WSDOT E-Bike Rebate Pilot Program Evaluation and Interim Report on E-Bike Lending Libraries

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EXECUTIVE SUMMARY

The Washington State legislature committed $7 million of Climate Commitment Act (CCA) funds to two new statewide e-bike programs in the 2023-2025 transportation budget. The Electric Bike Rebate Program (WE-Bike) received $5 million, and the Electric Bike Lending Library and Ownership Grant Program received $2 million, with funds for that program available July 2024. The 2025-2027 transportation budget committed an additional $7 million to continue the e-bike rebate program and an additional $2 million to continue the e-bike lending library and ownership program.

The University of Washington (UW) received $90,000 in the 2023-2025 biennium to publish a policy brief for the e-bike rebate program (Malarkey 2024), a report on survey results from the e-bike rebate program, and a report on program information and data collected for the e-bike lending library program. This report provides results and key findings from the UW's evaluation of the WE-Bike program and a discussion of policy implications and future research directions. This report also reviews best practices for a statewide e-bike lending library program with an update on the status of Washington's program.

E-bike rebate program

Washington State launched its first statewide e-bike rebate pilot in April 2025 with the goal of expanding access to e-bikes and advancing state transportation and climate goals. Funded by the CCA and administered by the Washington State Department of Transportation (WSDOT), the program offered $1,200 rebates to households with lower incomes and $300 rebates for all other households, redeemable at local participating bike shops for all three classes of e-bikes. Legislation directed that 60 percent of the rebate funds be directed to the $1,200 program and 40 percent to the $300 program. The University of Washington provided a policy brief in 2024 and worked through the pilot to evaluate the program's impacts on mobility, access, reach, and emissions to inform future program design.

The pilot program received 37,751 applications statewide from all 39 counties in Washington. There were 1.5 times more applications for the $1,200 rebate available to households with low incomes (at or below 80 percent of the county median) than for the $300 rebate available to households with higher incomes (above 80 percent of county median). Using random selection for awarding rebates as recommended in the 2024 policy document, the program made rebate offers in all 39 counties with 35 percent of those selections coming from overburdened communities. In addition, the demographic characteristics of applicants and rebate recipients closely matched the state's population overall.

The WE-Bike program awarded 6,861 applicants with rebates. 2,237 people were awarded a $1,200 rebate and 4,624 were awarded a $300 rebate per the legislative guidance for a 60/40 split of funds on each program for a total of $4,071,600. However, lower than anticipated redemption rates meant not all these funds were expended. 84 percent of applicants awarded $1,200 towards an e-bike purchase redeemed them, while just 24 percent of the applicants awarded a $300 rebate redeemed theirs. Expenditures on rebates during this pilot were $2.58 million out of an available $4.2 million.

The UW evaluation included regular surveys and trip tracking using smartphone global positioning system (GPS) data with a subset of over 1,200 study participants across six months, which included applicants who were and weren't awarded a rebate. By using random selection to award rebates, the program design allowed for a rigorous assessment of the program's causal impacts. By comparing the trip behavior and other attributes of the rebate recipients with a control group that didn't receive the rebates, the UW was able to accurately assess the rebates' effects. The UW also relied on program level data from the contracted program manager (APTIM) and WSDOT's program staff in its analysis.

The UW found that while the program's applicants generally matched state demographics, they had lower incomes and less access to private vehicles than the general population. 44 percent of the UW study participants reported household incomes below $50,000 and 17 percent reported no car ownership, compared to 24 percent and 4 percent for the state's population. Prior work has shown that e-bike adopters are typically higher-income individuals with good access to cars (Haustein 2016), suggesting that the rebate program may have effectively broadened access to e-bikes by engaging more people with lower incomes and without cars.

The UW also found rebate offers substantially increased e-bike purchases: 92 percent of purchases in the income-qualified group and 70 percent in the non-income-qualified group were induced by the rebate, leading to an estimated 2,490 induced purchases overall. These results demonstrate that rebates are an effective tool for sparking new e-bike sales, particularly among lower-income households where larger incentives are needed.

The rebate recipients in the UW study who purchased e-bikes reported meaningful improvements in mobility and access after purchasing an e-bike. Nearly half said they used their e-bike to reach destinations they previously did not travel to. Convenience, the ability to travel longer distances, and physical and mental health benefits were frequently cited as key motivations for participation.

Notwithstanding these benefits, during the six-month timeframe of the study, GPS-based trip data did not show measurable reductions in daily vehicle miles traveled (VMT), and consequently, no detectable reductions in carbon emissions or non-carbon pollutants. It may take longer than six months for e-bike rebate recipients to fully integrate e-bikes into their daily routines in a way that reduces their car use and the associated emissions. Moreover, mode shifts from autos to cycling are sensitive to users' perceptions and experiences of safety while cycling. In the context of this statewide program the UW was not tasked with evaluating the effects of combining e-bike rebates with improved cycling infrastructure. Funding to allow for a follow-up with study participants after one year would enable the program to address some of these study limitations.

Table 1 provides an overview of the program, and Table 2 summarizes findings from the University of Washington evaluation of the extent to which the program achieved its policy goals.

Table 1. Overview of key program metrics

	$1,200 rebate for low-income households	$300 rebate for all other households	program totals
Number of applicants	22,954	14,797	37,751
Number of applicants selected	3,163	7959	11,122
Number of applicants awarded	2,237	4,624	6861
% of applicants awarded rebates	10%	31%	29%
Number of rebates redeemed	1,880	1,087	2,967
% of rebates redeemed	84%	24%	27%
Dollars spent on rebates	$2,256,000	$326,100	$2,582,100
Share of rebate dollars to low-income households	100%	0%	87%
Share of rebate dollars to overburdened communities	37%	23%	35%

Table 2. Summary of program impacts relative to policy objectives

Policy objective	Evidence from UW study that e-bike rebate program served policy objective
Wide participation across state and demographic groups	Yes
Higher participation among low-income population	Yes
Allocate at least 35% of funds to overburdened communities	Yes
Increase mobility and access among rebate recipients	Yes
Increase in physical and mental health among rebate recipients	Yes
Reduce driving and emissions	No

In summary, e-bike rebates increase adoption, especially when structured to address affordability barriers for lower-income households. E-bikes purchased with the support of rebates increased mobility, access, and perceived health benefits among the UW study participants but did not reduce VMT and the associated emissions during the six-month study period. Continued evaluation over a longer timeframe could reveal potential changes in travel behavior and emissions. Finally, the pilot demonstrated the opportunities for collaboration between state agencies and universities to rigorously evaluate program design and outcomes, providing a model for future active transportation and climate initiatives.

The UW findings have two main policy implications for the WE-Bike program going forward:

- **Test an increase in the rebate amounts.** By testing higher rebate amounts, the WE-Bike program could identify rebate levels that induce the most e-bike purchases at the most economical public cost. Testing these increases would also allow the program to adapt to changing market conditions.

- **Extend the period of evaluation regarding the impact of e-bike rebates on VMT and emissions to at least one year.** Reducing greenhouse gas emissions is an important policy goal for the use of CCA funds. Evaluating the VMT and emissions impacts of e-bike rebates over one or two years could yield different results than a six-month study.

E-bike lending library and ownership program

The 2023-25 Washington state budget appropriated $2.0 million for the second year of the biennium to establish a statewide electric bicycle lending library and ownership grant program. Funding for the 2025-27 biennium is $3.568 million, which includes funds carried forward from 2023-25. All funding is from Climate Commitment Act revenues.

The University of Washington was tasked with reporting on the program's information and data collected. In spring of 2025, the project team, including colleagues from Portland State University (PSU) reviewed recent research on more than 54 e-bike lending library models across North America and shared those learnings and best practices with WSDOT to help inform the design and implementation of Washington's statewide program. Key findings include:

- Programs cluster into three models: community resource (shared assets), ride-to-purchase (try-before-you-buy), and long-term access/lease; each matches different objectives and communities.
- Proven successful program elements include clear targeting, community-centered design, partnerships with bike shops and trusted local groups, strong user agreements, safety training, and theft prevention (e.g., GPS locks).
- Common hurdles are high start-up/operating costs, insurance availability and cost, infrastructure for safe charging/storage, and fleet maintenance–especially for fleets that include a range of bike types beyond simple class 1 or commuter bikes.

WSDOT incorporated many of these best practices into its program design and grant guidance as well as stipulating all bike loans to participants must be at no cost. Additional safety considerations in the WSDOT program also embed national best practices including:

- Batteries and electrical systems tested to Underwriters Laboratories (UL) standards by an Occupational Safety Health Administration (OSHA) Nationally Recognized Testing Lab (NRTL)
- All bike borrowers must use a helmet and be aged 16+
- Bikes to loan are limited to class 1 or class 2 as verified by a manufacturer sticker on the bikes
- Theft prevention and safe riding, battery charging and basic maintenance practices are embedded in bike borrower education

Eligible grantees include government entities, nonprofits, and tribes. Two service pathways are prioritized: (a) employer libraries serving employees for commute trip reduction (CTR); (b) community libraries serving low-income and/or overburdened communities. The legislation restricts government entities to providing the opportunity only to their employees as part of their CTR work.

Grant applications opened on August 15 and closed October 3, with awards to be announced by the end of 2025. Projects must complete spending by June 30, 2027.

WSDOT received 13 complete applications. Their evaluation and prioritization emphasize community benefit, safety, implementation readiness, experience, community coordination and inclusive design such as consideration of those communities with limited access to technology.

E-BIKE REBATE BACKGROUND AND INTRODUCTION

Cities and states across the US have adopted policies to increase bicycling mode shares as a strategy to reduce transportation greenhouse gas emissions, alleviate congestion, and improve public health (Bennett 2022; Mode Shift | ACEEE n.d.). While conventional bicycles are a low-cost, low-emissions alternative to car travel, their utility is often limited by trip distance, topography, and physical exertion (Chevance 2025; Langford 2017). Electric bicycles (e-bikes) help overcome these barriers by bridging the gap between conventional cycling and motorized transport, expanding the range and types of cycling trips that can replace motor vehicle trips (Bjørnarå 2017).

In addition to their potential to induce mode shift, e-bikes can also improve physical health, lower transportation costs, reduce traffic congestion, and improve air quality (Bennett 2022; Bourne 2018; Fishman 2016; Malarkey 2024; Riiser 2022). Recognizing these benefits, and the barrier to adoption posed by e-bikes' high upfront costs, many cities, states, and organizations have introduced incentive programs to promote e-bike adoption (Bennett 2022; MacArthur 2025; Rossi 2024; Saki 2019). Several government-administered initiatives are funded by climate improvement legislation with the hope that increased e-bike use and ownership over time will gradually reduce reliance on personal vehicles, thereby lowering transportation-related greenhouse gas emissions (Bennett 2022; Bigazzi 2025; City and County of Denver 2023; E-Bike Research | TREC n.d.).

The Washington State Legislature appropriated $5 million for the 2023-2025 biennium[1] from the state's cap-and-invest program (commonly referred to as Climate Commitment Act or CCA) for the pilot initiative, aimed at promoting fair access to e-bikes statewide and advancing Washington's transportation and climate goals. Rebate amounts were set at $1,200 for those identified as low income and $300 for all other incomes. 60 percent of funds were directed towards low-income groups. Low income was calculated as living in a household at or below 80 percent of the county area median income level (AMI). WSDOT administered the program and partnered with the UW, with support from Portland State University (PSU), to provide policy guidance and evaluate program impacts. WSDOT contracted with APTIM to implement the program via competitive solicitation in 2024 (Weinberger 2025). The pilot rebate program launched in April 2025 with a single two-week application period.

Washington electric bike (We-Bike) program overview

Applications were available online for two weeks from April 9, 2025. The application had two stages. In the first stage, applicants provided basic contact information, selected the rebate value they wanted to be considered for, and checked the type of e-bike they were most interested in (cargo, adaptive, standard). Applicants selecting the $1,200 rebate could choose to report their approximate household income to assess likely eligibility. Applicants who completed the first stage received an email inviting them to create an account and continue to the second stage. In the second stage, applicants provided demographic information required by the legislation and responses to four survey questions, one asking if they wanted to be contacted by UW about paid participation in the evaluation of this program.

WSDOT received a total of 37,751 applications, including 22,954 for the $1,200 rebate and 14,797 for the $300 rebate. The applicants' responses to demographic questions closely reflected the state's demographic composition across characteristics such as age, gender, and race. However, applicants were slightly more concentrated in urban areas (i.e., King County). The top five counties with the most applicants were the same top five counties by population in the state.

Table 3. Demographic comparison of program applicants and Washington state population

Question statement	Categories	All rebate applicants	Washington state population
How old are you?	Age	Median: 40	Median: 39
What is your gender?	Female	40%	50%
	Male	50%	50%
	Non-binary	3%	Not provided as an option
	Other or Not Listed	0%	Not provided as an option
	Prefer not to say or blank	7%	Not provided as an option
What is your race?	White	59%	65%
	Black or African American	4%	4%
	American Indian or Alaska Native	2%	1%
	Asian	12%	10%
	Native Hawaiian or Other Pacific Islander	1%	1%
	Another or Not listed here	4%	6%
	2 or more races	8%	13%
	Prefer not to say or blank	13%	Not provided as an option
County (top 5)	King County	40%	30%
	Pierce County	11%	11%
	Snohomish County	10%	12%
	Spokane County	7%	7%
	Clark County	5%	7%
Total count		37,751[2]	7,642,355

Data in this table are from: Washington Census Bureau Profile n.d.; Washington state Office of Financial Management 2025.

[2] The WE-bike report from APTIM indicates that 37,751 pre-applications were generated; however, it reports 37,778 responses for the race and gender questions.

Beginning April 23, 2025, APTIM randomly selected rebate recipients within each income category. All applicants were notified of their initial rebate status. Selected applicants had 96 hours to respond with documentation verifying their eligibility. All applicants were required to prove Washington residency, name and age, while income-qualified applicants also needed to submit proof of income. Documents were verified manually by APTIM and those who were approved received digital vouchers redeemable at point of purchase in over 128 participating bike shops statewide. APTIM conducted subsequent randomized drawings from the remaining unselected applicants to fill unclaimed rebate slots as available.

Rebates had to be used within 45 days of issue, but those who needed and requested an extension were granted one. All rebates had to be redeemed by June 30, 2025, in line with state spending and the end of the fiscal year. In total, APTIM selected 7,959 people to receive a $300 rebate and 3,163 people to receive a $1,200 rebate. They awarded 4,624 rebates valued at $300 and 2,237 rebates valued at $1,200. By the June 30 redemption deadline, recipients redeemed 1,087 of the $300 rebates and 1,880 of the $1,200 rebates.

UW study

The UW team collaborated with WSDOT and APTIM to align the program evaluation with the study timeline and provide guidance on implementation decisions. Figure 1 presents an overview of the WSDOT e-bike rebate program timeline and shows how the UW study was integrated into its rollout.

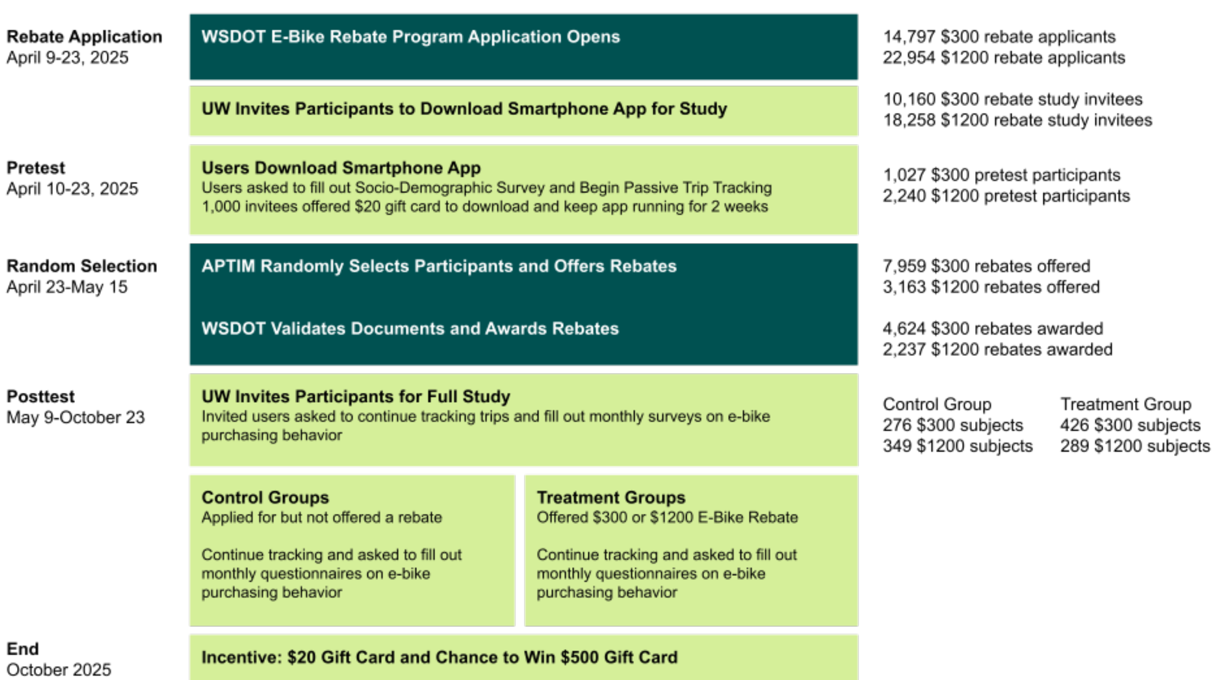

Figure 1. Timeline of the WSDOT e-bike rebate program and evaluation study

The UW team recruited willing study participants on a rolling basis during the rebate application window. Study participants were invited via email to download a smartphone app for passive tracking, provided a unique access token and given the research consent form. All study participants were aged 18 and above. Selected study participants who completed the full study received a $20 Tango gift card and were entered for a chance to win an additional $500 Tango gift card.

Given the recruitment challenges associated with smartphone-based studies (Meister 2025), the UW team randomly selected 1,000 individuals invited on the first day of recruitment to receive a $20 Tango gift card as an upfront incentive. Among these individuals, 21% downloaded the app. Because download rates among those who did not receive the incentive were still relatively high (13%), no further pretest incentives were offered. This high download rate across both groups suggests that recruiting participants during the active application window was an effective strategy.

A total of 2,195 participants (6% of all rebate applicants) downloaded the app and started tracking trips before April 23. 68% of these had applied for the $1,200 rebate. Comparing the demographics of study participants with those of all rebate applicants revealed the study sample was broadly representative of the larger applicant pool. Additional demographic information was collected for study participants such as education level and vehicle ownership, then compared against that of all rebate applicants and the statewide population; results are presented in Appendix, Table A1.

Between May 9 and May 12, 2025, UW invited 1,340 pretest participants (4% of total applicants) to continue in the full study. Full study invitees were randomly selected from the pretest pool after applying the following criteria:

1. They had downloaded and activated the smartphone tracking app during the pretest period.
2. They had not requested removal from the study.
3. Their app usage continued beyond the end of the application period (April 23).

Table 4 summarizes the number of participants by rebate amount and by treatment status (offered a rebate) versus control (not offered a rebate). These participants were asked to keep the smartphone app on for six months and to complete various short surveys on an approximately monthly basis.

Table 4. Full study invitees by treatment and rebate group

	Number of $300 rebate applicants	Number of $1,200 rebate applicants
Treatment (participants selected to receive a rebate, regardless of whether they completed document validation)	426 (5% of total)	289 (8% of total)
Control (Not selected to receive a rebate)	276 (4% of total)	349 (2% of total)

The WSDOT program's randomized selection of rebate recipients enhanced the fairness of the program, as compared with a first-come first-serve approach which can favor applicants that have greater ability to respond quickly (Malarkey 2024). It also meant that, on average, recipients were expected to be similar to non-recipients in both socio-demographic and attitudinal characteristics. Participants in the treatment and control groups had comparable transportation habits and prior e-bike ownership, (Appendix, Figures A1 and A2). The one difference between the groups was e-bike purchasing: For both rebate groups, more individuals who were offered a rebate purchased an e-bike than those who were not offered a rebate during the six-month study period. Among those randomly selected to receive an e-bike rebate, 31 percent of $300 applicants purchased an e-bike, compared with 79 percent of $1,200 applicants. Among those not offered a rebate, 10 percent of the $300 control group purchased an e-bike, compared with 6 percent of the $1,200 control group. These findings indicate that both rebate levels successfully induced e-bike purchases.

The randomized design, combined with the strong impact of the rebates on e-bike purchases, provides a solid foundation for evaluating the program's effects on various policy objectives. The following sections present results from the UW study and program data, highlighting measurable benefits for participants and the broader community.

EVALUATION OF E-BIKE REBATE POLICY OBJECTIVES

The UW policy brief (Malarkey 2024) identified several potential objectives for the e-bike rebate program including directing benefits to overburdened communities and low-income households; improving access, mobility, and health; and reducing transportation-related carbon and non-carbon emissions. For each of these objectives, in the sections below, we present the relevant measures, summarize the key findings, and discuss the results in the context of prior research.

Direct benefits to overburdened communities and low-income households

The CCA requires that 35 percent of program investments deliver direct benefits to overburdened communities (census tracts with high levels of air pollution)[3] and the e-bike rebate legislation requires that 60 percent of funds be directed to low-income households. The e-bike rebate program was designed to target these groups by offering higher rebates ($1,200) to income-qualified households and smaller rebates ($300) to others. This section examines whether the program successfully reached its intended audiences and expanded e-bike access among lower-income and overburdened communities.

To assess these outcomes, we compared the income and car ownership profiles of study participants with the statewide population, examined the primary modes of transportation used before program participation, and analyzed how rebate dollars and e-bike sales were distributed across income-qualified and overburdened households. We also investigated differences in program motivations between income-qualified and non-income-qualified applicants.

[3] (Washington state Department of Ecology n.d.) https://ecology.wa.gov/air-climate/climate-commitment-act/overburdened-communities

Participants in the UW study had lower household incomes and car ownership rates than the state average. 44 percent of participants reported household incomes below $50,000 compared with 24 percent of state households. 17 percent of participants reported not owning a car, compared with just 4 percent statewide. These characteristics indicate that the program successfully attracted participants with lower incomes and limited access to private vehicles. Prior work has shown that e-bike adopters are typically higher-income individuals with good access to cars (Haustein 2016), suggesting that the rebate program may have effectively broadened access to e-bikes.

Differences between income-qualified and non-income-qualified applicants were evident in transportation patterns, motivations for applying, and rebate redemptions. At the time of application, 60 percent of income-qualified applicants reported that their primary travel mode was driving a personal car, compared with 72 percent of non-income-qualified applicants (Figure 2). Lower-income households were more likely to rely on public transit, bicycling, or rides from others.

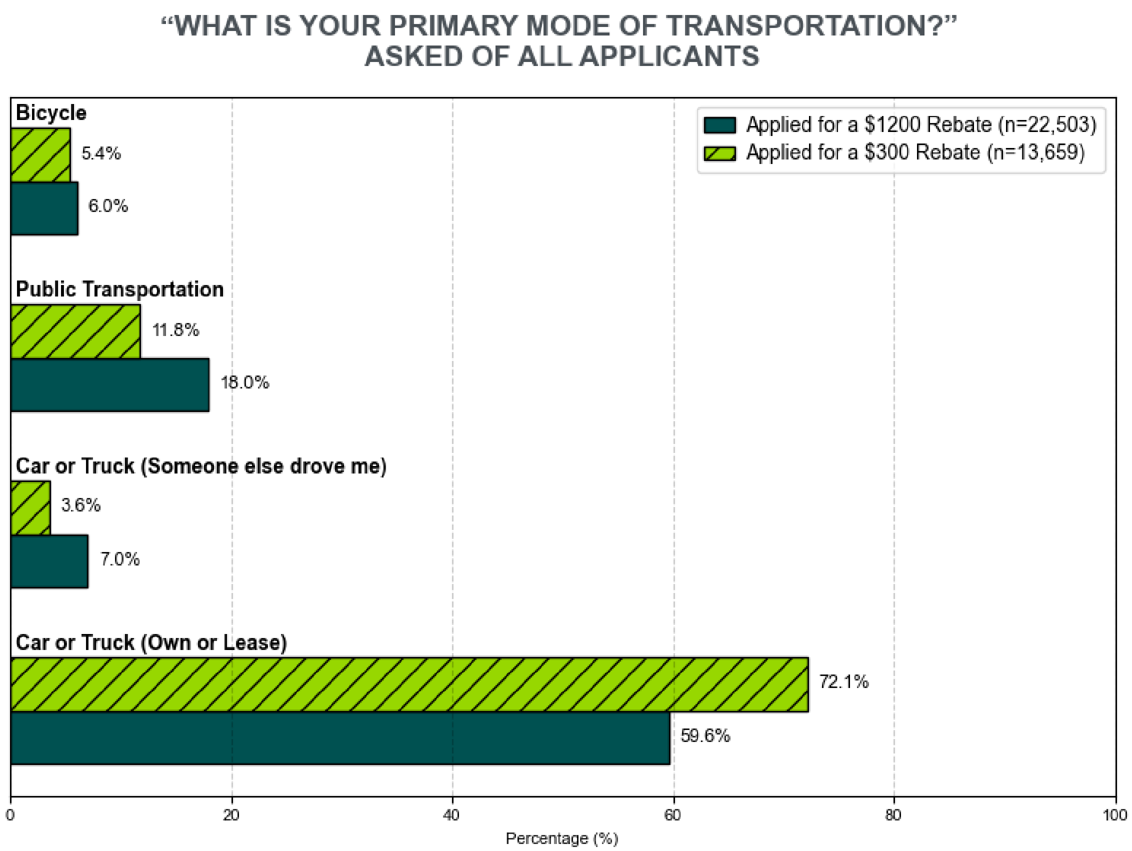

Figure 2. Comparison of primary mode of transportation at the time of program application for income-qualified and non-income-qualified applicants

We also asked study participants about their prior e-bike ownership and found that only 8 percent of income-qualified participants owned an e-bike before the program, compared with 15 percent of participants in higher-income groups.

Figure 3 illustrates these differences among study participants. The complete set of survey questions asked of study participants, along with descriptive statistics, is presented in Appendix, Table A2.

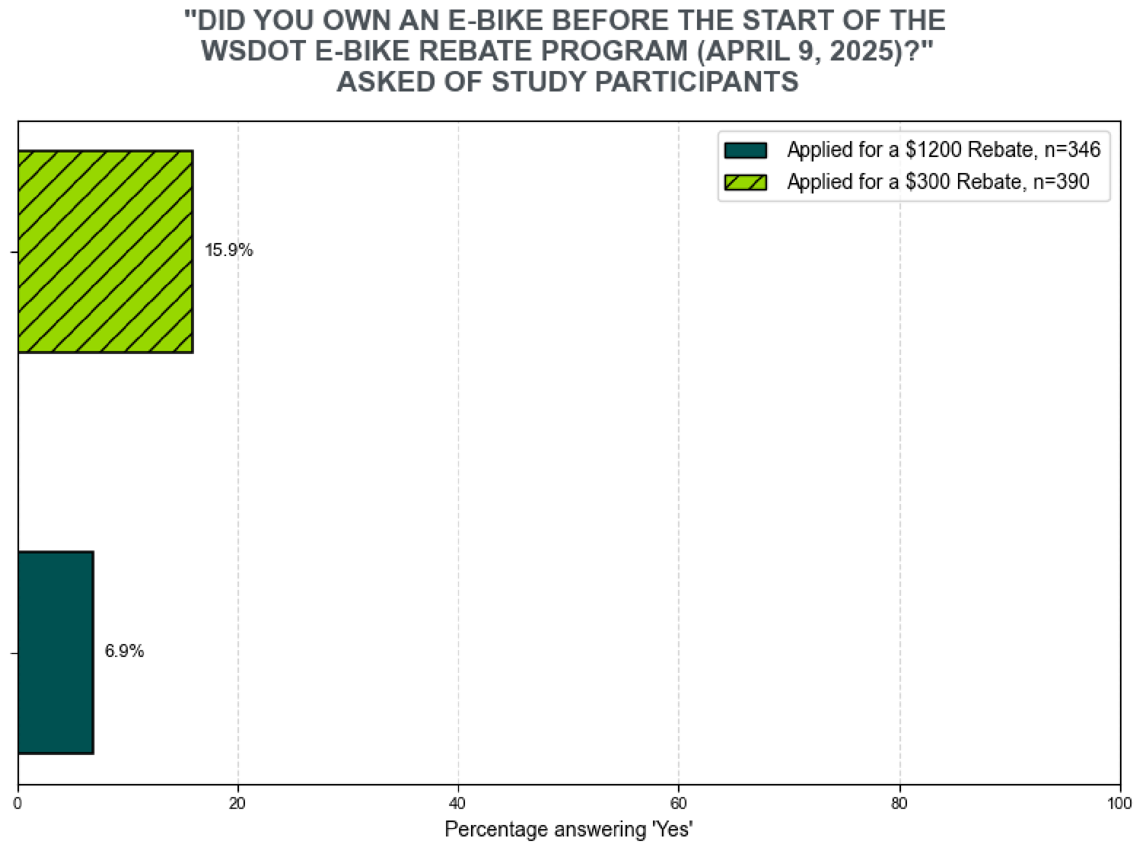

Figure 3. Comparison of prior e-bike ownership among study participants applying for the $1,200 and $300 rebates

Financial considerations were an important motivation for both applicant groups: 57 percent of income-qualified participants and 53 percent of non-income-qualified participants indicated that reducing transportation costs was “very important” or “extremely important” in their decision to apply. 30 percent of the income-qualified applicants reported that they would purchase an e-bike in the next year without a rebate, compared with 37 percent of the non-income-qualified applicants. These self-reported intentions are directionally consistent with the observed behavior of the study participants in pattern but are smaller in scale, in part because of the six-month study period. Among the control groups, 6.2 percent of income-qualified individuals purchased an e-bike within six months, compared with 9.5 percent of non-income-qualified participants.

Rebate redemption rates differed between the two groups. 84 percent of total program applicants awarded the $1,200 rebate redeemed it, compared with 24 percent of those awarded a $300 rebate. This finding is particularly significant given prior research showing that middle- and higher-income individuals are typically most responsive to financial incentives, while low-income households often face affordability constraints even when the incentives are available (Jones 2023). The program's design accounted for this, recognizing that inducing e-bike purchases among lower-income households costs more per unit than among higher-income households (Malarkey 2024). The high redemption rate among income-qualified participants suggests that the larger rebate value effectively mitigated these barriers.

This conclusion is further supported by the survey data from the UW study participants. Among participants who were offered but did not redeem a rebate, 6 percent of income-qualified recipients and 40 percent of non–income-qualified recipients reported that the e-bike purchase price, even with the rebate, was a barrier to purchase. Notably, many e-bikes cost more than the $1,200 rebate – 81 percent of $1,200 rebate redeemers paid at least part of the cost out-of-pocket, yet only 6 percent of the study's $1,200 rebate recipients who did not purchase an e-bike reported that the purchase price was a barrier. In contrast, the $300 rebate appears to have been insufficient for many recipients, suggesting that some explored purchasing an e-bike but ultimately found the cost prohibitive. Other programs show that lower rebate amounts are consistently associated with lower redemption rates. The Tacoma program, which offered a $300 rebate, achieved a 17 percent redemption rate, while an ongoing program in the San Francisco Bay Area has reported a redemption rate of less than 10 percent of $400 rebates (WSDOT & APTIM 2025). With prices expected to rise further due to recent tariffs (Is an Electric Bike Right for You? 2025), these affordability barriers are likely to become even more pronounced for lower-rebate recipients.

The program was directed by legislation to allocate 60 percent of e-bike rebate funds to lower income households and 35 percent of all rebates to overburdened communities. Using data from APTIM on the whole program, and in the context of higher redemption rates in the $1,200 group, 87 percent of rebate funds were directed to lower-income households. The program also achieved the goal of 35 percent of the total funds going to overburdened communities: 37 percent of the $1,200 rebates and 23 percent of the $300 rebates.

Improve access, mobility, and health

By lowering the upfront cost of e-bikes, the program aimed to improve personal mobility and generate broader health and well-being benefits. This section discusses participants' reasons for applying and changes in access and mobility.

Study participants were asked to rate several potential motivations for applying to the WSDOT rebate program on a five-point scale ranging from "Not at all important" to "Extremely important". The following percentages represent the share of respondents who rated each factor as either "very important" or extremely important": 61 percent cited greater convenience compared with other modes, 62 percent highlighted the ability to bike longer distances, and 57 percent emphasized reduced effort. Health-related motivations were also prominent: 65 percent identified improving physical health, and 62 percent noted mental health benefits as highly important reasons for participating. These results are consistent with previous research indicating that e-bikes are valued both for increasing cycling convenience and for supporting physical and mental well-being (Bourne 2018; MacArthur 2018).

The program also measurably improved access for e-bike purchasers. 44 percent of study participants who purchased an e-bike stated that owning an e-bike allowed them to go places that they previously did not visit. 68 percent reported using their e-bike for trips they would have previously taken by car, 46 percent for trips they would have walked, 36 percent for trips they would have biked, and 33 percent for trips they would have taken by transit. These results suggest that e-bikes expanded the range of trips participants could make and offered an alternative to vehicles, biking on a traditional bicycle, walking, and transit for certain trips. Only 2 percent of study participants reported not using their e-bike, suggesting that most participants may have gained health-related benefits from riding, depending on what modes they replaced. Taken together with the health- and convenience-related motivations, these findings suggest that the rebate program may have contributed to improved mobility, access, and health for e-bike purchasers.

Reduce carbon emissions and non-carbon pollutants

Reducing greenhouse gas and air pollutant emissions from the transportation sector is a core goal of the Climate Commitment Act, which provides the funding for the e-bike rebate program. By encouraging residents to purchase e-bikes, the program seeks to reduce vehicle travel and associated emissions.

To measure study participants', travel behavior, we used the National Renewable Energy Laboratory's OpenPATH smartphone app, which passively tracks trips using GPS and classifies travel by mode, including car, bicycle, walking, bus, and train. Using GPS data provides more accurate and complete data than traditional self-reported travel diaries, especially for short-duration trips (Blanc 2016). The OpenPATH app protects participant privacy by using unique user tokens rather than direct identifiers (Kosmacher 2024). Figure 4 shows the app interface, including detected travel modes and the option for participants to make corrections.

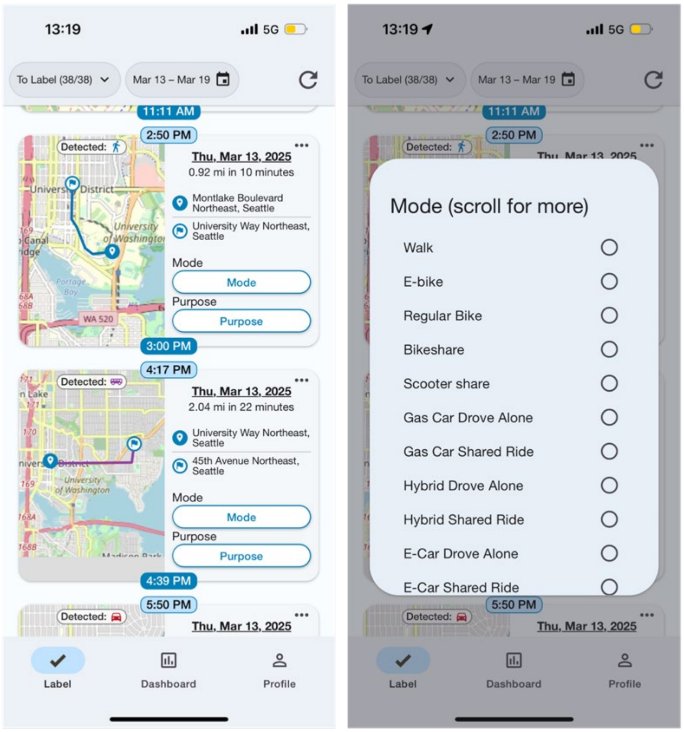

Figure 4. App interface with detected modes (left) and optional mode correction (right)

The app has been validated in prior studies and demonstrates accuracy in detecting vehicle-based travel, with reported F-scores between 0.6 and 0.7 (Kosmacher 2024). Given this level of accuracy, and this study's focus on vehicle trips, participants were not asked to manually label trips or report trip purposes. Nonetheless, some participants labeled trips, and comparison of the detected modes with these labels indicated that vehicle trips were automatically detected with 88 percent accuracy.

We examined whether being offered an e-bike rebate led participants to reduce their vehicle travel, measured by VMT. Using a two-way fixed effects (TWFE) model, we compared daily VMT before and after e-bike purchases between treatment and control groups. This approach isolates the effect of the rebate or subsequent e-bike purchase from broader factors that influence all participants, such as seasonal travel patterns or fluctuations in fuel prices, while also controlling for stable individual characteristics such as baseline travel habits, home location, vehicle ownership, and demographics.

Neither the $300 nor the $1,200 rebate offers produced a statistically significant change in daily VMT relative to their respective control groups. This result was consistent across alternative definitions of the treatment period and when using a log specification restricted to days with non-zero VMT, confirming that the findings were robust to date definitions and outliers. Figures A3, A4, and A5 present the daily average VMT for each rebate group and the distribution of daily average VMT before and after treatment.

Overall, we found no evidence that rebate recipients substantially reduced their vehicle travel. Full model results are reported in Appendix, Table A3, along with a discussion comparing these findings to prior research on e-bike impacts. These results suggest that while e-bikes may have expanded participants' travel options and mobility, they did not replace enough vehicle trips to reduce overall driving. Consequently, e-bike incentives did not measurably reduce carbon emissions or non-carbon pollutants over the six-month study period. As noted above, the six-month time frame was fairly short; evaluation after a longer period of e-bike ownership would produce additional information about long-term effects.

CONCLUSION AND NEXT STEPS

The WSDOT e-bike rebate program successfully encouraged incremental e-bike purchases, especially for low-income households. The program achieved the goals of directing more than 60 percent of rebate funds to low-income households and 35 percent to overburdened communities. Participants reported a range of motivations for applying, including convenience, the ability to bike longer distances, and physical and mental health benefits. The program measurably improved access and mobility: E-bike owners were able to reach destinations that had previously been inaccessible, and they substituted some car, walking, and transit trips with e-bike trips.

Our findings indicate that e-bike incentives alone did not deliver measurable greenhouse gas reductions over the period studied. E-bike rebates may require longer time periods and/or complementary measures to translate increased e-bike adoption into measurable reductions in vehicle travel. Expanding funding for more types of load-carrying equipment or other bike-related accessories, such as add-on equipment for transporting children, might also affect the extent and type of e-bike usage.

Further research could help optimize e-bike programs and evaluate long-term impacts. Behavior may shift gradually as participants integrate the e-bike into their routines. Our analysis captures effects only within six months of the rebate offer, a period when some participants may still be adjusting their travel habits. This is supported by 8 percent of participants reporting that they plan to change the number of cars in their household in the next six months. A follow-up study tracking participants for 1-3 months one year after the program could assess whether reductions in vehicle travel appear over time. This follow-up could also re-evaluate the number of induced purchases by tracking how many control group participants end up purchasing an e-bike without a rebate.

Beyond this one-year horizon, longer-term follow up could examine safety outcomes, such as serious or fatal cyclist crashes, and evaluate how rebates interact with infrastructure investments to produce broader mobility and safety benefits. Additionally, the large differences in rebate redemption rates suggest opportunities to test alternative incentive amounts. Future work could pilot different rebate levels to evaluate how program design affects adoption, cost-effectiveness, and ultimately, the potential for broader mobility and safety benefits.

Overall, the WSDOT e-bike pilot rebate program demonstrates that financial incentives can successfully expand e-bike adoption and enhance mobility and health outcomes, even if complementary measures may be needed to reduce vehicle travel. The program also highlights a successful collaboration among the Legislature, state agencies, universities, and contractors, providing a model for rigorously designing, delivering, and evaluating pilot programs, and generating actionable insights for future policy design.

E-BIKE LENDING LIBRARIES

This section provides an interim report on e-bike lending libraries. It documents best practices in lending library programs and reports on Washington's pilot grant program launching in 2025.

Best practices in U.S. e-bike lending libraries

1) Landscape and models

Members of the UW project team from Portland State University recently documented a rapidly diversifying ecosystem of e-bike lending libraries(MacArthur 2025). The scan found 54 programs nationwide (39 active, 7 temporarily closed, 8 proposed/funded) as of December 2024. Programs group into three principal models, deployed at scales ranging from single-site pilots to multi-community efforts led by nonprofits and public agencies.

- Community resource libraries — free or low-cost access to shared e-bikes, often targeting underserved communities.
- Ride-to-purchase programs — short-term loans and demos aimed at helping participants choose and purchase an e-bike, often paired with rebates or financing.
- Long-term access/lease — subsidized leases or ride-to-own programs that enable daily integration of e-biking over months.

2) Goals and early effects

While missions vary, six goals recur across programs: sustainability, equity, ownership, utility, recreation, and economic vitality. Case studies and surveys show lending libraries can shift travel behavior, increase eventual e-bike purchases, and raise awareness—particularly when the loan period is long enough to substitute for day-to-day car trips.

3) Administration and funding

Most libraries are administered by nonprofits and local governments, frequently in partnership with bike shops, local public agencies, universities, or employers. Funding comes from state and local grants, utility programs, and private donations; federal CMAQ/TAP funds and climate programs also support efforts when aligned with active-transportation goals. Administration models vary widely, but collaboration with bike shops and community groups is a recurring success factor.

4) Program elements: Practices that work

Best practices for e-bike lending libraries have programmatic, administrative, and operational elements:

Programmatic

- Define clear objectives and target populations up front (e.g., equity vs. ownership focus).
- Use community-centered design: site libraries in accessible places or use mobile pop-ups; co-design with trusted groups; pair with rebates where ownership is a goal.
- Curate the fleet to match needs (e.g., step-through frames; cargo and adaptive models; accessories like child seats and panniers).

Administrative

- Keep user costs low: many libraries are free; some use refundable deposits or sliding-scale fees; minimize card requirements that exclude unbanked users.
- Treat insurance as a make-or-break element: many programs struggle to obtain affordable, adequate coverage; solutions include piggy-backing on municipal insurance or institutional policies. Securing insurance may be a major barrier and should be addressed early in program planning.
- Use robust user agreements and liability waivers; require safety training and ID verification; establish clear policies for charging and storage.

Operational

- Right-size reservations and check-in/out to balance access and administrative load; online systems help but can create access barriers if slots fill instantly.
- Prioritize safety and security: instruction before release; GPS tracking/locks; structured charging protocols; and theft-prevention procedures.
- Standardize reliable hardware where possible.

5) Common challenges

Many e-bike lending libraries have struggled with:

- Start-up and operating costs (staff, storage/charging, maintenance, education).
- Insurance availability/affordability, especially for standalone nonprofits and multi-site fleets.
- Theft and damage risks; ensuring safe charging (no overnight or outdoor charging) and battery management.
- Maintaining fleets with several brands and models that have different parts, chargers, and operational requirements.

Washington state electric-bike lending library & ownership grant program (2025–2027)

Program overview

Washington has launched a statewide grant program to seed or expand e-bike lending libraries and ownership programs(E-Bike Lending Library and Ownership Grant Program | WSDOT n.d.) with funding from the Climate Commitment Act. The program is designed to both advance commute-trip reduction (for employer programs) and expand access in low-income and overburdened communities (for community programs), while allowing for data collection and program evaluation through a University of Washington partnership.

The legislation established what type of organizations were eligible to operate lending library programs, the funding, service pathways, and the potential for e-bike ownership as an outcome. WSDOT determined the model, allowable costs, core program rules, timeline, and required reporting in designing the program.

Legislative directives

- Eligible applicants: Washington government entities, nonprofits, and tribes.

- Two service pathways: (1) Employer E-Bike Lending Library (employees, for CTR purposes); (2) Community E-Bike Lending Library (low-income and/or overburdened communities).
- Biennium funding available: approximately $3 million (2025–2027); reimbursement-based; all spending must be completed by June 30, 2027.

WSDOT program design

Models

- Community resource, try-before-you-buy, and long-term access/ownership.

Allowable costs

- Eligible operational costs: staffing and administration, third-party services (maintenance, education, scheduling), community consultation, data collection, outreach and translation/ADA compliance, storage and charging installation at the library site.
- Eligible direct costs: Class 1 and 2 e-bikes and e-trikes (including cargo and adaptive equipment), parts and accessories, GPS/security devices, communications/software for tracking and reporting.
- Eligible infrastructure: electrical upgrades for charging; on-site storage/charging facilities.
- Ineligible: used e-bikes; electric mountain bikes, Class 3 e-bikes; >750W motors; 4-wheel devices; kits/modified bikes; scooters; electric automobiles; installations outside the library location.

Core program rules

- Loans/ownership must be free to participants (reasonable refundable deposits allowed).
- Equipment must be UL/NRTL-certified; charge only with manufacturer cables; do not charge overnight or in the rain.
- Helmet use is required; participants must be 16+ and Washington residents.
- Grantees must carry appropriate insurance and indemnify the state; property insurance is required.
- Grantees must collaborate with the University of Washington to provide trip/ride data and/or survey data for program evaluation.
- Marketing must credit WSDOT, and use provided branding to acknowledge Climate Commitment Act funding.

Timeline (2025–2027)

- Application opens: August 15, 2025
- Q&A sessions: August 21 and 28, 2025
- Application closes: October 3, 2025 (6:00 PM)
- Evaluation period: October 3–30, 2025; awards: end of 2025; projects close: June 30, 2027

Selection & reporting

- Competitive review with internal and external subject-matter experts; WSDOT may fund portions of proposals to maximize statewide reach.

- Scoring (100 pts): Community benefit (20); Implementation readiness (25); Team experience (15); Community coordination/consultation (15); Inclusive design (10); Safety (15).
- Quarterly progress reports required; final report at grant end; data sharing with UW required.

WSDOT's guidance to grant applicants encourages best-practice design aligned with national findings. Applicants should center community needs, tailor fleets (including step-through, cargo, adaptive), plan inclusive outreach and training, embed translation and access for unbanked/low-tech users, and implement theft-prevention and safe-charging protocols. Applicants should provide a realistic timeline and budget and identify risks and mitigations.

Next steps and evaluation

WSDOT will make awards and contracts with the awardees at the end of 2025 and beginning of 2026. Once the lending library programs are up and running, the University of Washington will collect data from the program operators and users of the lending libraries to evaluate the effects of the programs on access, mobility, and e-bike adoption.

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APPENDIX

Demographic comparison of full study participants, rebate applicants, and state population

Table A1 shows that full study participants closely resemble the broader pool of rebate applicants in age, gender, race, and vehicle ownership, indicating that selection into the study was not systematically biased. However, both the study sample and the applicant pool differ from the state population: they have lower household incomes, fewer vehicles, and are more likely to live in urban counties. These differences reflect the study's focus on individuals who applied for an e-bike rebate and completed multiple stages of the application process. Because of this, the findings may not generalize to the broader population.

Table A1. Summary statistics for study sample, program applicants, and state population

Question statement[4]	Categories	Full study participants	All rebate applicants	Washington state population
How old are you?	Age	Median: 40	Median: 40	Median: 39
What is your gender?	Female	45%	40%	50%
	Male	51%	50%	50%
	Non-binary	3%	3%	Not provided as an option
	Other	0%	0%	Not provided as an option
	Prefer not to say or blank	1%	7%	Not provided as an option
What is your race?	White	63%	59%	65%
	Black or African American	6%	4%	4%
	American Indian or Alaska Native	2%	2%	1%
	Asian	9%	12%	10%
	Native Hawaiian or Other Pacific Islander	1%	1%	1%
	Another	5%	4%	6%
	2 or more races	9%	8%	13%
	Prefer Not to Say or Blank	4%	13%	Not provided as an option
What is the highest degree or level of	Less than bachelor's degree	49%	Not collected	59%

[4] Question wording reflects the phrasing used in the smartphone app demographic survey.

school you have completed?	Bachelor's degree or higher	51%		41%
Which of the following best describes your current employment status?	Employed	70%	Not Collected	61%
	Not employed	30%		39%
Which category best describes your household income before taxes from the last calendar year?	Under $50,000	44%	Not Collected	26%
	$50,000-$74,999	16%		14%
	$75,000-$99,999	10%		13%
	$100,000-$199,999	19%		30%
	≥ $200,000	6%		17%
	Prefer not to answer	4%		Not provided as an option
How many passenger vehicles are owned, leased, or available for regular use by the people who live in your household?	0	17%	Not Collected	4%
	1	37%		22%
	2	31%		39%
	3	10%		20%
	4+	4%		15%
County (Top 5, Based on Question 'What is your ZIP code?')	King County	37%	40%	30%
	Pierce County	13%	11%	11%
	Snohomish County	9%	10%	12%
	Spokane County	8%	7%	7%
	Clark County	5%	5%	7%
Total Count		1,257[5]	37,751	7,642,355

Data in this table are from: Washington Census Bureau Profile n.d.; Washington state Office of Financial Management 2025. Car ownership date taken from Washington state Transportation Commission 2014

[5] Sample sizes vary depending on the data used. This table includes all posttest invitees who recorded at least one trip using the tracking app.

Covariate comparison between treatment and control groups

Figures A1 and A2 present the distribution of responses across study groups and reports results from chi-squared tests assessing whether any differences are statistically significant.

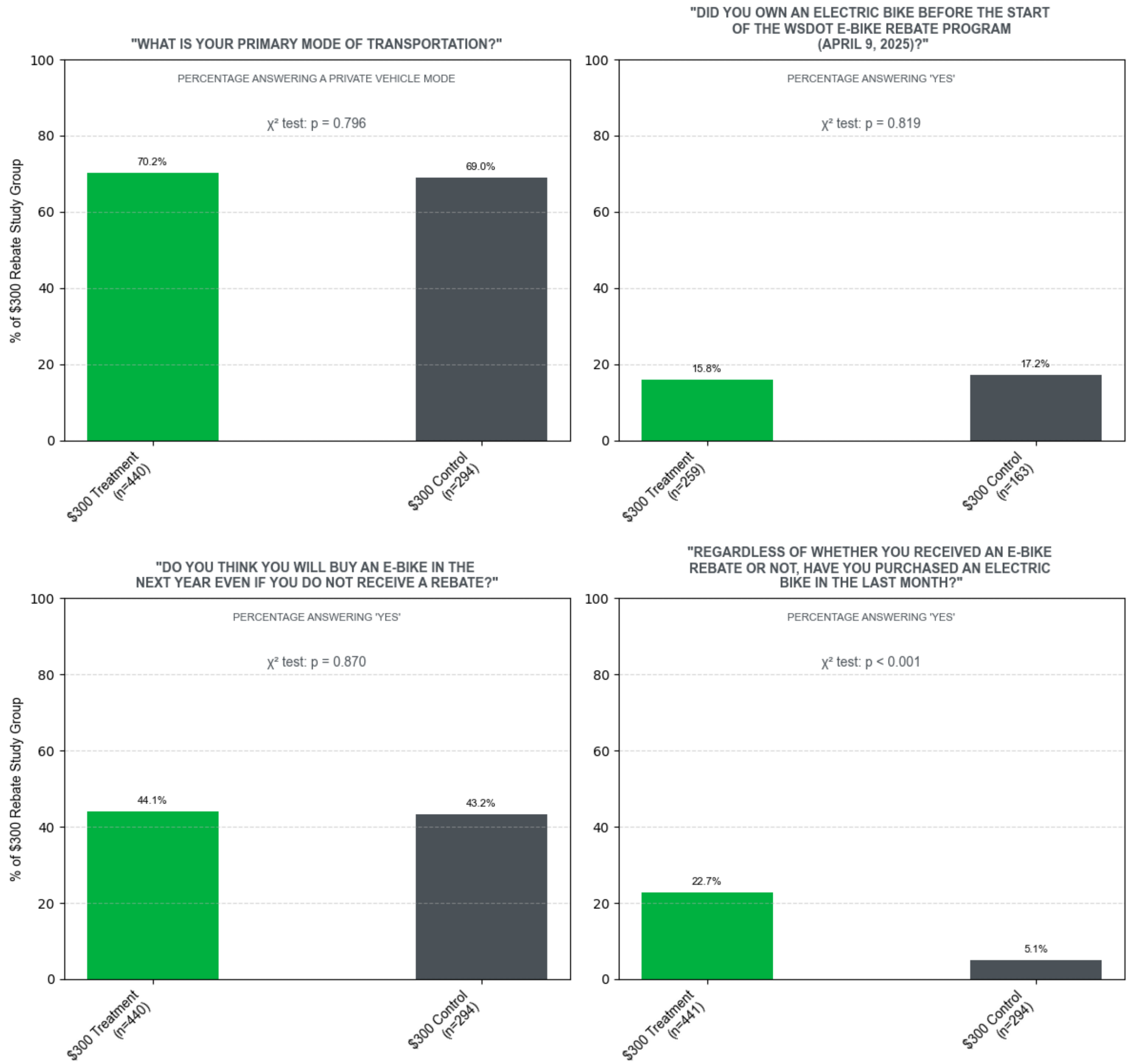

Figure A1. Distribution of survey responses by treatment status for $300 rebate group

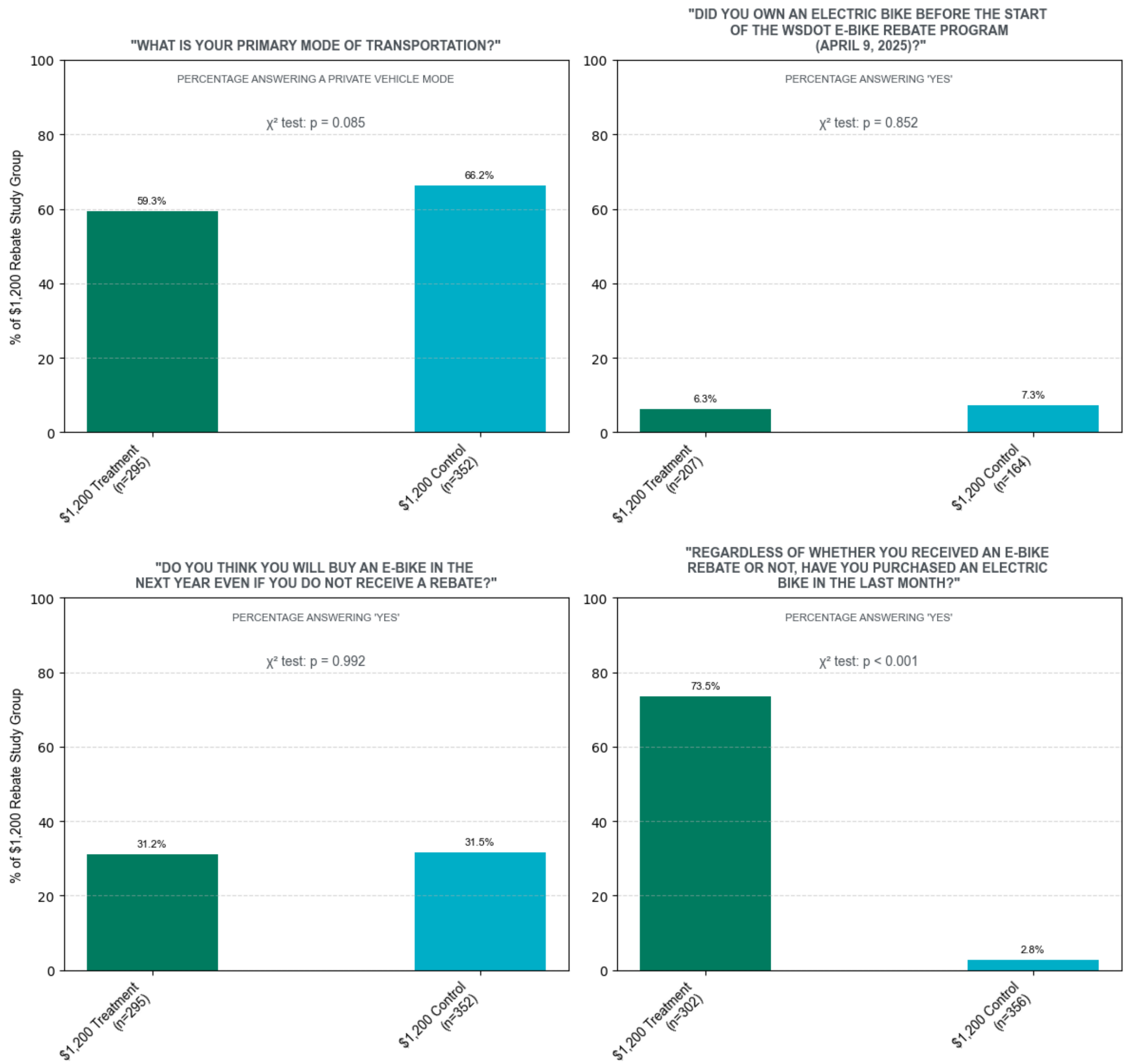

Figure A2. Distribution of survey responses by treatment status for $1,200 rebate group

As expected, most survey responses do not differ significantly between treatment and control groups at the $\alpha = 0.05$ level, indicating that randomization successfully balanced observable characteristics relating to e-bikes and prior transportation behavior. The exception is e-bike purchasing behavior, where significantly more individuals in the treatment group reported having purchased an e-bike.

Table A2. Survey questions and descriptive statistics asked of UW study participants

Rebate group			$300		$1,200	
Question	**Time of survey**	**Response**	**T**	**C**	**T**	**C**
Did you own an electric bike **before** the start of the WSDOT e-bike rebate program (April 9, 2025)?	Appx. monthly	'Yes'	16%	16%	6%	8%
Regardless of whether you received an e-bike rebate or not, have you purchased an electric bike **since the start** of the rebate program (April 9, 2025)?	Appx. monthly	'Yes'	31%	10%	80%	6%
How important was each of the following in your decision to apply for an e-bike rebate? Answering 'Extremely important' or 'Very important'	Appx. 5 months after program start	Greater convenience of e-bike compared to alternatives, for at least some trips.	61%	62%	60%	64%
		Saving money compared to the use of other transport modes	49%	61%	55%	59%
		Being able to cover longer distances compared to a normal bicycle	58%	65%	69%	73%
		Less effort compared to riding a normal bicycle	54%	54%	63%	56%
		More fun way to get to my destination	53%	45%	60%	55%
		To gain mental health benefits from regular exercise	53%	57%	69%	70%
		To increase physical activity and improve fitness	59%	59%	69%	73%
		Environmental advantages when replacing trips by car	55%	65%	49%	57%
		To meet the needs or preference of my family members	30%	33%	30%	38%
Why did you not purchase an e-bike?	Appx. 5 months after program start	Too expensive even with the rebate	40%		6%	
		I could not find a suitable e-bike model (size, features, quality)	8%		3%	

		Difficulty finding an e-bike near me	9%		2%	
		Concerns about e-bike maintenance or reliability	1%		1%	
		Lack of safe or convenient places to ride	2%		0%	
		Lack of secure parking or storage for an e-bike	4%		1%	
		I decided I did not need or want an e-bike after all	3%		0%	
		Personal circumstances changed (job, health, finances)	8%		1%	
		I missed the rebate deadline or was unable to complete the purchase in time	12% 1		4%	
Since April 2025, which of the following best describes your household's car ownership? We reduced the number of cars that we own or lease We replaced one or more of our cars We increased the number of cars that we own or lease We neither bought nor sold a car	Appx. 5 months after program start	'We reduced the number of cars that we own or lease'	5%	6%	10%	7%
Do you plan to change the number of cars in your household in the next 6 months?	Appx. 5 months after program start	'Yes, I plan to reduce the number of cars'	5%	10%	11%	10%

Estimating the effect of e-bike rebate offers on VMT

Data exploration

We first visualize average daily VMT across rebate groups.

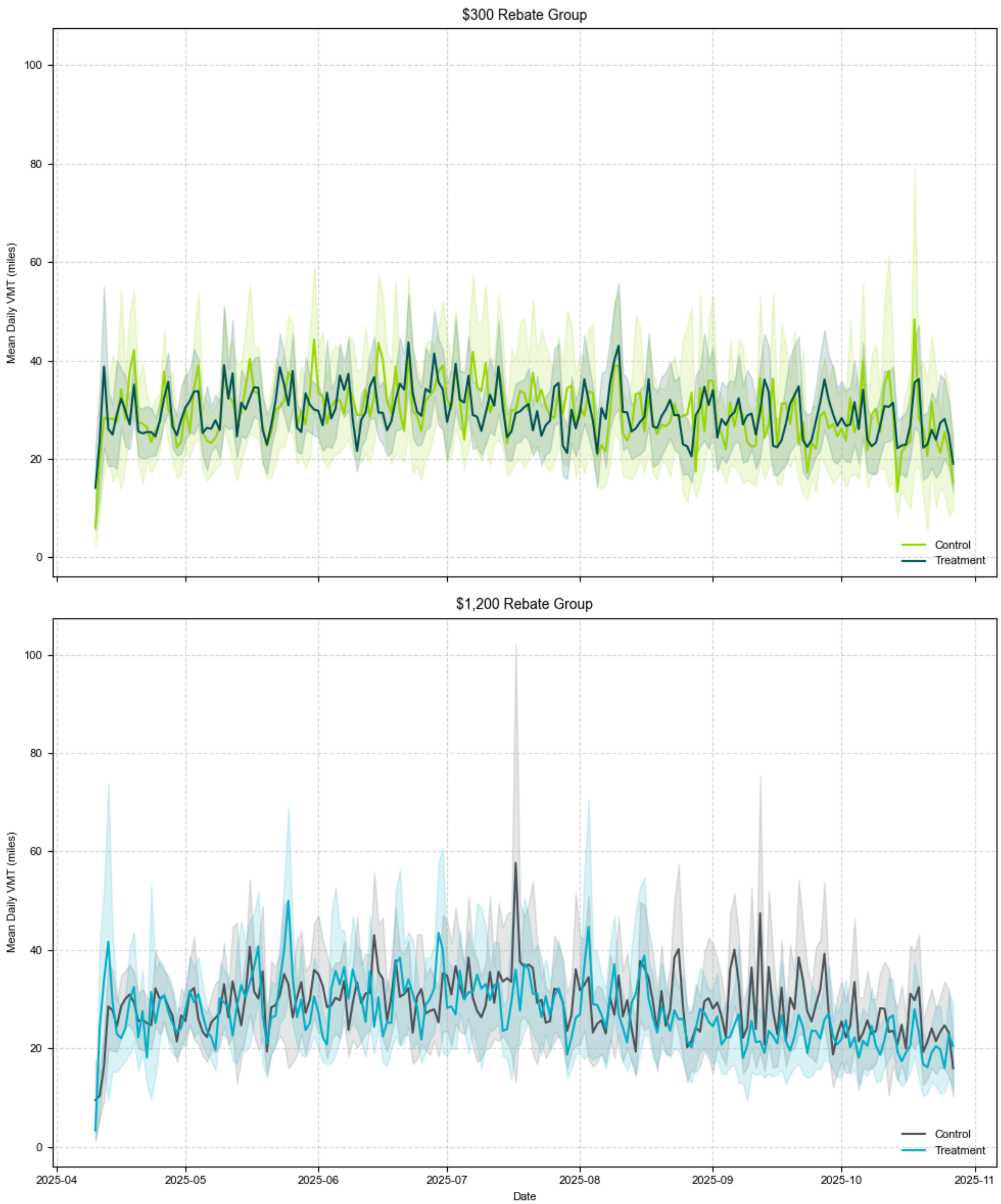

Figure A3. Daily average VMT with 95% confidence intervals

For the $300 group, treatment and control averages, largely overlap. For the $1,200 group, the treatment and control show a slightly larger gap after August, but confidence intervals still overlap. Average daily VMT for both groups is mostly between 20–40 miles.

For both groups, the distributions of daily VMT show several outliers, with no clear differences across groups.

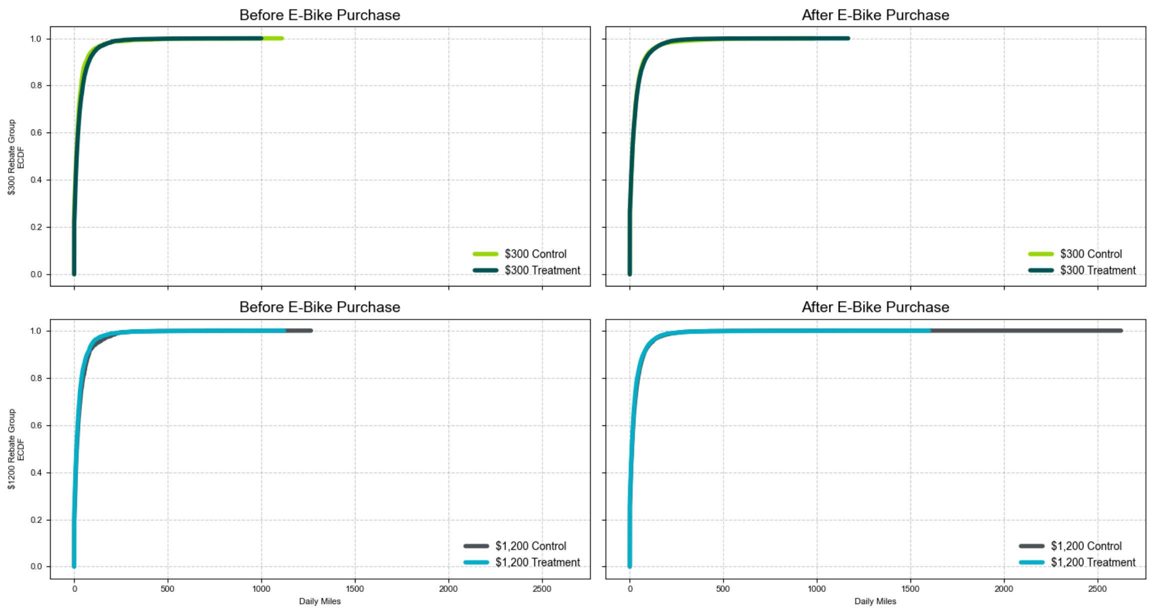

Figure A4. Distribution of daily VMT before and after e-bike purchase, by treatment and control groups

To reduce the influence of these outliers, we apply a log transformation to VMT on days with non-zero travel, allowing clearer visualization of group differences. On these non-zero VMT days, the $300 treatment group has slightly higher VMT than the control before e-bike purchase, with the gap narrowing afterward. This appears to be driven primarily by a VMT reduction in the control group. The $1,200 treatment group has slightly lower daily VMT than the control group before purchase and has a slight increase in VMT in the post-purchase period.

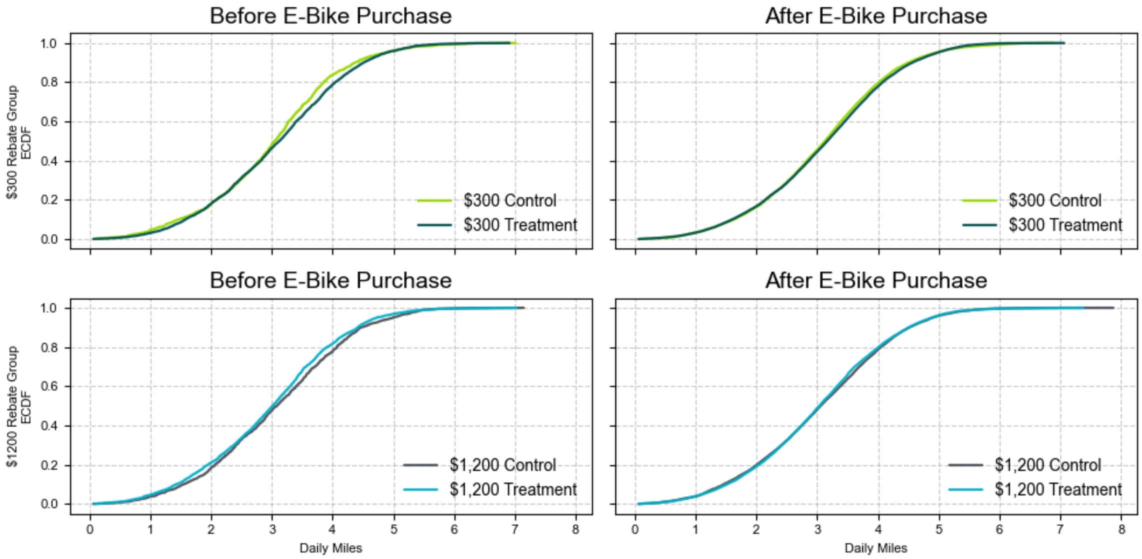

Figure A5. Log-transformed distribution of daily VMT before and after e-bike purchase, by treatment and control groups (days with VMT > 0)

Analysis method

We estimate the effect of being offered an e-bike rebate on daily VMT using a TWFE model. $Treatment_{it}$ indicate whether the treatment was applied to individual i on calendar day t (redemption date). We exclude the redemption day itself to avoid partial exposure. The model is as follows:

$$VMT_{it} = \alpha_i + \lambda_t + \beta \times Treatment_{it} + \varepsilon_{it} \quad \text{(Equation 1)}$$

w

here the dependent variable, VMT_{it}, is the vehicle-miles traveled for individual $i \in N$ on calendar day $t \in T$ and ε_{it} is the error term that captures the omitted variables. To control for unobserved heterogeneity, we include α_i to account for individual fixed effects and λ_t to account for calendar-day fixed effects, which capture changes due to seasonality or holidays that could affect travel across the full study sample. The coefficient β is the effect of the offer on daily VMT among participants.

Results

Table A3 presents the TWFE results. Days without trips are treated as missing, while days with only non-car trips are coded as zero VMT. Trips occurring on the intervention day (rebate notification) are excluded. Individuals with fewer than seven days of pre-treatment data are dropped. We estimate the model using both the rebate notification date and the redemption date to account for potential anticipatory effects. To address the influence of extreme outliers, we also estimate a log-transformed model restricted to days with positive VMT.

Table A3. Estimated effects and standard errors of e-bike rebate offers on daily VMT using the TWFE model

Model outcome	Daily VMT		Log (daily VMT)		Daily VMT		Log (daily VMT)	
Data	All data		Days with VMT > 0		All data		Days with VMT > 0	
Post-treatment definition	Individual rebate purchase date (or 04/23 for non-purchasers)		Individual rebate purchase date		Individual rebate notification date		Individual rebate notification date	
Rebate group	$300	$1200	$300	$1200	$300	$1200	$300	$1200
Intercept (Std. error)	31.126*** (0.730)	28.476*** (0.637)	3.090*** (0.020)	2.955*** (0.016)	30.292*** (0.854)	30.606*** (0.924)	3.036*** (0.023)	3.025*** (0.023)
Rebate offer (Std. error)	-0.930 (1.164)	0.073 (1.173)	-0.016 (0.032)	0.042 (0.030)	0.921 (1.350)	-3.156 (2.154)	0.022 (0.037)	-0.055 (0.053)
R^2	0.0006	1.1e-07	0.00001	0.00009	0.00001	0.00009	0.00001	0.00007
Treatment group size	233	191	189	108	242	95	200	75
Control group size	110	141	81	162	107	142	79	106

*: 2-tail significance at α=0.10. **: 2-tail significance at α=0.05. ***: 2-tail significance at α=0.01.

Table A3 shows that across all models, the estimated effect of being offered an e-bike rebate is not statistically significant at conventional levels ($\alpha = 0.05$). These results suggest that, within approximately six months of the rebate offer, there is no detectable causal effect of the rebate on reducing total daily VMT.

Discussion

This study is among the first of its kind, making direct comparisons with prior research challenging. Although numerous studies have examined the relationship between e-bike adoption and vehicle travel, they differ substantially in research design, intervention type, and data collection methods. Many prior studies are observational, which means they are prone to selection bias and have limited ability to control for external factors that may bias conclusions (Rubin 2008). In observational studies, differences in travel behaviors between e-bike adopters and non-adopters may be due to underlying differences in travel needs and preferences, rather than being a consequence of e-bike adoption *per se*. While causal inferences can sometimes be drawn from observational data, experimental research, which involves randomizing the levels of one or more variables, is a stronger and more reliable method for understanding causality (Campbell and Stanley 1996). When random assignment is not feasible, researchers often use quasi-experimental designs. These approaches can still establish causality but are weaker due to their lack of randomization. To date, there are just six experimental or quasi-experimental studies that evaluate the impact of e-bike incentives on vehicle travel. Table A4 summarizes the six experimental or quasi-experimental studies that evaluate the impact of e-bike adoption on vehicle use.

Table A4. Experimental and quasi-experimental studies assessing the impact of e-bike adoption on total vehicle use

Citation	Study location	Intervention type	GPS data used?	Randomization of treatment?	Sample size > 100 in the intervention group?	Change in VMT or VKT
Söderberg 2021	Sweden	Loan program	✓	✓		Car use decreased by 14 km/person/day
Sundfør 2024	Norway	Incentive program		✓	✓	Vehicle mode share by Vehicle Kilometers Traveled (VKT) decreased by 10.1%
Sundfør 2022	Norway	Incentive program	✓		✓	No significant change
Sun 2020	Netherlands	Natural acquisition			✓	Vehicle mode share by VKT decreased by 9.6%
Cairns 2017	United Kingdom	Loan program				Car mileage decreased by 20%
Bigazzi 2025	Canada	Incentive program			✓	Car use decreased by 49 km/recipient/week

As shown in Table A4, most studies rely on self-reported travel data, with only two studies using GPS-based data collection. Self-reported travel data are subject to recall and social desirability biases, which can reduce the accuracy . Consistent with these concerns, our study found discrepancies between reported and observed data. When asked directly, 67% of e-bike purchasers reported using their e-bike for trips they had previously made by car, and 64% indicated that they drive “much less often” or “somewhat less often” since purchasing their e-bike. Nevertheless, the GPS-logged travel data from the same set of respondents indicates no significant change in overall VMT, compared with the control group.

As discussed above, randomization is also critical for evaluating e-bike programs because individuals who choose to purchase e-bikes may differ in unobserved ways, such as environmental attitudes or access to cycling infrastructure. By randomly assigning rebate offers in our study, the unobserved characteristics are expected to be balanced between treatment and control groups, enabling a more rigorous assessment of the program’s causal impact on vehicle use compared to prior studies that did not employ true randomization.

It is also important to recognize contextual differences. Most of these studies were conducted in Europe with transportation systems that differ substantially from those found in the US. Findings from countries such as the Netherlands, where there is a large bicycling culture, may not be generalizable to the US setting (De Haas 2022; Wen 2021). In the US, where baseline cycling rates are low and automobile dependence is high, the impact of e-bike adoption may differ substantially from those observed in high-cycling European contexts. Yet, to date, only one study with a quasi-experimental design has examined this effect in North America (Bigazzi 2025). Their study reports a decrease in car use following an incentive program, but it relies on self-reported travel diaries (which may be subject to recall and social desirability bias) and does not employ randomization of the treatment (making it vulnerable to selection bias).

Finally, while some studies report reductions in car use, a 2025 meta-analysis of true experimental studies found no significant overall decrease in vehicle travel (Chevance 2025). Taken together, the literature and our findings suggest that e-bike programs can increase mobility, expand trip options, and support health and access benefits, but may not necessarily lead to reductions in total vehicle miles traveled and associated carbon and non-carbon pollutants.

Table A5. Induced e-bike purchase calculations

	Income-qualified group $1,200 rebate	Non-income qualified group $300 rebate
Number of vouchers redeemed	1,880	1,087
Share of treatment group purchasing an e-bike	79.4%	31.3%
Share of control group purchasing an e-bike (April 2025 – October 2025)	6.2%	9.5%
Share of induced purchases	92%	70%
Number of induced purchases	1,733	757

The share of induced purchases are calculated as:

$$Share\ of\ Induced\ Purchases = \frac{Treatment\ Purchase\ Rate - Control\ Purchase\ Rate}{Treatment\ Purchase\ Rate}$$

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