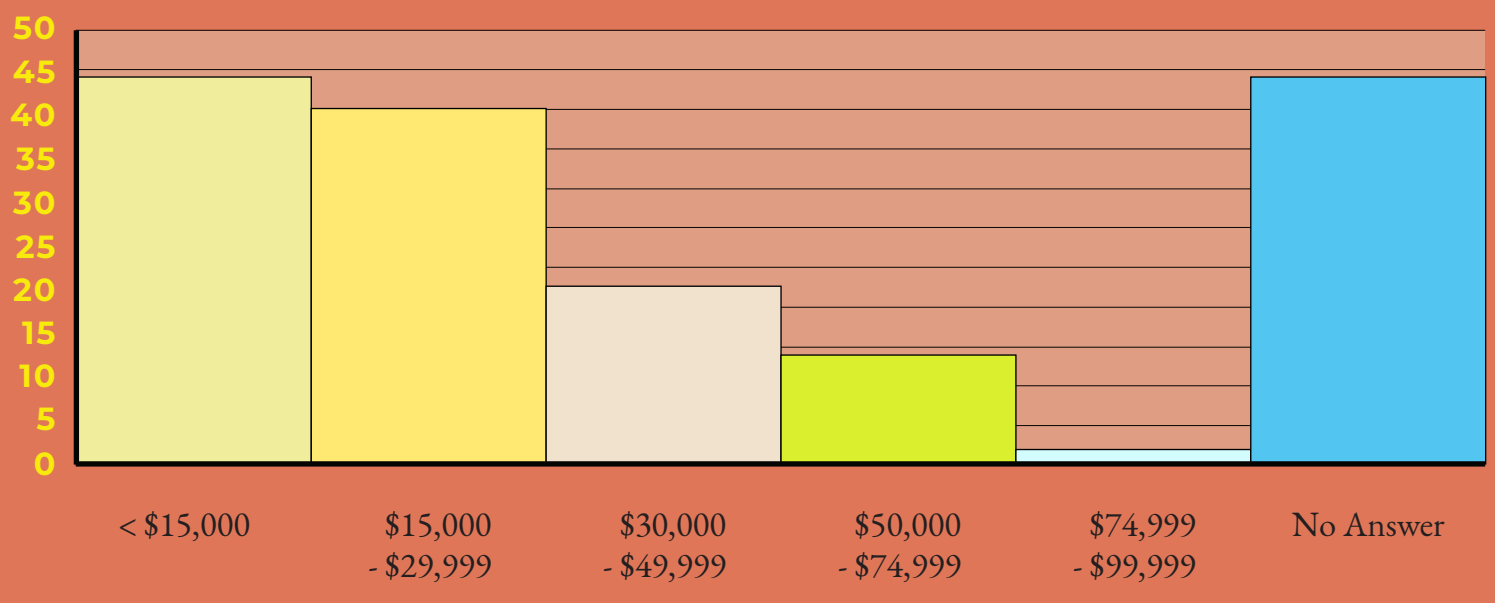


PARTICIPANT EDUCATION LEVEL



E-Bikes for EJ reached a diverse population with regard to geographic location, education level, and household income. 65% of participants achieved an educational level of high school or below. 69% of program participants educational level of high school or below. 69% of program participants were from the most populous cities in the program area-Springfield and Holyoke. At least 74% of e-bike recipients reported an annual household income of less than $49,999.

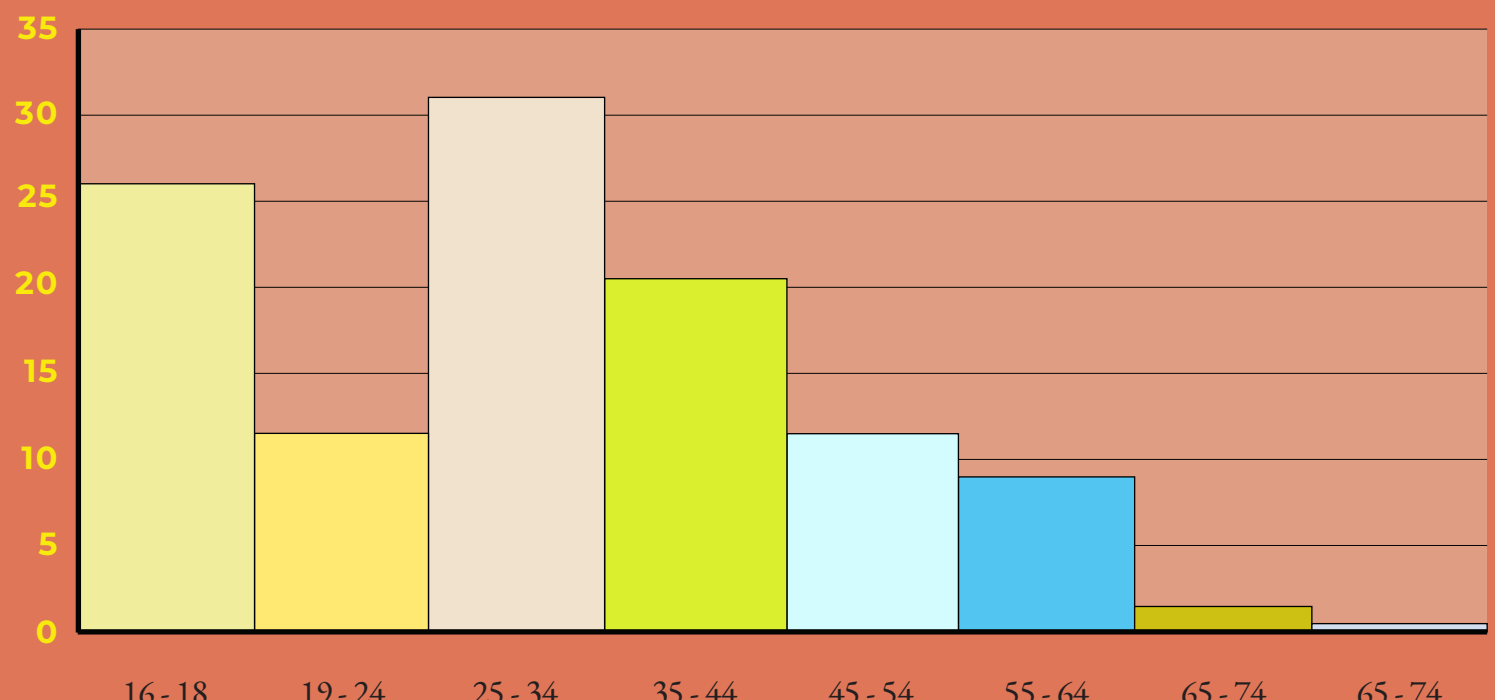
HOUSEHOLD INCOME OF PROGRAM PARTICIPANTS



PROGRAM EVALUATION

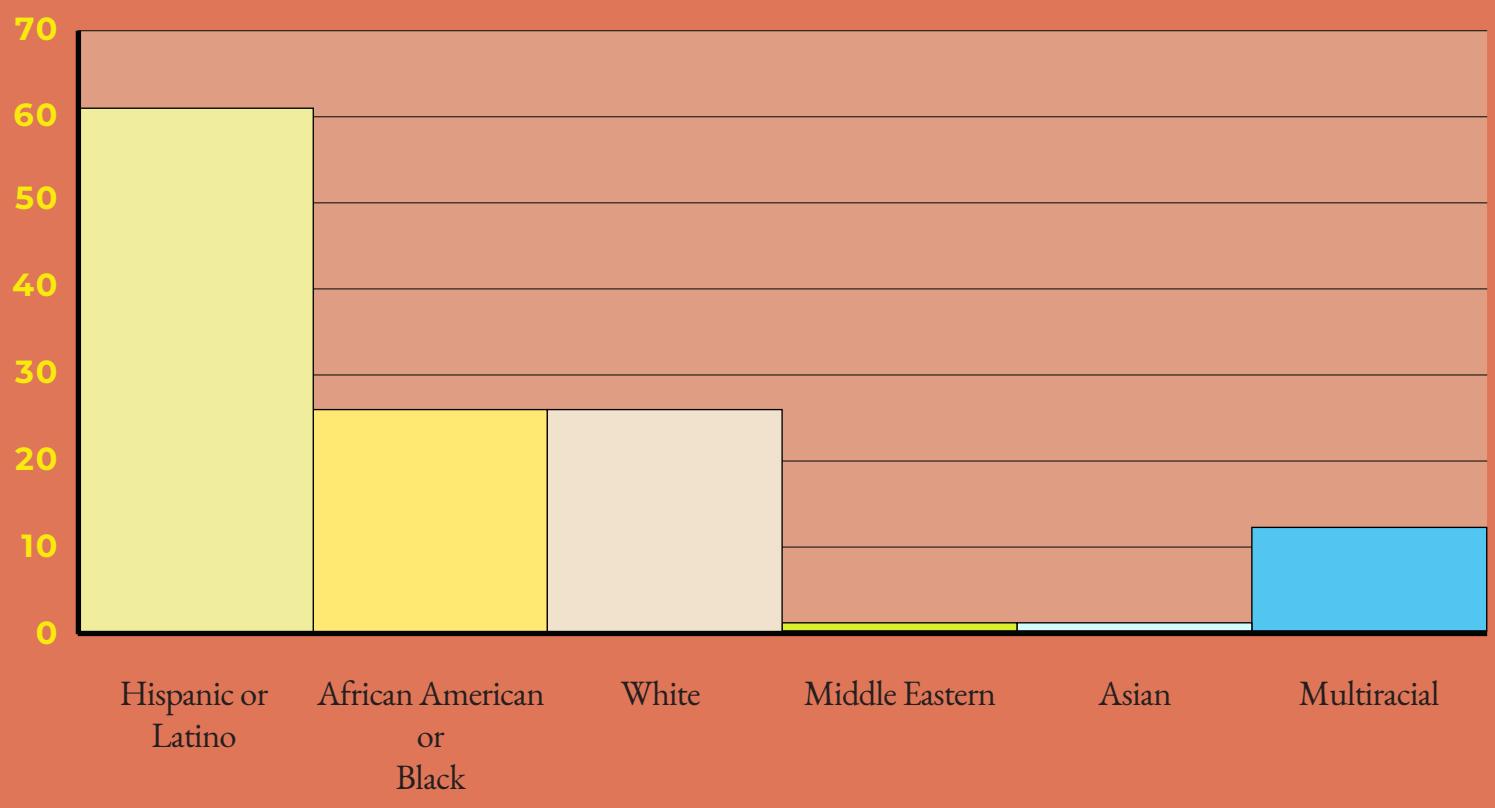
ACT4ALL FINAL DEMOGRAPHICS

AGE OF PROGRAM PARTICIPANTS



The E-Bike for EJ program participants were also diverse in terms of age and race. 74% of participants reported an age of 44 years or below, while 26% reported an age of 45 or above.

RACE OF PROGRAM PARTICIPANTS

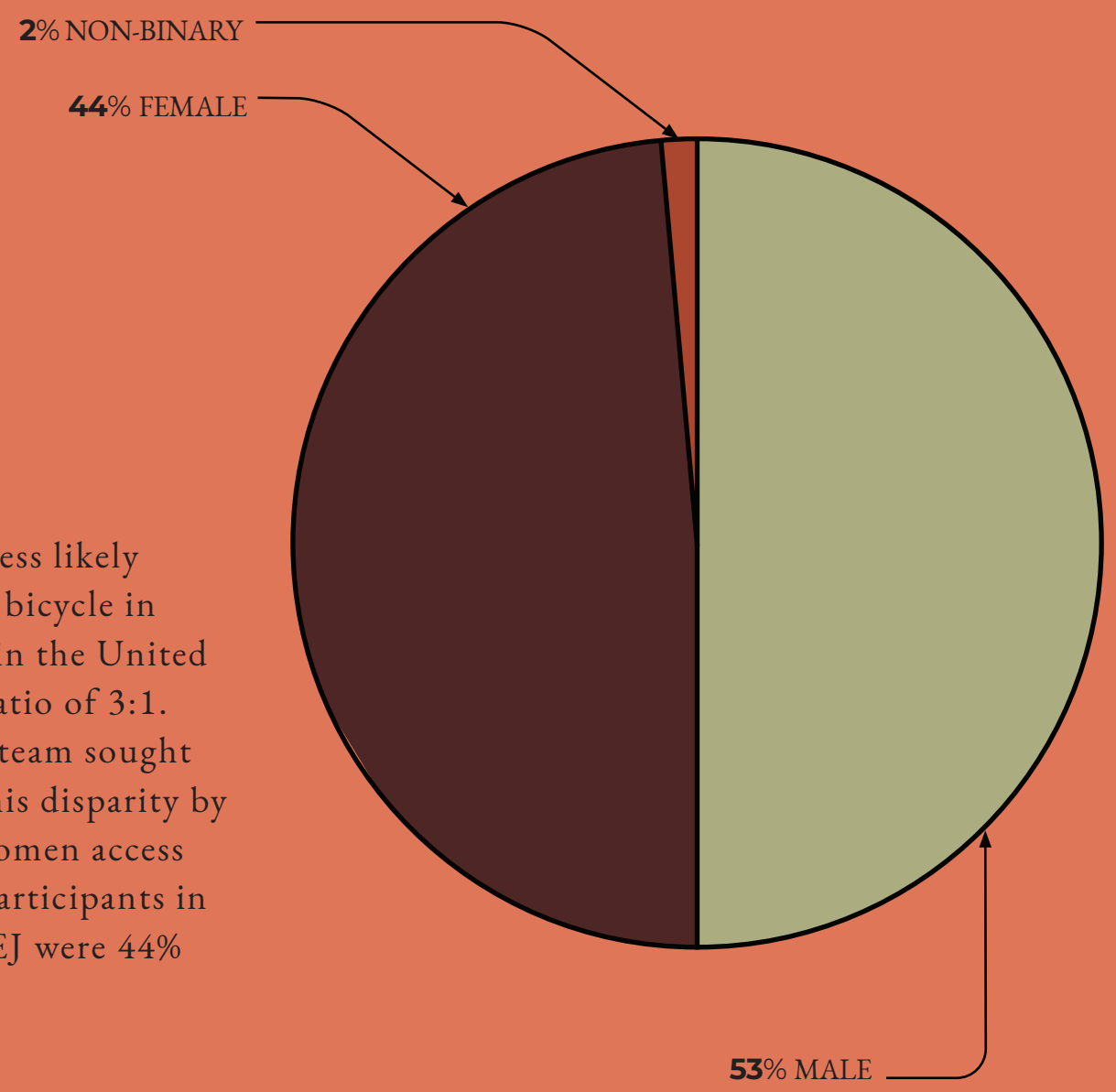


The race and ethnicity of program participants were varied as well with 48% identifying as Hispanic or Latino, 20% as African American or Black, 26% as White, 9% as Multiracial, and 1% as Middle Eastern and Asian respectively.

PROGRAM EVALUATION

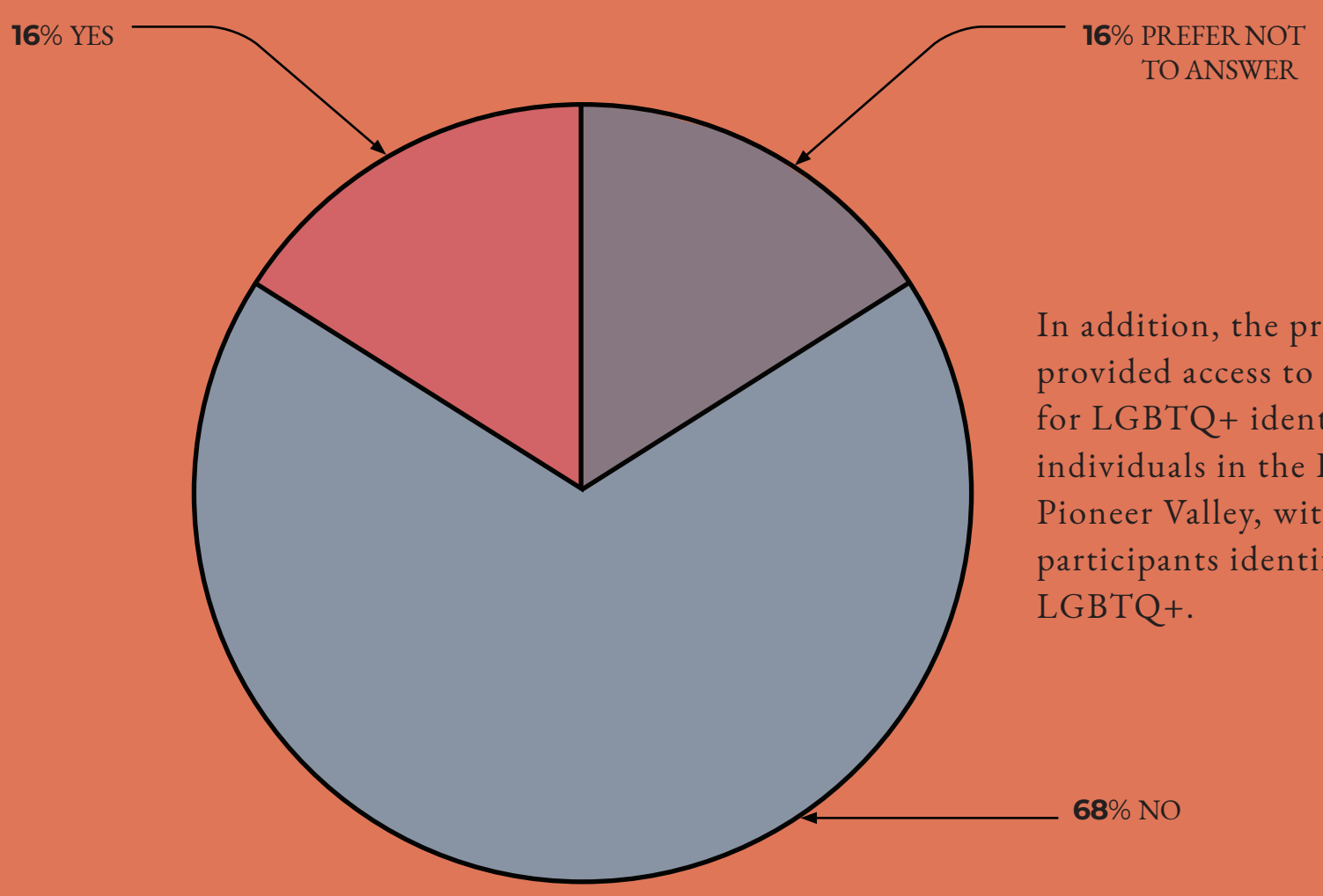
ACT4ALL FINAL DEMOGRAPHICS

GENDER OF PROGRAM PARTICIPANTS



Women are less likely than men to bicycle in most places in the United States by a ratio of 3:1. The project team sought to address this disparity by providing women access to e-bikes. Participants in E-Bikes for EJ were 44% female.

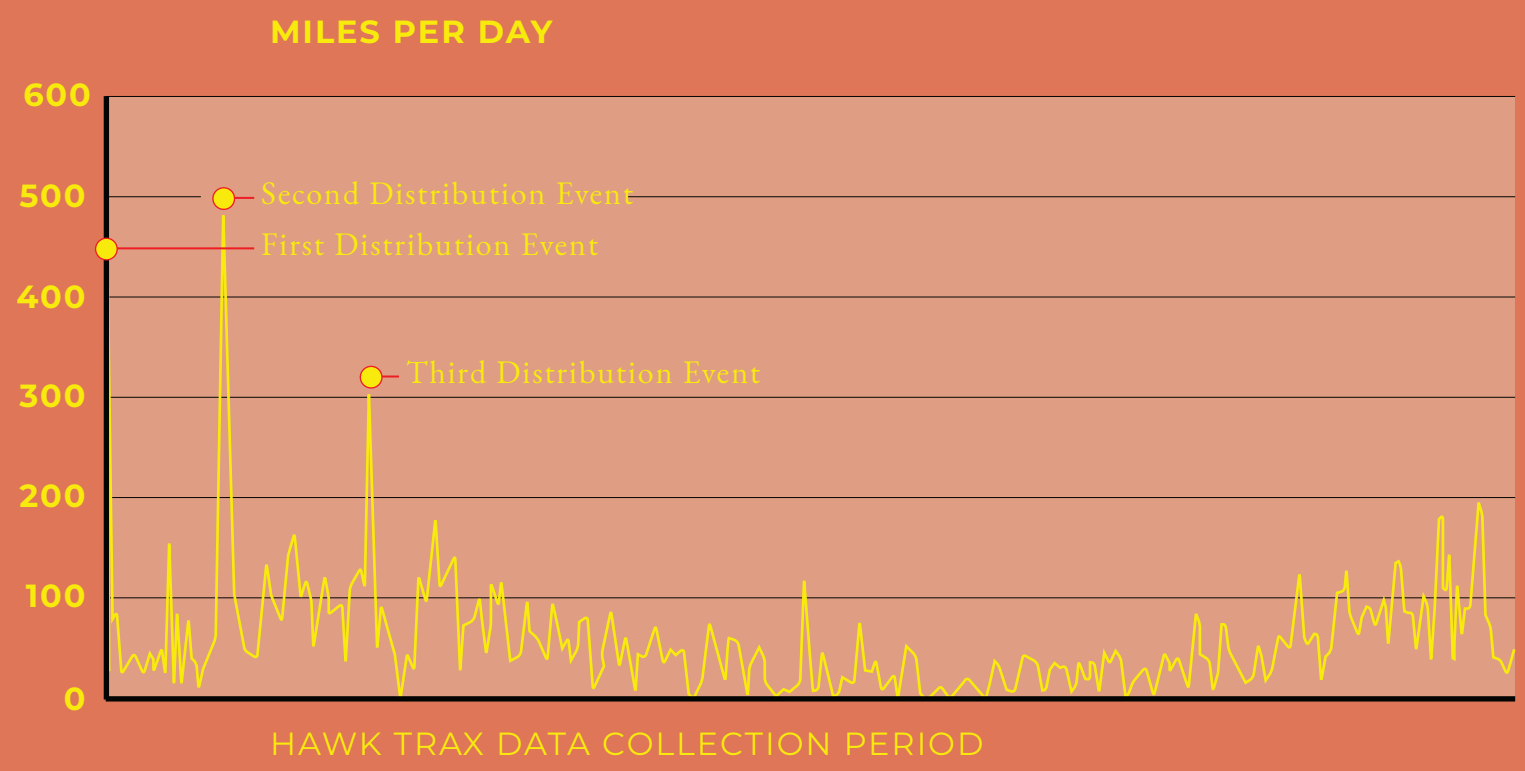
PARTICIPANTS IDENTIFYING AS LGBTQ+



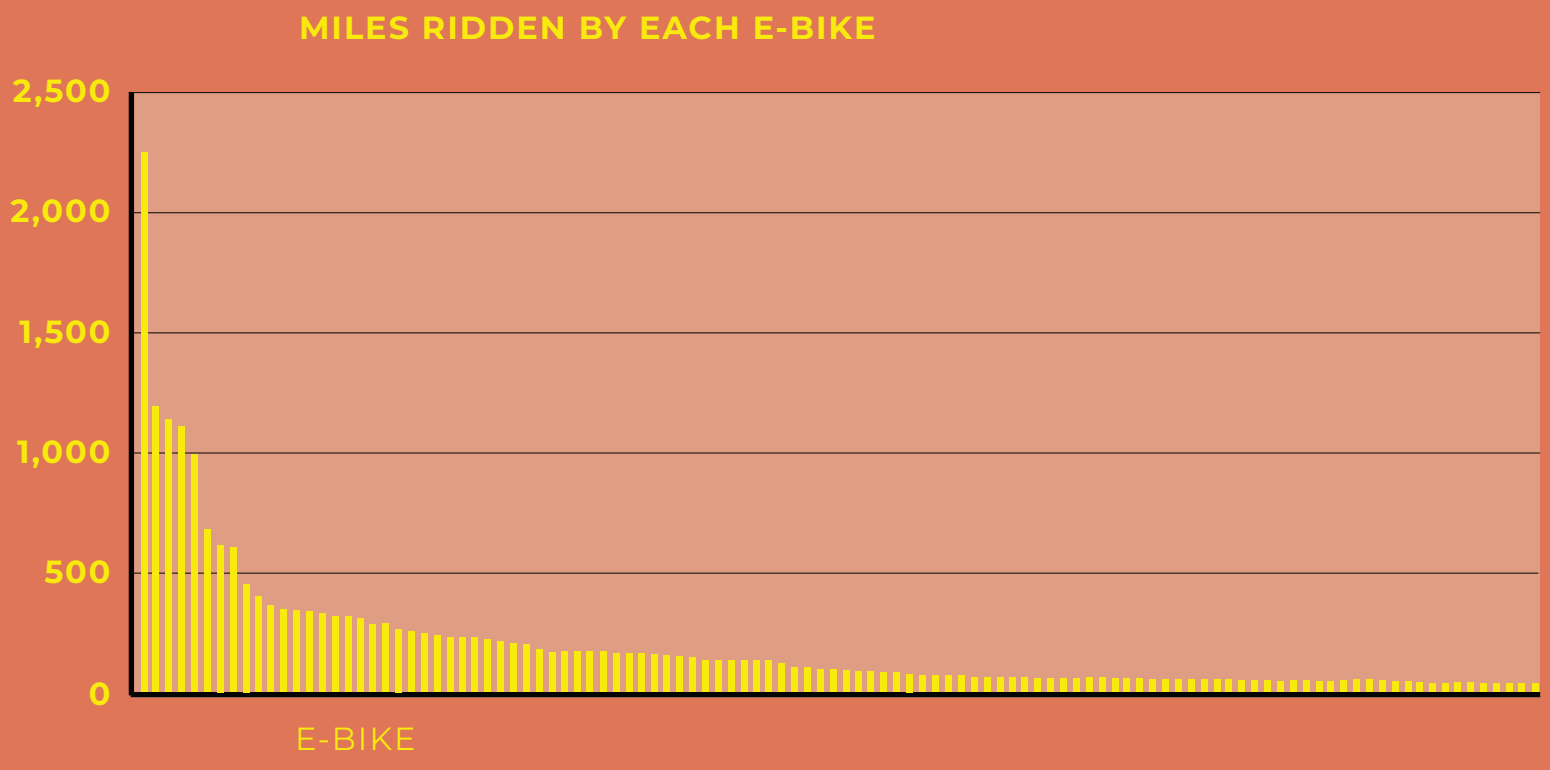
In addition, the program provided access to e-bikes for LGBTQ+ identifying individuals in the Lower Pioneer Valley, with 16% of participants identifying as LGBTQ+.

PROGRAM EVALUATION

ACT4ALL RIDERSHIP DATA



This graph shows the total miles per day of all Hawktrax riders throughout the second-year data collection period, starting from the fall of 2024 to the summer of 2025. The spikes represent the three distribution events. This shows high sustained ridership at the beginning of the project, a dip during the wintertime and rebuilding of ridership towards the end of the period in spring and summer.



The graph shows the total actual miles ridden by each E-bike, where each bar represents a single e-bike distributed by the program. This graph only includes actual data collected by the program and does not include estimates calculated for missing data. That means each bar represents about a year of riding time and both the first and second year of distributions.

PROGRAM EVALUATION

ACT4ALL RIDERSHIP DATA

DATA SUMMARY

	Devices	Active Devices	Total Mileage
Lightbug	59	33	2,778
Hawktrax	75	64	13,757

The data summary table shows the total mileage for 2023-2025 and both types of trackers used on the e-bikes. The first year (2023-2024) used Lightbug, while the second year (2024-2025) used Hawktrax.
The column "Devices" show the total number of e-bikes and tracking devices distributed, while Active Devices shows the total number of e-bikes and tracking devices that relayed data. Lightbug devices hadmuch lower device activity and we believe this discrepancy comes from defects in the Lightbug installation or devices themselves rather than ridership behavior.

Using the available mileage data, we estimated both the missing data from the inactive Lightbug devices and the second year of use where the Lightbug e-bikes were anecdotally still being ridden but no longer being tracked. The estimated total miles ridden from 2023-2024 is 23,905.57. This total includes the actual miles collected from the working trackers (16,535.16 miles) plus (7,370.41 miles) estimated miles. ridden from e-bikes with the nonfunctioning Lightbug trackers.

QUARTERLY RIDERSHIP

	Q1 (Jun - Aug, 2023)	Q2 (Sept-Nov, 2023)	Q3 (Dec 2023 - Feb 2024)	Q4 (Mar -May 2024)	Q5 (June - Aug, 2024)	Q6 (Sept - Nov 2024)	Q7 (Dec 2024 - Feb 2025)	Q8 (Mar-May 2025)	Q9 (Jun - Aug 2025)*
Trips	1,856.67	2,939.00	1,566.67	412	1,449.00	1,885.00	1,336.67	2,928.67	1,279.33
Actual Miles Traveled	822.73	1,133.77	621.53	198.5	3,348.50	5,640.03	3,406.70	3,897.17	1,594.67
Estimated Miles Traveled	516.27	725.80	417.23	1,083.17	1,821.47	2,130.67	1,306.70	1,562.67	638.13
Actual + Estimated	1,338.93	1,859.47	1,038.73	1,281.67	5,169.97	7,770.70	4,713.40	5,459.83	2,232.90
Total E-Bikes Deployed (Cumulative)	59	59	59	59	113	128	134	134	134
Active Tracking Devices (Cumulative)	30	21	15	9	61	74	48	62	58

*This chart shows e-bike ridership data from June 2023 through June 2025.

PROGRAM EVALUATION

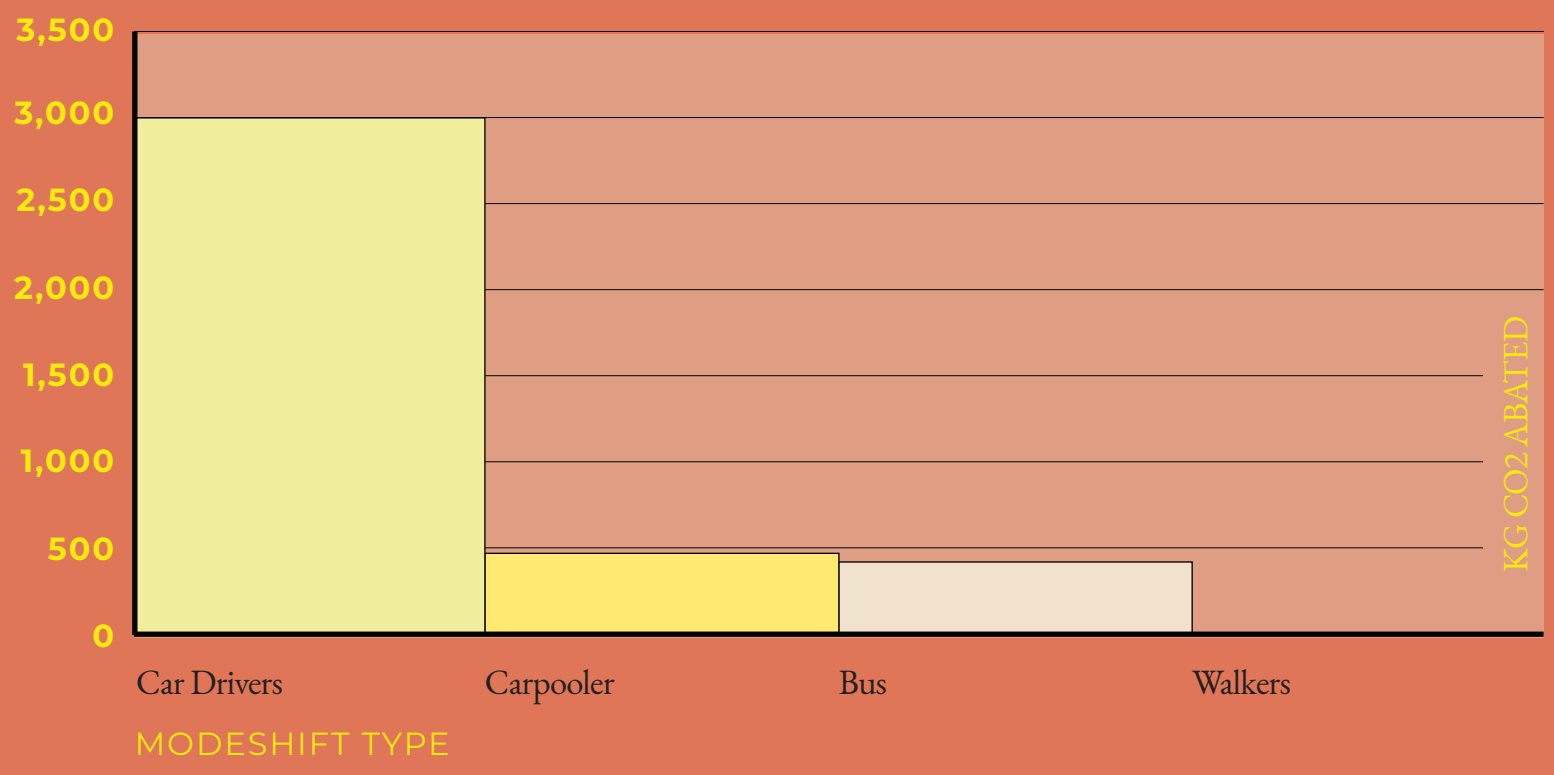
ACT4ALL EMISSIONS DATA

EMMISSIONS REDUCTION

	Miles	N20	CO	NOX	PM10	PM2.5	CO2	SOX
Car Drivers	7,144.10	0.04	27.25	0.22	0.05	0.04	2,974.83	0.01
Carpoolers	2,286.11	0.01	4.36	0.04	0.01	0.01	475.97	0.00
Public Transit / Bus	5,715.28	0.17	0.03	0.13	0.00	0.00	435.83	0.00
Walk and Bike	8,001.39	_	_	_	_	_	_	_
Total	23,146.88	6.83	37.09	5.62	0.17	0.16	21,359.88	0.18

kg

CO2 ABATEMENT BY MODESHIFT TYPE



Emissions abatement and reduction from mode shifting was calculated. Surveys at the beginning of the project captured which mode of transportation was used as a primary method of transportation before receiving an e-bike. It was assumed that all e-bike rides were replacing a trip using that method of transportation. Riders were divided into four categories: Those who primarily drove, those who primarily car-pooled or were driven by others, those who used public transit (buses being the primary mode of public transit in this region), and those that walked or biked.

Emissions were calculated by using the total mileage for each rider in each category and multiplying the total mileage for each group by the emissions factor (kilograms of emissions per mile driven) of the vehicle type for each emission. The emissions factors were obtained from EMFAC, the emissions model developed and used by the California Air Resources Board to assess emissions from on-road vehicles. Mileage uses the total mileage, including estimated miles.

- For car drivers and carpoolers, the type of vehicle used was provided in the survey. If it was not, a 2019 average sedan's emissions factor was used.
- For Carpoolers, the total emissions were divided by two, as only one of the two riders would be shifting over to an e-bike.
- For Public Transit Riders, the total emissions were divided by forty, as only one of the, on average, forty riders, would be shifting over to an e-bike.
- Those that walked or biked produced no emissions before modeshifting to an e-bike, so no emissions were abated.
- All emissions shown are in kilograms of emission over the total lifetime of the project.

PROGRAM EVALUATION LESSONS

The E-Bikes for Environmental Justice project demonstrated how intentional community-based partnerships and program design can contribute to the success of equitable clean transportation initiatives in the Lower Pioneer Valley.

WORKING WITH COMMUNITY BASED ORGANIZATIONS

- Partnering with trusted local CBOs was essential to identifying and engaging structurally disadvantaged residents.
- Organizations already active in housing, workforce development, and youth programming were the most effective at outreach due to existing community trust and direct relationships with residents.
- CBOs played key roles in recruitment, translation, safety education, and participant support, ensuring equitable access and representation across communities.
- Compensating CBOs for their time helped sustain their engagement and affirmed the value of their expertise.
- Future programs could include additional CBO training in e-bike maintenance, data collection, and technical assistance to deepen local capacity and self-sufficiency.

SCALING & INCREASING RIDERSHIP

- Expanding ridership will require sustained funding for purchase incentives, and maintenance support.
- Investment in safe, connected infrastructure—including bike lanes, charging hubs, and secure storage would increase ridership and safety.
- Building a regional service and maintenance network will ensure reliability and long-term program sustainability—some e-bike repairs program participants required were beyond the capacity of local bike shops in Springfield and Holyoke.

FUTURE PROGRAM DESIGN

- Early procurement planning is critical to manage supply chain delays and test GPS tracking technology or other specialized equipment.
- A tiered incentive model—offering less than 100% cost reimbursement may yield participants who are more engaged in program surveys and feedback and more committed to using their e-bikes more often.
- Improved participant follow-up through surveys and data tools would enhance evaluation and help refine incentive levels and program design over time.

REGIONAL CHALLENGES

- The Lower Pioneer Valley's geography—marked by steep grades and long travel distances creates unique challenges for e-bike use.
- The Commonwealth's commitment to complete streets, along with PVPC, MassBike, and others' advocacy efforts have yielded some progress in the development of bicycle and pedestrian infrastructure, however the lack of on road bicycle infrastructure still presents a challenge for e-bike adoption and ridership.
- Despite these barriers, participants demonstrated that e-bikes can significantly expand mobility and access when supported by community infrastructure and local partnerships.

Acknowledgements

The Pioneer Valley Planning Commission, Catherine Ratté, project lead and Matt Liebel, final report design, acknowledge and are grateful to all our collaborators who made this project such a success. We are also grateful to the residents of the Pioneer Valley who have participated in the E-bikes for Environmental Justice program and shared their experiences with us for this report.

We are grateful to the Massachusetts Clean Energy Center, Elijah Sinclair, Jade Lu, Soumya Atnoor and Jasmine Li for their provision of funding, faith in our approach and oversight and guidance of our work. We are grateful to CALSTART, Al Beatty who co-designed and launched the project with Catherine and Mac Bruce, Kelly Cwik, and Mitul Arora who have co-implemented it. We are grateful to our Community-Based Organization partners who embraced a commitment to climate action and advanced their missions of expanding equitable access to opportunity through working with their constituents to distribute e-bikes and working with us to co-design the implementation work, Caroline Davis at Ascentria, Nafeeza Castro at Community Action Pioneer Valley, Liz O'Gilvie at Gardening the Community, Nayroby Rosa at one Holyoke CDC, Kerry Cordis at the Holyoke YMCA and Jessica King at the Valley Opportunity Council. We are also grateful to Don Podolski and his daughter Mary Podolski and their staff at New Horizon's bike shop, Rob Thomas and Jim Gurzenski at Rad Springfield and David Neal at the Holyoke Urban Bike School for joining our efforts to build an e-bike infrastructure in our region and for supporting the e-bike recipients throughout the project and beyond. We are also grateful to the ValleyBike communities who supported this project from the start.

Thank you!

ACT4ALL