

INSIGHTS REPORT

COLUMBUS' E-BIKE
INCENTIVE PILOT PROGRAM

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PROGRAM OVERVIEW

→ EXECUTIVE SUMMARY

Columbus' Electric Bike (E-Bike) Incentive Pilot Program offers a small number of discounts to qualifying Columbus residents in order to make e-bikes more affordable to more people. Those who receive an incentive could purchase an e-bike from a local participating bike shop.

Smart Columbus, on behalf of Columbus City Council, launched this small-scale, short-term experimental pilot program in July of 2023 to help Columbus learn and make decisions about longer term and larger scale programming.

Thanks to Columbus' enthusiasm for e-bikes, the program received 10x the amount of applications, demonstrating demand and excitement for the program. The pilot program was then expanded in December 2023 in order to distribute more incentives to Columbus residents. Overall, **nearly 300 e-bike incentives have been redeemed** in Phases 1 and 2. In the forthcoming Phase 3, an **additional 340-360¹ incentives will be awarded to Columbus residents.**

- 1,496 applications received between June 24, 2023 to July 29, 2023
- 312 incentives disbursed, 289 e-bikes purchased, 23 incentives to be redistributed, 1035 applications on the waitlist
- 42% of incentive recipients identified as a ethnic or racial minority
- 76% of recipients participate in qualifying benefits programs (SNAP, Medicaid, etc) or have household incomes of less than \$60,000/year
- Of those surveyed, 91% wouldn't have bought an e-bike without the program and 60% felt owning an e-bike allowed for greater access to work opportunities.

¹ This is an approximate amount that will vary depending on how many incentives are distributed and at what rate (\$500-2,500).

→ PROGRAM DESIGN

E-bike incentive programs are widespread across the country, yet they are often tailored to specific contexts, which may differ from that of Columbus. **Rather than replicating programs from other cities, Columbus established its own E-bike Incentive Pilot Program with a focus on addressing the specific needs of its residents and working within its local constraints. To achieve this, Smart Columbus developed the program by following human-centered design principles.** The initial program development and insights were gained from primary and secondary research, including ideation sessions and interviews with local bicycle retailers, enthusiasts, advocates, e-bike users and city officials.

As the program expands into 2024, updates to the design of the program are based upon the following sources:

- **Surveys from Columbus residents** who redeemed their incentives and those who did not use their incentives
- **Interviews with a diverse range of e-bike users** from both phases of the program
- **Feedback from nearly 5,000 residents** who submitted responses through a General Interest Survey
- **Pain-points shared from participating bike shops**
- **Customer service interactions** and submissions to the program's feedback form
- **Data gathered through the program's application**, which received over 1,500 submissions

→ PILOT PROGRAM AUDIENCE & ELIGIBILITY

In order to reach participants that would benefit most from the incentive, we identified the following **primary audiences**:

- Individuals of ethnic/racial minority groups whose household incomes are less than \$60,000 per year and may participate in a qualifying program (public benefits).
- Individuals who use non-electric bikes for their transportation needs and could use an e-bike to make traveling easier and more enjoyable.
- Individuals that travel via the bus, car or walking and could use an e-bike as an affordable and reliable option.
- Families that could replace car trips with cargo e-bike trips for taking children to school and running errands.
- Recreational cyclists that could begin using an e-bike for transportation.

Pilot Program eligibility was determined by the following criteria:

1. City of Columbus Resident
2. Age 18 and older
3. Income under \$150,000, distributed according to the table below

Eligibility by Income	Type of Bike	Incentive Amount	Additional Incentives Included with an E-bike Purchase
Participates in a qualifying program (public benefits)	Standard E-Bike	\$1,200	+\$200 for safety gear + 90 day tune-up
Household income under \$60,000 <i>Not currently receiving public benefits</i>	Standard E-Bike	\$900	+\$200 for safety gear + 90 day tune-up
Household income between \$60,000 - \$150,000	Standard E-Bike	\$500	+\$200 for safety gear + 90 day tune-up
Household income under \$100,000	Cargo Bike or Electric Trike	\$2,500	+\$200 for safety gear + 90 day tune-up

→ OUTREACH METHODS

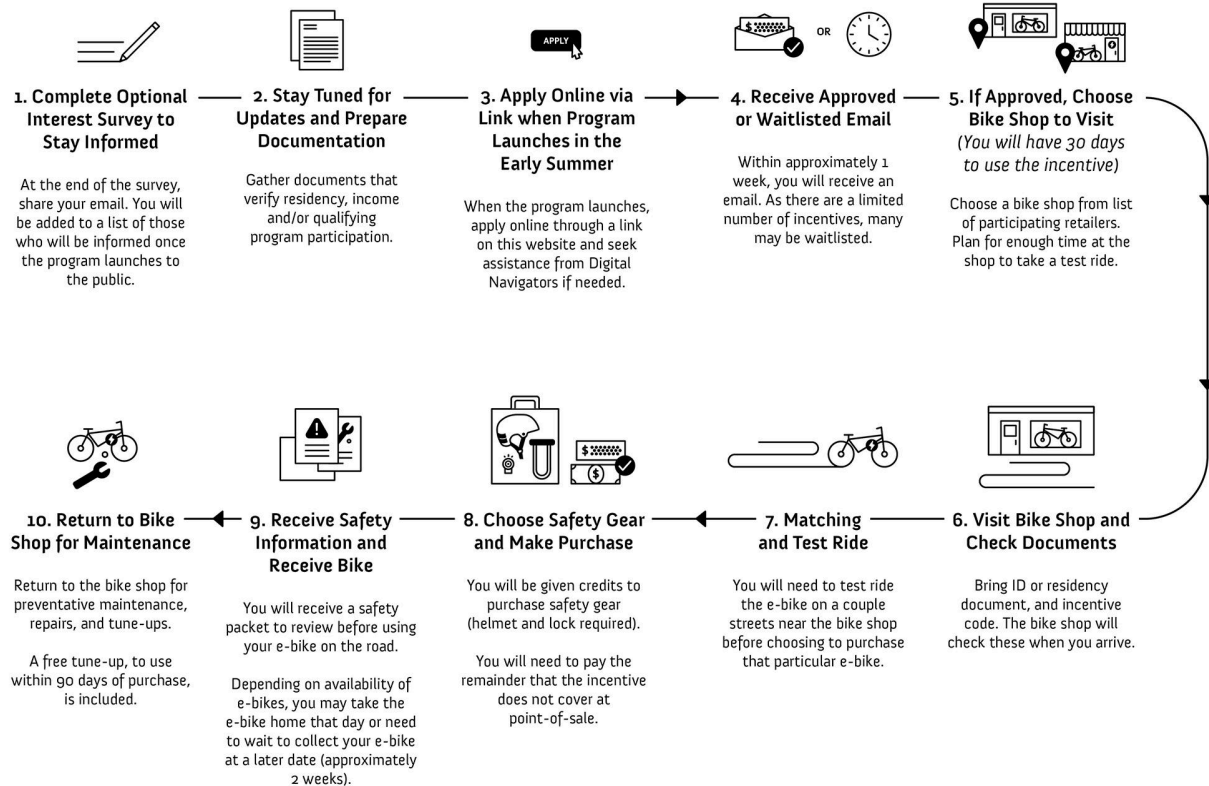
We identified the importance of grassroots communications & outreach early in the program design process. To meet our intended audience where they are at, we completed the following:

- Attended **three** Rise Up Events and spoke with **150+** individuals, collecting contact information from interested residents and engaging residents in a sticker **survey**
- **Deployed an interest form and received nearly 5,000** submissions to date
- **Sent four** email updates to stakeholders
- **Published website** with key information and FAQs
- Disbursed **posters and flyers** to community organizations and retailers
- **Completed a trial run** to test the system with 6 early applicants to identify and adjust issues prior to broad deployment
- Additionally, the program received organic coverage from **two** news outlets.

As this program was a pilot with a very limited number of incentives available, **the promotion of the program was intentionally limited so that those who did not have immediate access to program details and necessary documentation would still be able to apply to receive an incentive.**

→ PILOT PROGRAM RETAILER & CUSTOMER EXPERIENCE

We incorporated insights from early ideation and research into a retailer and customer journey as demonstrated in the graphic below.



In order to make the retailer and customer experience as frictionless as possible, we contracted with **Best Payment Solutions** to build out a **portal** to house resident applications, eligibility verification, retailer reimbursements, and key documentation (i.e., purchase receipts, records of safety gear, dates of redemptions and real-time data).

In addition, we developed a website (columbusebikes.com) as a tool to market the program by collecting email addresses through an interest form, provide answers to frequently asked questions, and allow residents to provide feedback.

PROGRAM EVALUATION

→ CURRENT PROGRAM OUTCOMES

Current Redemption Status Across Phases 1 & 2 (July 2023 - May 2024)

Incentives Redeemed <ul style="list-style-type: none"> 79 (28%) in Qualifying Benefit tier <i>Includes 1 electric trike</i> 116 (41%) less than \$60,000 tier 74 (27%) \$60,000 - \$150,000 tier 12 (4%) cargo bike 	281
Sale Currently in Progress <ul style="list-style-type: none"> 3 (38%) in Qualifying Benefit tier 4 (50%) less than \$60,000 tier 1 (12%) \$60,000 - \$150,000 tier 	8
Incentives Approved but Not Yet Redeemed <ul style="list-style-type: none"> 0 (0%) in Qualifying Benefit tier <i>(1 cargo e-bike)</i> 1 (100%) less than \$60,000 tier 0 (0%) \$60,000 - \$150,000 tier 	1
Pending Applications	1035

Retail Sales Distribution

101	Johnny Velo Bikes (Clintonville)
83	Paradise Garage (Short North)
82	Franklinton Cycleworks (Franklinton)
8	Orbit City eBikes (East Beechwold/Clintonville)
7	Beechwold Bicycles (Beechwold/Clintonville)

→ CUSTOMER EXPERIENCE & E-BIKE USE

Initial Post-Purchase Survey*

(Surveys conducted **after 1 month+** of participant e-bike use)

**From Phases 1 & 2*



91% indicated they would not have purchased an e-bike without the Pilot Program.



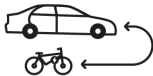
87% found that the amount paid out-of-pocket was affordable.



60% answered “yes” or “somewhat” when asked if owning their e-bike made it **easier to access work opportunities.**



93% found the safety gear provided by the program **to be useful.**



82% replace car trips (including taxi and rideshare) with e-bike trips.

- **51% replaced either 3-4 or 5-6 car trips** per week.

Follow-Up Survey on E-Bike Use*

(Surveys conducted **after 6 months+** of participant e-bike use)

**From Phase 1. 53% of incentive recipients responded.*



88% continued e-bike use

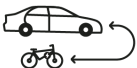


6% discontinued e-bike use due to winter and 5% due to theft or preference for other transport option



75% reported “excellent” e-bike condition and 15% “good” condition

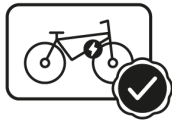
- Others mentioned some maintenance or repair was needed



70% are using their e-bikes to replace car trips

→ INSIGHTS

The following insights capture the key takeaways from the E-Bike Incentive Pilot Program evaluation. A human-centered design approach has been used, involving stakeholders and Columbus residents in the process.



1. POSITIVE OUTCOMES ACHIEVED & DEMAND VERIFIED

Ongoing comprehensive evaluation indicates that the E-Bike Incentive Pilot Program is **successful in demonstrating proof of concept*** and demand for e-bike subsidies. As with any public program, some residents have shown dissatisfaction, but overall, the response has been positive. Many of the complaints raised can be addressed by minor adjustments in program communication.

**See Measurements of Success on page 30 for more details.*

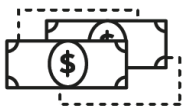
- The vast majority of feedback received confirms the desire for such a program, with many members of the public affirming that e-bikes provide the following benefits:
 - provides an **affordable transportation option, especially for those who cannot afford to own and maintain a vehicle.**
 - presents **an alternative to the bus and walking**, which allows for greater flexibility and freedom.
 - allows **those of different abilities to have access to exercise, recreation and greater mobility.**
 - offers **a more environmentally friendly way of transportation** than a car.
 - **reduces traffic congestion and eases the need for parking infrastructure**, which is especially important in a city with some of the recent **highest population growth² in the country.**
- **Demand** for such a program in Columbus has been confirmed by:
 - **Strong local interest: Nearly 5,000 Interest Survey submissions with 72% indicating they were “extremely interested” in owning an e-bike** and 12% indicating “interested.” Many residents expressed their desire for an e-bike:

² <https://www.nbc41.com/news/local-news/columbus/columbus-population-grew-faster-than-any-u-s-city-in-second-half-of-2023-study-shows/>

- *"I desperately need transportation to maintain my household"*
 - *"An e-bike would be able to replace my car for 90% of my travel needs."*
 - *"I want to buy a bike so I can sell my car, but I'm not able to afford a good bike. It's sustainable and costs less for upkeep than my car."*
 - *"Very interested in this opportunity. It can be an alternative to the bus, which will give me more freedom to plan and time my travels to work."*
 - *"Delivery is the only job I can do because of my PTSD. I can't work around people anymore. I'm a Marine Corps vet."*
 - *"I am 71 years old. Last year I had hip and knee replacement surgery. I would love an e-bike!"*
- **High number of applicants: 1,500 applications** received between June 24, 2023 to July 29, 2023.
- **More demand than supply:** 1035 applicants are still on the waitlist.
- **Unused incentives stem mostly from financial constraints, not disinterest:** Only 5% of those surveyed did not redeem their incentives due to lack of interest or change of mind. The main barriers to redemption were cost, choice and personal challenges that arose.
- **Columbus City Council responded to the demand for the e-bike program by allocating a second phase of funding in December 2023 and an additional \$500,000 towards the continuation of the program in 2024.**
- **Overall, the program's participating retailers affirmed the positive impact the program has had on both their businesses and the lives of local residents.**
 - **The pilot program supported local businesses during a difficult time for the bike industry.** As 91%³ of those who purchased e-bikes would not have done so without an incentive, the program brought new business to these shops. However, the program did not benefit all shops equally as the majority of sales went to shops with the most affordable options.
 - *"This program has been instrumental in providing a more accessible and environmentally friendly mode of transportation to the city of Columbus for people that are often transportation challenged. It has also allowed me to keep my six employees employed in a difficult time in our industry." - John Robinson, owner of Johnny Velo Bikes*

³ Of those surveyed

- *“The program has been good for our shop and for our employees. It has been fun to sell bikes to incentive recipients because they feel like they won something and come into the store very happy.” - Participating Retailer*
- *“The program hit the nail on the head for some of those who are in need of transportation.” - Participating Retailer*
- One of the participating retailers views the program favorably for the community, citing its provision of affordable transportation, and mentioned that despite experiencing limited business at his shop, he expressed no desire to change the program.
- As for the program's delivery and operations, the retailers did not have major concerns overall, but did request changes to incentive distribution timing and more advanced notice to prepare stock and capacity. There were also requests to provide more information to retailers on how they might problem-solve some issues that arise with residents (delivery requests, safety gear credit complaints, financing for lowest-income residents, etc.) Retailers also noted the necessity of explaining numerous e-bike concepts on the spot, highlighting the need for further education in this domain.
- Some of the program's participating retailers have expressed concerns over the long-term quality of the lower-cost e-bikes in the program, noting that maintenance costs may become unbearable for residents over time.



2. CHALLENGES WITH AFFORDABILITY

The program received feedback from numerous individuals expressing that even with the incentive, they were unable to afford an e-bike or found the out-of-pocket cost to be prohibitively high. These individuals had varying household incomes. The program may need to shift the general income range of its focus demographic and adjust the qualifications for the \$900 tier.

- **64%** of surveyed incentive recipients did not redeem their incentives because **e-bikes were more expensive than they expected and/or they could not afford the out-of-pocket amount**. Around 160 incentives have expired to date, accounting for 35% of all incentives distributed.

- The lowest possible out-of-pocket cost for those with the highest incentive amount (\$1,200 discount) is \$100. Although this incentive nearly covers the entire cost of the e-bike, this amount is too high of an expense for individuals facing significant financial constraints. In this case, **an e-bike may not be the best option for those with little to no disposable income, as upkeep and maintenance cost around \$300 or more annually, and would likely become a burden.**
 - A recent national study⁴ of incentive programs has affirmed that e-bike incentives may be the best for those of low-incomes, but not of the lowest incomes.
 - For those of the lowest incomes, the program could consider a separate discount on regular bicycles which require far less maintenance and present significantly less complications over time. The program could also partner with a program like Franklinton Cycle Works' *Bikes for Independence* for referral and distribution.
- The program is currently looking into expanding the \$900 tier to include those with incomes up to \$80,000 as the **\$60,000-\$150,000 range for those of middle-incomes is too wide**, especially when taking household size into consideration. This range was selected for the sake of simplicity but will require adjustment as the program extends beyond its initial pilot phase.
 - **The average household income of those with expired incentives was \$63,830.00.**
 - 42% of those with expired incentives had household incomes between \$60,000-150,000.
 - 28% of those with expired incentives had household incomes between \$30,000-\$60,000.
 - **51% of expired incentives were \$500 incentives**, revealing that even those of middle incomes may have difficulty affording the out-of-pocket-costs, which are at least \$600 for this tier.
 - 16% were \$1,200 incentives
 - 30% were \$900 incentives
 - 2% were \$2,500 cargo bike incentives
- **The program needs to find the right balance between affordability and personal investment.** If the e-bike user has not paid any amount out-of-pocket, they may be less likely to spend what is necessary to maintain the bike over time.

⁴ <https://www.sciencedirect.com/science/article/abs/pii/S1361920924000713?via%3Dihub>



3. INCREASE IN PERCEIVED VALUE NECESSARY

There is a gap between the cost of a quality e-bike and the price point many Columbus residents anticipate. While the e-bike program exists to make e-bikes more affordable, there is investment necessary on the resident's end. Steps can be taken to manage cost expectations and increase the perceived value of e-bikes.

- **For many potential Columbus e-bike users, the desired amount to invest in an e-bike (after discount) is the same as one would invest in an economical non-electric bicycle.** There may be an expectation that an e-bike and regular bicycle are of comparable value and production costs. The retail price of a quality e-bike is closer to that of a low-cost used car than to a regular bicycle.
 - 44.53% of those who completed the interest survey (~1,800 residents) indicated that they would ideally spend between \$0-\$300 on an e-bike after discount. These amounts are what regular, non-electric bikes cost at non-profit bike shops or large retailers such as Walmart. Another 25% were willing to spend up to \$500. **The program may need to emphasize the differences between regular bicycles and e-bikes in the future.**
- For some who have applied to the program and received incentives, **the shopping experience brought sticker shock upon learning the cost of e-bikes.** In turn, these individuals denied the incentive.
 - 64% of those surveyed who did not redeem their incentives chose to not do so because e-bikes were more expensive than they expected. Quotes from residents with unused incentives:
 - *"Even with the cheapest options for e-bikes the amount awarded didn't cover half of the expense of purchasing a bike. I said I could cover up to \$200 toward a bike in my application and the least expensive option was going to mean at least \$500 out of pocket which was too much for me to do."*
 - *"As excited as I was and as much as my family is grateful for the opportunity, as a single parent in this economy I could not justify a \$400 investment on a bike."*

- *“Increase the minimum amount of the voucher. I didn't want to pay \$700 for a bike right before my scheduled vacation.”*
 - Being in a higher income tier did not necessarily mean someone was willing or able to pay more out of pocket to purchase an e-bike.
- **Although a cultural shift may be needed to see alternative modes of transportation as a worthwhile investment, information on e-bike cost dispersed through the pilot program would be a good place to begin.**
 - At the point of application, the e-bike program did not disclose price ranges and out-of-pocket costs. **Providing more clarity upfront would have helped to set realistic expectations, also enabling residents to opt out of the application** if they were not able or willing to invest the required amount for the purchase. Quotes from residents with unused incentives:
 - *“Be more upfront in pricing.”*
 - *“Provide an estimate of cost of bikes.”*
 - *“Give exact price points with tax included.”*
 - Research shows that price primacy⁵ and cost breakdowns⁶ may help customers determine if the product is worth the price, especially if the item is significantly discounted. **Cost breakdowns also helped to create trust** as it increased understanding of what components were involved in the production of a product.
- The program could have also **better emphasized the value proposition that the e-bike incentive itself presents:** a subsidy that encompasses up to 90% of the retail cost for participants in the highest incentive tiers. The incentive amounts are high because quality e-bikes are expensive.
 - **The program could have also better emphasized the savings that e-bikes offer.** In comparison to owning a car, which costs \$353⁷ per month in Columbus on average, an e-bike costs \$300 per year after the initial purchase. As this is around 7% of what owning a car costs, an e-bike is far more affordable.

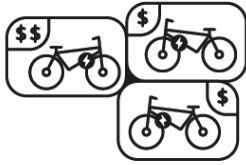
⁵ <https://hbswk.hbs.edu/item/how-our-brain-determines-if-the-product-is-worth-the-price>

⁶ <https://hbswk.hbs.edu/item/deconstructing-the-price-tag>

⁷ <https://www.move.org/average-cost-owning-a-car/#data>

- Perceived value may depend on use case: those who planned to use their e-bikes for transportation and/or car replacement may be **more likely to see the discount as a good deal if they require the e-bike to get around** versus if they plan to use it casually.
 - Some incentive recipients, who received the highest incentive amounts and use their e-bikes for transportation, have shared via interview that although it would be ideal for tax to be covered on the e-bike purchase, they see the out-of-pocket expense as a worthy investment. This is especially true in cases where an e-bike eventually replaces a car.
 - Highlighting the out-of-pocket cost after discount initially may make a difference for those who plan to use the e-bike for transportation. Research shows that when displaying the price of an item, the customer is more likely to see it as a good deal when the item will be used for utilitarian purposes⁸.
- In addition to increasing the perceived value of e-bikes, more clarity is needed around program messaging and the program's name itself. **For some, the word “incentive” was interpreted as the e-bike being free-of-charge.** One resident recommended changing the name of the program to “Columbus’ E-Bike Purchase Assistance Program.”
 - *“Eliminate 'Incentive' and call it the Columbus E-Bike Purchase Assistance program. Incentives make sense for individuals with higher disposable income and just need a 'nudge'. **Make it clear there may be out of pocket cost (sometimes substantial) when purchasing an E-Bike in this program.**” - Valerie, Incentive Recipient*
 - *“There should be no out of pocket cost because most low income families can't afford it, that's why you have the incentive program to begin with right?” - Resident with redeemed incentive*

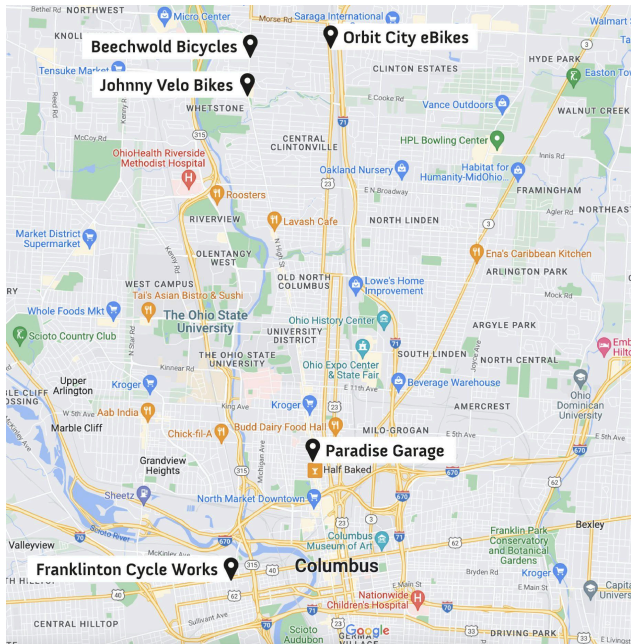
⁸ <https://hbswk.hbs.edu/item/how-our-brain-determines-if-the-product-is-worth-the-price>



4. AVAILABILITY & CHOICE LIMITATIONS

Several residents have expressed strong desire to include online retailers in the program as they offer more variety and lower-cost options under \$1,000. However, access to maintenance and the ability to manage quality standards remain high priorities to the program. The program's five bike shops have taken steps to accommodate the budgets and demand of customers.

- 11% of those surveyed who did not redeem their incentives indicated that it was a lack of choice that influenced their decision not to buy an e-bike. **More information could have been presented upfront to better manage expectations around local selection.**
 - Several residents who did purchase e-bikes mentioned that they would have also preferred more options. Some did not end up with a model or style that they ideally wanted.



- From Phase 1 to Phase 2 of the pilot, bike shops offering e-bikes under \$1,300 went from 2 out of 5 shops, to 4 out of 5 shops. As the program enters its third phase, **all participating retailers now offer options under \$1,500.** The newly added affordable offerings still align with the retailers' values, so this improvement benefits all.

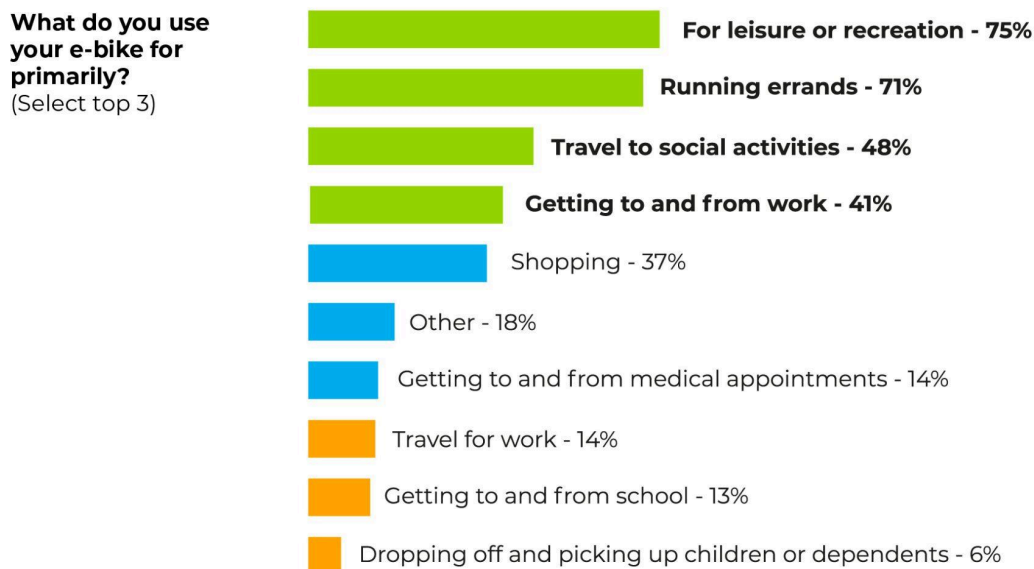
- Although the selection is limited, the e-bike program supported the effort to bring more affordable e-bike options to the City of Columbus, expanding choice for incentive recipients and other residents alike.

- **Retailer locations were accessible for most customers.** 95% of those surveyed did not have trouble accessing the bike shops, although a handful of customers did, citing not having access to a car or needing to take the bus to get there.



5. PRIMARY USE CASES & MODE-SHIFT

The majority of the program's surveyed incentive recipients utilize their e-bikes for transportation, while a minority solely use them for recreational activities. In terms of the program's broader goals, the greatest success seems to be in encouraging mode shift, although not all individuals transition from using their cars to biking purely by choice.



- As highlighted above, the primary uses of e-bikes of those surveyed are “For leisure and recreation,” “Running errands,” “Travel to social activities,” and “Travel to and from Work.” Participants selected their top 3 uses.
 - **While recreation is a primary use, it is not the exclusive purpose for the majority of surveyed incentive recipients. Most incentive recipients use their e-bikes for transportation.**
 - Two of the top categories, “Leisure and Recreation” and “Travel to Social Activities,” do highlight a major benefit of e-bikes: **users of different incomes and physical abilities have access to activities that boost mental and physical health.** Many users may not have a gym nearby or be able to afford the membership fee, but an e-bike provides a form of exercise that has an added benefit of time spent outdoors.

- *“I use it to get out of the house. And since it is getting warmer outside, it is nicer to ride around the city. I can go farther out into the city and explore different surroundings that I might have never seen before. My friends and I could go on small group bike rides and just enjoy time together with each other instead of always sitting in the house.” - Briston, incentive recipient*
 - The second most common use was “Running Errands”. As the majority of car trips in the US are within 3 miles of an individual’s home⁹, **an e-bike is the perfect replacement for many short trips that residents are making.** For those without cars, an e-bike makes **local amenities easier to access as the e-bike user can get there faster than walking and without having to rely on a bus schedule.** Quotes from incentive recipients:
 - *“Most of my trips are quick store runs or to the library. Family Dollar is around the way. Or if I want to grab a snack from UDF or go to the pawn shop. Places that would otherwise be a 10- 15 minute walk.”*
 - *“I ride the bus for most things, but the routes are not always convenient. The e-bike offers much more flexibility, especially for trips that are too close to justify taking a bus, but too far to walk.”*
 - *“E-bikes provide a quicker and less labor-intensive commute for short trips around town that do not require the cargo of a car, while being much safer than the scooters. I love using it to go to/from the gym, small grocery runs, and to visit friends.”*
- When it comes to the program’s broader goals of providing access to reliable and affordable transportation and reducing greenhouse gas emissions, there is evidence of success in both areas, especially when it comes to mode shift. **The program has shown the readiness and willingness of many Columbus residents to reduce car usage, especially when given the support necessary to purchase an e-bike.**

Overall, the survey results indicate that **82% of participants replace their car trips with e-bike trips**, showcasing a positive trend towards the program’s environmental objectives.

- **35% of those surveyed substitute 3-4 car trips with e-bike trips each week, while 15% replace 5-6 trips, and 7% replace more than 7 trips.** Based on individual averages, the total car miles replaced by e-bike

⁹ <https://chargedevs.com/newswire/new-study-more-than-half-of-daily-car-trips-in-the-us-are-less-than-three-miles/>

miles adds up to be **1,150 - 1,725 miles per week**. This average is likely significantly higher as it does not include those who did not complete the survey.

- Aventon, a popular e-bike model within the program, tracks CO2 emissions and trees saved per e-bike mile ridden. Based on Aventon's data, the survey respondents' weekly average of 1,150 - 1,725 e-bike miles leads to:
 - **379.50 - 569.25 kg of CO2 emissions** reduced per week
 - **35 - 52 trees** saved per week
- On the topic of environmental goals, a national study on incentive programs recommends that program objectives expand beyond CO2 reduction as other benefits bring greater impact¹⁰. **As the study suggests that e-bike programs are a costly way to reduce emissions, benefits such as access to transportation, improvement of public health, and repurposed street space may bring greater return on investment.** The recommendation is not to remove greenhouse gas emission reduction as a goal, but to highlight a variety of other benefits as well, especially when seeking further program funding.
- Quotes on car replacement from incentive recipients:
 - *"A quicker and less labor-intensive commute for short trips around town that do not require the cargo of a car."*
 - *"Oftentimes quicker for commuting to work because I avoid traffic."*
 - *"Carbon footprint and ease getting around the city. Not having to park."*
 - *"Faster commute, more fun/enhanced quality of life, and less wear on my car."*
 - *"My truck uses a lot of gas. So much better for my wallet and the environment."*
 - *"Not having to use a car so much! Living in the city things are already so close, having an ebike which takes minimal effort makes running errands fun and green!"*
 - *"It has taken care of the need for a second car in our home."*

¹⁰ <https://www.sciencedirect.com/science/article/abs/pii/S1361920924000713?via%3Dihub>

- **For some e-bike users, replacing car trips is a choice as they are able to afford the costs of owning and maintaining a vehicle.** The main pull factors to replace car trips in these cases appear to be cost savings, efficiency, exercise, enjoyment, and environmental benefits. However, not all e-bike users mode shift by choice, some do this out of necessity.
- Since Columbus is a highly car dependent¹¹ city, the high percentage of those replacing car trips encompasses those of varying household incomes. Owning a car does not mean that it is an affordable or reliable form of transportation for an individual. **E-bikes have become a main form of transportation for incentive recipients who cannot afford to repair or replace their cars, even if that was not the main intention behind the initial purchase.**
 - *“About a month after buying my e-bike, my car ended up breaking down. So now my e-bike is my primary source to get to work. I’ve been using it all throughout the winter too. I got 400 miles on it right now.” - Marcus, Incentive Recipient*
 - *“My experience overall has been pretty good especially in the aspect of my car going down. It has actually helped me to be able to travel to different places if I need food and then I recently started doing doordash with it.” - Briston, Incentive Recipient*
 - *“My car is approaching 20 years old. Every time that check engine light comes on, I start to sweat. There is a chance that the e-bike, walking and buses will be my only means of transportation. I see it as ultimately replacing the car.” - Valerie, Incentive Recipient*
 - *“Because I have a vehicle too, sometimes I just use my car, but when my car is down, the e-bike definitely comes in handy.” - Jetta, Incentive Recipient*
- While the program has achieved some success in fulfilling its objectives, there is room for improvement in **ensuring that more e-bikes are allocated to individuals who genuinely rely on them for transportation needs.** This may be achieved through partnering with community organizations who can refer clients to the program.
 - With this aim in mind, the program must also consider that **e-bike ownership presents additional challenges to residents already facing hardship. An ideal recipient would have:**

¹¹ https://linkuscolumbus.com/wp-content/uploads/2021/06/LinkUS-State-of-Mobility_June-2021.pdf

- access to some disposable income to pay for the initial e-bike cost and annual maintenance
 - the ability to safely store their e-bike indoors at home and at school or work
 - the capacity to charge and upkeep their e-bike
- Allocating incentives more directly to individuals who truly need e-bikes would also help **lessen cases of resale**. We are unaware of the resale rate during the pilot program, but did track some attempts of resale online.



6. VALUE OF E-BIKES TO RESIDENTS

At the beginning of the pilot, the program highlighted benefits such as cost savings, arriving at work less sweaty and tired, and traveling longer and further while enjoying the ride. Since then, residents have highlighted a variety of other benefits as they experience life with an e-bike.

- **For those who rely on the bus system or friends and family for transportation, e-bikes allow for greater convenience, flexibility and freedom.** Quotes from incentive recipients:
 - *"Freedom."*
 - *"As with owning a vehicle, the greatest benefit in my opinion is the freedom of the transportation; not having to learn/figure out public transportation's schedules, and then ultimately plan your travel around it (ex: bus schedules)."*
 - *"I don't have to wait for a bus. I have more access to freely go wherever I want."*
 - *"Ease of travel and travel time. Trips that used to take me much longer either walking or taking the bus are now simple. It's made me much more willing to go out and do things in the city than before."*
 - *"I don't have to wait for the bus schedule to leave, and it doesn't cost money like driving."*
 - *"Convenience of not having to wait for a bus and the time it takes versus walking if there is not a bus route."*

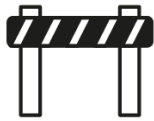
- *"Knowing I have transportation whether or not someone else is using the family car."*
 - *"Not having to wait for someone to come pick me up"*
 - *"In getting people these bikes who wouldn't otherwise be able to afford them, we're also opening up tons of opportunity. We work with a lot of folks who are in and out of housing, who say 'I just got housed, thank God, but there's nothing around me. All of my social connections, all of the places that I used to go are now more than five miles away. The bus doesn't go there directly or it's a very long bus ride.' They feel isolated and their home almost becomes like a sort of prison because they're alone. So an e-bike would be perfect because now they can access where they work or where their social connections are. They can live more independent, stable, and healthy lives. So the positive possibilities here are huge." - Jonathan Youngman, Franklinton Cycle Works*
- **For those with disabilities or physical limitations, an e-bike can provide newfound access to exercise and amenities** that were previously unattainable. Quotes from incentive recipients:
 - *"I love how far the e-bike can go. Since I don't drive, I am able to go out on my own without waiting for a ride, which makes it easier to run errands and pick up groceries. I no longer have to wait for someone to become available to drive me places. This is most useful when I need medication right away. I can now take my bike to the pharmacy. I can not walk long distances and use the pedal boost constantly, so this bike is fantastic for getting me out of the house, sometimes just to enjoy nature and improve my mental health, others for necessary things like medication as stated above."*
 - *"Seeing my wife smile because she can ride a bike again!!!"*
 - *"It's huge because I've been able to get air and go way further than I can do any other way. I think as I keep building more muscle I'll be able to use it to run small errands and things around where I live, it won't be a problem. And being able to bike with my children, being able to just go on my own and get exercise. It's really cool, a wonderful opportunity. I just had no idea what I was missing. I'm just so excited because I've been able to do things I haven't done in 10-20 years. I went on a 15 minute bike ride with my son. We had so much fun and I've never been able to do that with him. I've never been on a bike at the same time."*
 - *"The greatest benefits from using my e-bike have enabled me to get back to cardio activities. I have experienced chronic ankle pain for over 4 years, from a*

fracture in high school. The bike allows me to exercise without straining my joints and if I need a pedal brake, I can keep moving with the electrical feature."

- For many, **e-bikes enhance quality of life by bringing fun and enjoyment to transportation. Activities that once brought stress and were time consuming, such as a commute to work with traffic, become a very different experience.**

Quotes from incentive recipients:

- *"For as bad as streets are to ride on in Columbus, it is still more fun and less stressful to bike than to drive. E-bikes expand the number of trips I can take by bike rather than a car, including grocery shopping, trips with my infant, and even with my partner we take the cargo e-bike."*
- *"It's more convenient, it allows me to get exercise and soak up some fresh air, and it's less stress and more peaceful."*
- *"Therapeutic. No paying for gas and it's easy and fun!"*
- *"It makes me so much happier! It's more affordable, of course, but it's just the best part of each day. And if I don't need to get groceries, go to the library, etc. I'll take it out around the neighborhood after my partner is home and the baby is tucked into bed. It's the best."*
- *"The physical exercise really helps my mental health"*
- *"Extra exercise, the joy of riding"*
- *"The guy at Orbit City when I tried it out noticed that my husband and I were grinning when we came back in after our test ride. He said that feeling doesn't go away. It's so pleasant. It's just a really childish joy to ride a bike around the city. That's been really nice."*
- *"It's way more fun and exhilarating than driving."*
- *"I work at OSU hospitals and my e-bike has cut down on my commute time because I no longer have to sit in traffic."*
- *"One of the biggest benefits is not having to worry about parking at my destination downtown!"*



7. BARRIERS TO CONTINUED USE

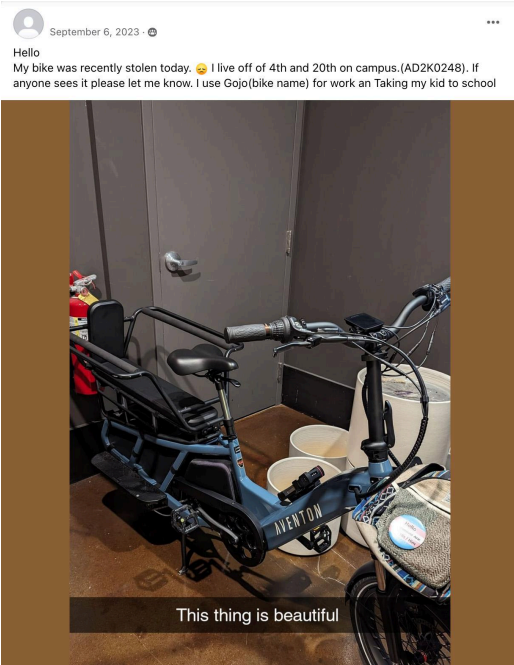
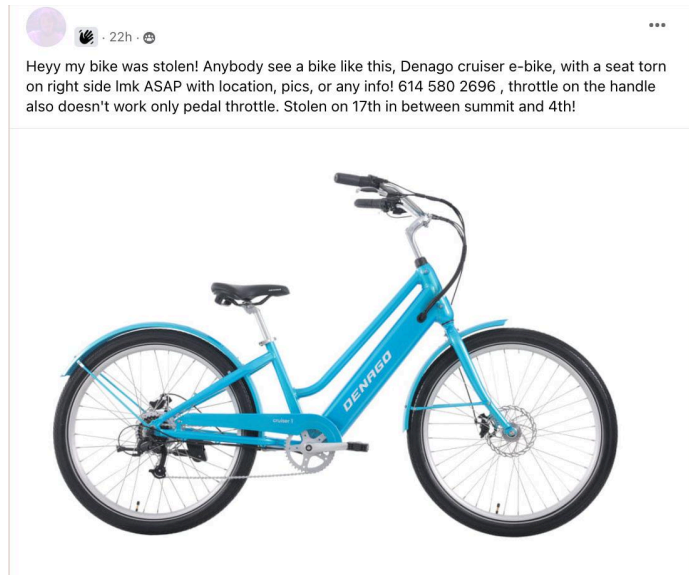
Even upon being awarded an incentive and purchasing an e-bike, several barriers present themselves that discourage greater e-bike use. These barriers also represent downsides that customers may want to consider before making the investment in an e-bike purchase.

- **Lack of adequate bike infrastructure** - Many of the program's e-bike users cited safety concerns when riding in the streets of Columbus, noting that they would ride more frequently and even go car-free, if the infrastructure provided better protection. This was of particular concern with families with children.
 - *"My kids and I love the e-bike. It has been a life-changing addition to our garage and we use it whenever possible. There are still many places that we can't go to or have to drive because infrastructure is inadequate or unsafe."*
 - *"It is very easy to use. I would use it instead of my car if there were safer bike lanes available in my area."*
 - *"I don't think very many people actually take their bike to work. It's too dangerous. Most bicycles are for recreation."*
 - *"We are woefully behind peer cities in building bike infrastructure here. The good thing about e-bikes is that it does get people biking who normally don't think they could bike. So there is a bit of a chicken and egg thing going on here: if you get people on e-bikes they will want to have bike infrastructure, but then people don't want to ride unless there is bike infrastructure. In general, an e-bike incentive program is a good idea to help build support for infrastructure. But again, there's this chicken and egg problem because we need the infrastructure to really get people riding." - Dr. Harvey Miller, Director of the Center for Urban Regional Analysis at The Ohio State University*
 - *"I want to live a car-free lifestyle. We would go car free if we could, but we literally can't because the infrastructure is so bad. I know changes are in the pipeline. I know that there are projects in place like LinkUS, which has the chance to revolutionize this process. I'm hoping and begging that it works."*
 - Columbus' E-Bike Incentive Pilot Program is a part of **broader community transit investment efforts, such as [LinkUS](#) and [Bike Plus](#). As infrastructure improvements are made, frequency of e-bike use is expected to increase as well as enhanced comfort on the road.**

- **Storage** - Given the weight of e-bikes, storage becomes a significant consideration for individuals who may not be able to lift them easily. Carrying the e-bike onto one's porch or home, or into an apartment, can be challenging and in some cases can discourage use. Some residents do not ride their e-bikes to some locations as they are unaware of what storage is available. Additionally, employers may also discourage employees from bringing their e-bikes into the workplace due to lack of space.
 - *"I live in a small house. I don't have a storage shed or garage. I do have a basement, but e-bikes are pretty heavy. So bringing them up and down the stairs would definitely be a challenge."*
 - *"I had to adjust to the way my stairs are set up, to kind of turn the bike a certain way while trying to get it out my door. It's not easy to get it in and out of the house because the handlebars might be a little wide."*
 - *"I don't have a garage. I wish I had a place to store the e-bikes because right now my sons store them in my den and I don't really want them there. They're kind of too heavy to be taken up and down the stairs, but I do prefer that they be stored in the basement."*
 - *"He used the e-bike to get to work, but not all the time because where he worked there was no place to put his e-bike. At first, he was putting his bike inside the building, but then they told him he couldn't. He's in a downtown area, so I'm hoping he can find a place to lock the bike. He works at a ballet company and dancers are constantly going in and out of the building. He would have it inside the hallway which everybody has to walk past. Eventually he had to take it out of the building."*
- **Maintenance costs** - Most individuals in the Qualifying Program tier purchased the most cost-effective bikes. Although the program limited purchases to e-bikes over \$999 to manage quality, some of the program's retailers have expressed concern that lower-cost e-bikes may present more maintenance issues over time than the higher quality brands. This is especially true for e-bikes that are heavily used for transportation. **For individuals facing financial constraints, these expenses may present a significant hurdle, potentially resulting in the discontinuation of e-bike usage altogether.**
 - *"When money's tight, maintenance is probably the first thing to go because we don't think about tune ups. You're thinking I'm gonna ride this until something breaks and then I'll take it in and see if I can get that one item fixed. Whereas by the time that happens, there might be several things that ought to be fixed. So my concern is the cost of maintenance over time. Can the individual afford to take care of the e-bike in the way that they need?"*
- Woody Patrick, Bikes for All People

- *"Afraid that when my battery dies it will be \$500 to replace"*
- Although there is concern over future maintenance costs, so far, the e-bikes in the lower-quality range have not seemed to experience many major maintenance issues. In the future, **the program may want to set aside some funding for maintenance in the second or third year of use.**
 - After 6 months of use, 61% of those surveyed indicated that their e-bike's condition was "Excellent, no issues at all". 16% reported "Good, with minor wear and tear."
- **Weather** - Likely due to a mild 2023 winter season, **winter weather did not seem to present much of a barrier to use for most.** Of those surveyed who purchased their e-bikes during the winter, 34% used their e-bikes 3-4 times per week and 25% used their e-bikes 5-6 times per week. One user who commutes to work only avoided using his e-bike when the temperatures were far below freezing.
- **Theft** - Related to storage concerns, fear of theft and theft itself can keep residents from utilizing their e-bikes to the fullest. In at least one case, one resident was not using her e-bike at all. This concern is legitimate as **several of the program's e-bikes have been stolen**, although one was recently recovered. **Given that e-bikes are ideally stored indoors, individuals with lower incomes face greater risks of theft, as they often lack access to a garage and can face difficulty bringing an e-bike into an apartment.** Even in an ideal situation where an e-bike was stored in a locked garage, it was stolen.
 - *"One of the biggest drawbacks that I see with my e-bike is that I am very concerned about where I leave it locked up."*
 - *"My primary use for the e-bike is none and it literally has less than five miles on it. Because again, at \$1000 investment, I'm terrified of it getting stolen. So the goal was to travel from where I live on the south side up to trips downtown, but I have no idea where there's bike parking and where there's not. So that's one reason I haven't really taken it out anywhere. If it gets stolen, I couldn't get another one for \$1000."*
 - *"Theft is rampant. Anecdotally, I've been in the business for a long time and I would say that the last couple of years have been the worst. With this single last year being the ultimate worst that I've ever heard of. Not a day goes by that we don't have someone calling the shop just to say that there's a bike that has been stolen." - Woody Patrick, Bikes for All People*

The following individuals who experienced e-bike theft had received cargo e-bike incentives or \$900 incentives. Two of the individuals participated in Qualifying Programs and used their e-bikes for transportation to work and for transportation of children.

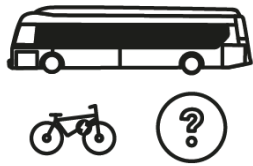


11 Dec 2023



Hello,

Unfortunately I wanted to let you guys know of a theft of my e-bike that I got through this program last week. I went ahead and reported it to the police but haven't hear back and figured I should let you guys know as maybe you could help me keep an eye out for it, thank you!



8. CHALLENGES WITH MULTI-MODAL TRANSPORTATION

Although there were hopes for the program to encourage multi-modal transportation, e-bikes do not currently seem to pair well with the local bus system and at times, not well with cars. This is to be expected as the city adapts to accommodating new technology. Pairing e-bikes with bus travel is a challenge that many cities face.

- Based on participant feedback, bus drivers enforce policies differently. Some allow e-bikes to be placed on racks and others mention that e-bikes are not allowed. **The unpredictability puts users in a tight spot, especially if they are using the bus to commute to work or an appointment.** As loading an e-bike onto the bus is already intimidating, many will stop attempting to use bike + bus altogether.
 - *"Unfortunately, some public transportation do not allow those bikes. **So if you're looking to use an e-bike and also use public transportation, you're kind of screwed.** You could only bike. It was raining so I thought I'm gonna stop biking. I'm going to just get on this next bus, but then I was told I could not load the bike onto the bus."* -Elmer, incentive recipient
 - *"On most buses you can't bring batteries onto the bus. **They ask if it's an electric bike then some might tell you that you can't put the bike on the bus because it's a battery and it could explode.** They try to take precaution before you actually put the bike on the bus."* -Briston, incentive recipient
- COTA's Codes and Policies page found on the organization's [website](#) lists prohibitions on what is permitted inside the coaches. The following rules are similar to most public transit agencies across the country:
 - No Motorized Devices: Motorized devices, such as a scooter and a Segway, are prohibited on the bus. This does not include ADA mobility devices.
 - No Dangerous Equipment: Dangerous equipment that may cause a fire or explosion, such as car batteries, gas cans, lawnmowers, or paint thinner, is not permitted on any COTA vehicle.
- All COTA coaches are equipped with bike racks that allow 2 bikes on each rack. The racks can accommodate bicycles weighing 55 pounds or less. The owner is responsible for any bicycle, theft, damage, or loss associated with transporting their bicycles on

COTA's bicycle racks. The bicycle owner is responsible for loading, securing, and unloading their bicycle. Customers can reach out to COTA's Customer Care Center at 614-228-1776 to report any issues they encounter.

- As for pairing an e-bike with a personally owned vehicle, many residents do not expect e-bikes to be as heavy and bulky as they are, so e-bikes do not always fit in a vehicle as expected.
- Utilization of the e-bike alone seems to be the most common, although some residents have indicated the use of a vehicle to transport their e-bikes to recreational destinations.
 - *"I would only take the bus if I had no other way to get to work. So if that's including e-biking, I wouldn't e-bike to the bus and then put the bike on the bus and then take the bike to work with me." -Marcus, incentive recipient*

→ INSIGHTS CONCLUSION

Columbus' E-Bike Incentive Pilot Program has positively impacted the lives of many residents, allowing access to an affordable transportation option that provides a wide variety of benefits. The program also has real limitations when it comes to choice, out-of-pocket costs, and current number of incentives. This results in the e-bike program not being best suited for everyone. **The program needs to continue to do its best to creatively work within the current limitations and maximize its resources and offerings to benefit Columbus residents.**

Moving forward, the program can address many of the concerns raised during the pilot by providing more information to residents upfront on these aforementioned constraints. This will allow the program to better manage expectations and enable residents to opt out of the program or have more time to prepare for an e-bike purchase if they so choose. The program can also work alongside other city initiatives to support growing bike infrastructure and multi-modal solutions that residents long for.

MEASUREMENT FRAMEWORK

The performance indicators below have been tracked to measure program success, impact, and value. These indicators have been used to evaluate how well the pilot met intended objectives and goals, and to form recommendations for future programming.

Program Goal:

- Design and deploy a financial incentive to increase the adoption of e-bikes among Columbus residents that results in a reduction of GhG emissions and increases access to opportunity.

Pilot Learning Goals:

1. Who are Columbus's current and prospective e-bike customers?

Before the e-bike pilot program, individuals of middle to high incomes were Columbus' primary e-bike customers, purchasing e-bikes locally that generally cost around \$2,000 and above.

Customers with low-incomes were more likely limited to online purchases or lower quality options from large retail chains, as these offerings come at a much lower price point, starting below \$300. This remains largely the case.

However, the e-bike program has expanded the **current** local customer base to include many who would not have been able to afford an e-bike otherwise.* E-bike incentives allow those of lower-incomes to afford a moderate-quality bike locally, also giving them access to maintenance. These are customers who have access to some disposable income, so they are not those of the lowest income. The program has also possibly influenced local price points, allowing customers who have not received incentives to take advantage of more affordable options as well.

**90% of those surveyed who redeemed their incentives would not have purchased an e-bike without the program*

As Columbus' bike infrastructure improves and the population grows, the city's **prospective**

	<p>e-bike customers will expand as well. Those who have been hesitant to ride will feel more comfortable making the investment in an e-bike. As the program and demand grows, more bike shops may open or existing shops may expand their product offerings as well.</p>
<p>What is the value to different customer segments?</p> <p>Specific interest in understanding low to moderate income customers.</p>	<p>Benefits to Low Income Households</p> <ul style="list-style-type: none"> • Great transportation option when the user does not have access to a car and cannot solely rely on the bus to access desired destinations. E-bikes provide more flexibility and save time. • Great transportation alternative when the user cannot afford to repair or replace their personally owned vehicle. • Low-cost when compared to the cost of purchasing and maintaining a car (\$353 per month for a car in Ohio¹²) and in some cases presents a lower annual cost than riding the bus. Parking fees are also avoided. • Provides an affordable way to access recreational activity which benefits mental and physical health. <p>Benefits to Moderate Income Households</p> <ul style="list-style-type: none"> • Allow users to save money on gas and parking, especially in a time when cost of living is higher. • Offers an alternative transportation mode that is more enjoyable and less stressful than driving, providing opportunities for exercise and reducing time spent in traffic. <p>Across our pilot evaluation, e-bikes bring the most value to:</p>

¹² <https://www.move.org/average-cost-owning-a-car/#data>

	<ul style="list-style-type: none"> • Those with low, middle or high incomes, but not those of the lowest incomes as some disposable income is needed to cover ongoing e-bike costs. • Those with good storage options at home and their common destinations (access to a garage, first floor house or apartment, accommodating workplace, bike racks at necessities) • Those with the capacity in their lives to upkeep an e-bike (regular charging, air in tires or tire replacement, can handle the weight of an e-bike) <p>Otherwise, an e-bike may bring more of a burden than a benefit.</p>
<p>2. What is the current level of interest, outlook and sentiments?</p> <ul style="list-style-type: none"> ○ Do residents like e-bikes? Do they want e-bikes? ○ What are the barriers to adoption that need to be mitigated. 	<p>There is a significant level of interest in e-bikes locally as evidenced by nearly 5,000 interest survey submissions. The rising cost of living, local population growth, and improved bike infrastructure will make e-bikes an increasingly attractive transportation option.</p> <p>Growing local interest also points to national interest. Although bike sales across the country have slowed down, e-bike sales have significantly increased, remaining “the fastest growing category across the bike industry this year” according to People for Bikes¹³.</p> <p>Although strong interest exists, the cost of e-bikes and a lack of adequate bike infrastructure remain as barriers to adoption. Theft and lack of storage options are also significant hindrances.*</p> <p><i>*For more details on barriers, see Insight #7.</i></p>

¹³ <https://www.fastcompany.com/90994141/why-2023-was-the-year-of-the-e-bike-and-not-the-self-driving-car>

3. What are the different e-bike use cases? Current and potential.

Current Use Cases*

The top 3 common uses for the program's e-bikes:

- **75% For leisure and recreation**
- **71% Running errands**
- **49% Travel to social activities**
- **41% Travel to and from work**

A minority of respondents solely use their e-bikes for recreation, most use their e-bikes for transportation, which includes a variety of purposes.

Potential Use Cases

If bike infrastructure in the city were to improve, we could see even greater e-bike use for transportation purposes. Additionally, if the program takes more intentional steps towards identifying applicants in genuine need of e-bikes, there may also be an increase in those traveling to and from work on e-bikes.

**For more details on use cases, see Insight #5.*

4. Attractiveness of different incentive models.

The point-of-sale instant rebate model has been confirmed as the easiest option for customers, especially for those of low and moderate incomes who often do not have the financial means to pay the whole amount upfront.

The income-based tiered approach to distributing incentives has worked well for Columbus and is popular across the country. Prioritizing those of lower incomes seems to be well-accepted by the public and appreciated by many who have benefitted from the program.

The program's incentive amounts generally make sense for the local context, but who qualifies for the middle tier of \$900 needs to

	<p>be revisited as the \$60,000-\$150,000 range is too wide. The current incentive amounts are relatively higher compared to other programs due to purchases being restricted to local shops, which typically have higher prices than online options. While this has been a significant concern voiced by incentive recipients, the program remains committed to prioritizing access to maintenance services and ensuring product quality management.</p>
<p>5. Effectiveness of an incentive in increasing e-bike sales, usage, etc.</p>	<p>The program brought new customers to local bike shops as evidenced by 90% of those surveyed indicating they would not have purchased an e-bike without the program. The majority of sales were made at three of the participating bike shops, while two of the program's affiliated shops have seen comparatively lower benefits so far.</p> <p>One bike shop in particular might have closed its doors if not for the program.</p> <p>E-bike usage in Columbus has increased both by incentive recipients and those who became interested in an e-bike purchase through hearing about the program.</p>
<p>6. An understanding of the desired end-to-end customer experience journey for e-bike customers and users and wrap around support needs.</p>	<p>The end-to-end customer experience has been tested using human-centered evaluation methods and updates will be made accordingly. Many of the complaints the program received can be addressed through clearer communication in the future and by refining it's primary audience to focus on who will derive the greatest benefits from e-bike use.</p>