# INTEGRATING AND INCENTIVIZING SUSTAINABLE MOBILITY: EVIDENCE FROM MAAS ADOPTION, E-BIKE USE AND EMISSION MODELLING IN THE UNITED STATES

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Doctor of Philosophy

Degree

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## DEDICATION

To my parents, whose sacrifices, and unconditional support laid the foundation for everything I have achieved.

To my wife – my constant source of strength, patience, and love – thank you for standing by me through every late night, every moment of doubt, and every small victory.

And to our two sons, whose laughter and presence kept me grounded even on the most difficult days – you guys been my greatest motivation.

This work is for you.

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## ABSTRACT

This dissertation investigates the behavioral, environmental, and policy aspects of sustainable mobility solutions, specifically MaaS [Mobility-as-a-Service] and e-bikes [electric bicycles], to inform equitable and cost-effective strategies for reducing transportation-related carbon dioxide ($CO_2$) emissions in the United States.

Chapter 2 examines the potential for MaaS subscription adoption among transit riders in Nashville, Tennessee, using a discrete choice experiment embedded in a stated-preference survey. Across all choice tasks, 65% of responses selected the opt-out option, indicating limited willingness to purchase MaaS bundles even when multiple options were presented. When selected, low-cost bundles were preferred, underscoring strong price sensitivity and weak demand for integrated multimodal access. Adoption was more likely among younger, lower-income riders and those using multi-ride passes, while higher-income individuals showed greater resistance to structured subscription models. These results highlight the need for MaaS designs that reflect the economic realities of transit-dependent users.

Chapter 3 analyzes mode substitution behavior among e-bike users, based on pooled data from the 2017 and 2023 national e-bike surveys. A multinomial logit model shows that e-bikes most commonly replace private vehicles and transit trips, especially for commuting and errands. Substitution patterns vary by income, trip purpose, and riding frequency, with middle-income and high-frequency users most likely to displace car travel. Over time, adoption has expanded beyond early adopters, indicating broader integration of e-bikes into daily travel behavior.

Chapter 4 evaluates the cost-effectiveness of flat e-bike purchase incentives in reducing $CO_2$ emissions. Simulations combining stated purchase probabilities and VMT substitution estimates reveal predictable emissions gains with increasing budget, with cost-effectiveness ranging from $600 to $830 per metric ton of lifetime $CO_2$ reduction. Middle-income respondents achieved the most significant displacement per dollar spent, and performance compares favorably with typical electric vehicle incentive programs.

Together, these chapters emphasize the importance of aligning decarbonization strategies with user behavior and economic context. While MaaS faces adoption challenges, e-bike incentives offer a more scalable and cost-efficient pathway for reducing transportation emissions. These findings support a pragmatic approach to mobility policy, grounded in behavioral evidence.

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# CHAPTER 1 INTRODUCTION

## 1.1 Background and Motivation

The rapid urbanization of U.S. cities has intensified transportation-related challenges, including increasing traffic congestion, elevated carbon emissions, and inequitable access to mobility. These issues disproportionately affect low-income populations and reinforce car dependency in urban environments. In response, planners and policymakers have increasingly turned to demand-side interventions aimed at reshaping travel behavior, reducing vehicle miles traveled (VMT), and supporting low-emission mobility alternatives.

Two such interventions, financial incentives for electric bicycle (e-bike) adoption and platform-based models like Mobility-as-a-Service (MaaS), have emerged as promising yet under-evaluated tools for advancing sustainable and equitable urban transport. While MaaS platforms aim to integrate shared and public mobility services into streamlined subscription models, e-bike incentives directly lower the barriers to adopting cleaner personal transportation for short-distance travel. Both approaches hold potential to displace private car use and reduce $CO_2$ emissions, though empirical evaluations, particularly in U.S. contexts, remain limited.

### *1.1.1 Evolution of Incentive Mechanisms in Transportation*

Transportation incentives in the United States have historically reinforced the dominance of automobiles. Mid-20th-century policies such as fuel tax exemptions, highway construction subsidies, and favorable land use zoning enabled sprawling suburban development and private vehicle dependence (Weiner, 1997). The symbolic association between car ownership and economic mobility further entrenched this auto-centric paradigm.

By the late 20th century, growing awareness of environmental degradation and urban livability concerns catalyzed investments in alternative modes, public transit, pedestrian infrastructure, and early cycling initiatives (Newman et al., 1998; Litman, 2004). However, compared to European cities like Amsterdam or Copenhagen, where multimodal systems were systematically integrated, U.S. efforts were fragmented and largely reactive (Pucher et al., 2008; Oldenziel et al., 2016).

In the 21st century, growing climate concerns and federal commitments to decarbonization have led to the emergence of a new generation of incentive programs focused on low-emission mobility. Federal tax credits for electric vehicles (EVs), state-level rebates, and pilot subsidies for e-bikes represent a notable policy shift (Gallagher et al., 2011; MacArthur et al., 2017; Wang et al., 2021). These strategies aim not only to reduce tailpipe emissions but also to induce behavioral changes by displacing short car trips, especially in urban areas where alternatives can be viable (Cherry, 2007; MacArthur et al., 2014; Popovich et al., 2014).

More recently, platform-based tools such as MaaS have sought to enhance multimodal accessibility by bundling public transit, bikeshare, and carshare services into unified subscription offerings. Though MaaS has seen promising uptake in Europe and parts of Asia, U.S. implementation has lagged, hindered by institutional fragmentation, limited shared mobility coverage, and lack of interoperable payment systems (Smith et al., 2018).

Unlike many European cities, which align pricing tools (e.g., congestion charges, fuel taxes) with transit and cycling subsidies, U.S. mobility incentives remain relatively siloed from land-use and infrastructure policies (Santos et al., 2004; Rode, 2016). This disconnect has weakened their ability to shape long-term travel behavior.

### *1.1.2 Contemporary Transportation Incentive Programs in the U.S.*

Across federal, state, and local levels, U.S. transportation incentives have expanded significantly in recent years, reflecting a growing emphasis on climate resilience, public health, and mobility equity (Buehler et al., 2021; IEA, 2021; McQueen et al., 2021; Wahba, 2024). The federal EV tax credit, up to $7,500 per vehicle, remains the most visible and widely adopted policy. Paired with state-level measures, such as California's ZEV mandate, these programs have driven a modest but growing shift toward electrified vehicle fleets (DOE-EPA, 2021).

At the municipal level, cities such as New York, Seattle, Portland, and Denver have implemented incentive structures that target shared and active transportation. These include congestion pricing plans, variable parking fees, and e-bike purchase rebates ranging from $400 to $1,700. Evaluations from programs in cities like Denver and Burlington indicate that such incentives are

capable of replacing 30–60% of short car trips with e-bike travel, leading to measurable emissions reductions at a relatively low cost (McQueen et al., 2021; Haggerty, 2024).

Programs like Portland's bike subsidy pilot and San Francisco's Muni Lifeline pass illustrate how targeted financial support can promote both environmental and equity outcomes. **Table** 1-1 provides a detailed cross-section of U.S. incentive programs, highlighting their scope, eligible modes, delivery mechanisms, and intended goals.

Despite growing diversity, these programs remain uneven in design and geographic coverage. Moreover, limited empirical evaluation constrains our understanding of their actual effectiveness, particularly regarding behavioral durability, equity outcomes, and the impact on emissions.

### *1.1.3 Research gaps in MaaS adoption, E-Bike Behavior, and Incentive Evaluation*

Despite increasing policy interest, significant gaps remain in our understanding of how MaaS platforms and e-bike incentives affect travel behavior and sustainability outcomes, particularly in car-centric U.S. cities. Three interrelated issues constrain existing evaluations: limited adoption data, unclear substitution patterns, and insufficient assessment of the long-term impact of emissions or cost-effectiveness.

First, the empirical literature on MaaS adoption in the U.S. is sparse and largely speculative. While MaaS promises to integrate low-emission transport options, public transit, shared bikes, and ridesharing into a single, seamless user experience, few studies provide robust behavioral evidence from U.S. users. Much of the foundational work originates in European contexts with denser transit networks and stronger institutional integration (Sochor et al., 2015; Jittrapirom et al., 2017; Smith et al., 2018). In contrast, U.S.-based evaluations Logan et al. (2022) show low uptake, especially in low-density, automobile-dominant cities where transit systems are underdeveloped and shared mobility is fragmented. Furthermore, most analyses focus on willingness to pay or hypothetical preferences rather than downstream impacts such as VMT reduction or mode shift, leaving open the question of whether MaaS models are adaptable, or even appropriate, for sprawling U.S. metropolitan areas.

Table 1-1. Details of different incentive programs in the United States

| S. N | Program Name | Description (What it does) | Aim | Incentive (Financial/Material) | Eligible Modes | Eligibility | Location |
|---|---|---|---|---|---|---|---|
| 1 | Public Transportation Incentive Program | Encourages employee use of mass transit to reduce pollution | Reduce pollution, traffic | $315 per month | Bus, Train, Subway, Vanpool, Ferry | Commuters using public transit | Nationwide |
| 2 | Commuter Tax Benefits | Offers tax-free transportation benefits for public transit users | Tax savings for employees and employers | $300/month tax-free | Public Transit, Vanpool, Parking | Employees commuting via public transit or vanpool | Nationwide |
| 3 | California Clean Vehicle Rebate (CVRP) | Rebates for new electric vehicle purchases, including e-bikes | Promote sustainable commuting | $1,000 for e-bike purchase | Electric Vehicles, E-bikes | Low-income residents earning up to 300% of the federal poverty | California |
| 4 | Bike-to-Work Day and Program | Incentives for biking to work through an annual event | Encourage cycling for health and traffic | Free breakfast, bike tune-ups | Bicycle | All Denver residents and commuters | Denver, CO |

Table 1.1. Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | GoMass Commute Tax Credit | Tax credits for employee commuter benefits | Promote public transit, cycling | $50/month tax credit | Public Transit, Vanpool, Biking | Employers offered commuter benefits | Massachusetts |
| 6 | Capital Bikeshare Corporate Membership | Employers subsidize bike-share memberships for | Make biking to work accessible | Subsidized membership fees | Bikeshare | Employers offered commuter benefits | Washington D.C., Virginia |
| 7 | Muni Lifeline Program | Reduced-fare transit passes for low-income residents | Make transit affordable for low-income | 50% discount on transit passes | Public Transit (Muni) | Residents earning up to 200% of the FPL | San Francisco |
| 8 | Bike and Scooter Shar Program Subsidies | Discounts for low-income residents on bike and scooter share | Promote active transportation | Free or discounted bike/scooter | Bike, Scooter | Low-income residents (SNAP, Medicaid) | Austin, TX |
| 9 | Transportation Alternatives Program (TAP) | Federal funding for biking and walking infrastructure | Enhance transportation alternatives | Varies by project scope | Biking, Walking | Government, transportation authorities | Nationwide |

Table 1.1. Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | Guaranteed Ride Home Program | Free emergency rides for public transit or carpool commuters | Emergency support for commuters | Free rides (up to 6/year) | Public Transit, Carpool, Walking | Employees in participating counties | San Francisco (Bay Area) |
| 11 | Electric Bike Rebates | Rebates for low-income individuals purchasing e-bikes | Reduce emissions through e-bike use | $200 rebate | E-bikes | Residents earning ≤ 80% of the state median income | Vermont |
| 12 | NYC Citi Bike Reduced Fare Program | Reduced bike-share rates for low-income residents | Make bike-share affordable | $5/month membership | Bike Share | NYC residents in public assistance programs | New York City |
| 13 | Vanpool Subsidy Program | Subsidies for vanpool groups to reduce solo driving | Reduce congestion, promote ride-sharing | $600/month subsidy | Vanpool | Groups of 5–15 commuters in a sponsored vanpool | Houston, TX |
| 14 | Regional Transportation District EcoPass | Unlimited public transit passes for employees in participating businesses | Promote transit commuting | Discounted pass, employer-shared cost | Public Transit | Businesses enrolled in the EcoPass program | Denver, CO |

Table 1.1. Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 15 | Transportation Demand Management Program | Encourages employer incentives for transit, biking, and carpooling | Reduce single-occupancy vehicle trips | Varies (subsidies for transit, biking) | Transit, Vanpool, Biking | Employers offering sustainable commuting options | Seattle, WA |
| 16 | GoTriangle Bike & Bus Program | Offers bike racks on buses and trip-planning tools | Integrate biking and transit | Free bike racks, trip tools | Transit, Biking | Open to all residents | Raleigh-Durham |
| 17 | Healthy Transportation Compact | State-led funding for active transportation infrastructure | Promote walking and cycling infrastructure | Funding varies by project | Walking, Biking | Cities, municipalities | Massachusetts |
| 18 | Parking Cash-Out Program | Employers offer cash in place of parking benefits for non-drivers | Incentivize alternate modes of transport | $50–$300/month (cash equivalent) | Public Transit, Walking, Biking | Employers with 50+ employees | California |
| 19 | Get Healthy Philly Program | Grants for infrastructure promoting walking and biking | Reduce chronic diseases, promote activity | Varies by project | Bike Share, Walking | City agencies, non-profits, local organizations | Philadelphia |

Table 1.1. Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 20 | LA Metro Employer Pass Program | Subsidized or free transit passes for employees | Reduce commuting costs | Discounted transit passes | Public Transit | Employers in the Los Angeles area | Los Angeles, CA |
| 21 | Healthy Streets LA | Convert road space into protected bike lanes and transit lanes | Reduce emissions, promote walking/biking | Funded by city infrastructure | Infrastructure (Bike lanes, Transit) | - | Los Angeles, CA |
| 22 | Regional Commute Trip Reduction Program | Employer programs encouraging transit, biking, and carpooling | Reduce solo driving, improve air quality | Varies by employer | Transit, Biking, Carpooling | Employers with 100+ employees | Washington State |
| 23 | Colorado Bike and Pedestrian Grants | Grants for bike and pedestrian infrastructure development | Promote biking and walking statewide | $10,000–$500,000 (project-based) | Bike, Multimodal Transportation | Cities, counties, and school districts | Colorado |
| 24 | MARTA Employer Discount Program | Discounts for transit passes provided by employers | Reduce traffic, promote public transit | Discounted transit passes | Public Transit | Employers in the Atlanta metro area | Atlanta, GA |

Table 1.1. Continued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 25 | King County Metro (ORCA) Business Passport | Unlimited public transit access for employees via ORCA pass | Promote convenient, affordable public transit | Discounted transit passes | Public Transit (Buses, Trains, Ferries) | Employers in King County | Seattle, WA |
| 26 | Charlotte Bike Share Program | Affordable bike-share program for short urban trips | Provide a sustainable transportation option | $8/month membership, hourly rates | Bike Share | Open to all residents | Charlotte, NC |

Second, while e-bike adoption has grown substantially in recent years, studies examining what modes are displaced by e-bike use are limited in both quantity and quality. Early work suggests that e-bikes are often used for short commutes and errands (Popovich et al., 2014; Ling et al., 2017; MacArthur et al., 2018). These studies usually fail to differentiate between user segments, trip purposes, or income levels. Most notably, they do not assess how substitution behavior evolves as the e-bike market moves from early adopters to broader demographics. This evolution is significant in the U.S., where new users may have very different travel patterns, vehicle access, and motivations than earlier adopters. There is a need to understand not only which modes e-bikes replace, but also under what conditions these substitutions occur, and how consistent such behavior is across purposes and socioeconomic contexts.

Third, the emissions benefits of e-bikes and MaaS programs are often assumed rather than quantified. While some lifecycle assessments suggest e-bikes are among the most energy-efficient transport modes (Fishman et al., 2016), real-world environmental benefits depend on how frequently and in what contexts they replace car trips. U.S. incentive programs for e-bikes, such as those in Denver, Vermont, and California, have begun to measure adoption and usage patterns (McQueen et al., 2021; Wahba, 2024). Still, few provide rigorous evaluations of emissions avoided per dollar invested. Compared to EV incentives, which often exceed $1,000 per metric ton of $CO_2$ abated (Sallee et al., 2016), e-bike programs may offer a more cost-effective path for short-distance decarbonization, but this remains underexplored and highly context-dependent (Bigazzi et al., 2025).

Finally, few studies integrate behavioral modeling with emissions simulation to quantify the cost-effectiveness of micromobility incentives under different budget scenarios or demographic targeting strategies. This methodological integration is necessary to inform program design, especially as cities face fiscal constraints and are under pressure to demonstrate measurable climate impacts from public investments.

This dissertation addresses these gaps through three interconnected empirical chapters. The first study investigates the determinants of MaaS adoption in a car-oriented city, utilizing Stated

Preference (SP) data and discrete choice modeling. The second analyzes pooled e-bike user surveys from 2017 and 2023 to assess mode substitution patterns across trip purposes, demographics, and time. The third simulates carbon reductions under varying e-bike incentive scenarios, linking adoption probabilities with trip replacement and emissions modeling. Together, these studies provide evidence-based insights for designing more effective, equitable, and scalable sustainable mobility programs.

## 1.2 Research focus and chapter overview

This dissertation examines the behavioral and environmental impacts of e-bike incentives and MaaS adoption in car-oriented U.S. cities. Its unifying framework is built around three analytical pillars:

i. **Mode Substitution:** Understanding what travel modes are displaced by new low-emission options.
ii. **Distributional Equity:** Identifying who adopts and benefits from mobility incentives.
iii. **Emissions Effectiveness:** Estimating the potential of these interventions to reduce transportation-related $CO_2$.

The research is grounded in the framework of sustainable transportation planning, which emphasizes the intersection of environmental, social, and economic dimensions of mobility systems (Litman, 2004). Sustainability in transportation depends on simultaneously reducing emissions and environmental harm, promoting equitable access to mobility, and ensuring the cost-effective and efficient use of resources. This dissertation contributes to this framework through three empirical chapters, each aligned with one or more of these pillars: mode substitution, equity in access, and emissions effectiveness. **Figure** 1-1 illustrates how these three pillars manifest in practice through emerging transportation strategies, such as MaaS and e-bike financial incentives. It contextualizes the role of MaaS and financial incentives within the broader goals of reducing environmental harm, achieving equitable access, and enhancing economic efficiency.

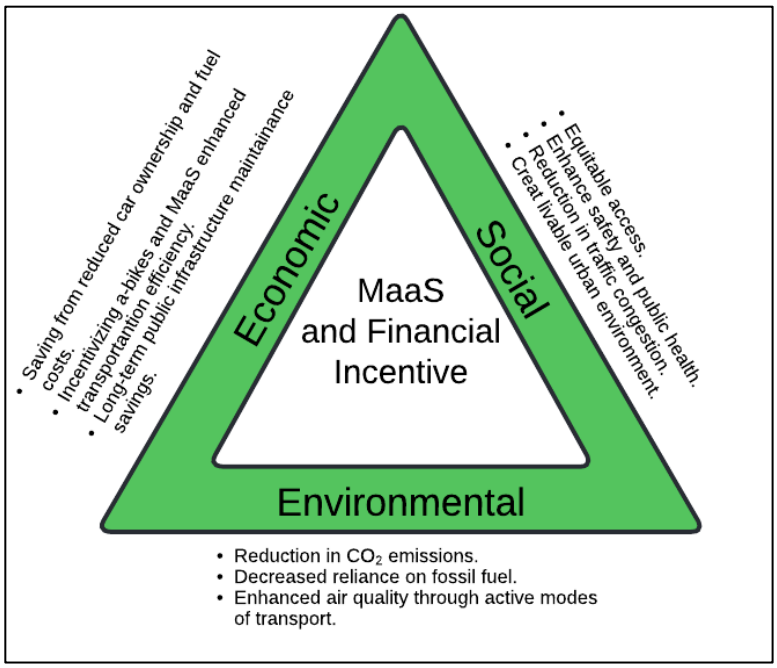


Figure 1-1. Sustainable transportation planning triangle (Adapted from Litman, 2006).

This chapter explores MaaS subscription preferences among transit users in Nashville, Tennessee, a low-density, auto-dominant context. Using SP data and a random parameter logit model, it evaluates how fare payment type, income, and employment status influence willingness to adopt MaaS bundles.

**Research Question 1:**

*What user characteristics are associated with the likelihood of adopting a MaaS subscription bundle in a car-centric U.S. city?*

### *1.2.1 Mode Substitution Patterns Among E-Bike Users*

This chapter examines what modes e-bike trips replace across different purposes (commuting, errands, recreation), using pooled survey data from 2017 and 2023. A multinomial logit model is used to assess substitution patterns by income, frequency of e-bike use, and year.

**Research Question 2:**

*What modes are displaced by e-bike trips in the U.S., and how do these patterns vary by trip purpose, user demographics, and over time?*

### *1.2.2 Cost-Effectiveness of E-Bike Purchase Incentives*

This chapter simulates emissions reduction from e-bike incentives under varying budget levels. Using SP and behavior data, it calculates $CO_2$ reduction per dollar spent, stratified by income and incentive size.

**Research Question 3:**

*How cost-effective are e-bike purchase incentives in reducing $CO_2$ emissions, and how does effectiveness vary across budget levels and user segments?*

## 1.3 Methodological Overview

This dissertation employs a multi-method research design, combining discrete choice modeling, cross-sectional behavioral analysis, and simulation-based policy evaluation. Each empirical chapter employs a distinct methodological framework aligned with its respective research question, enabling a nuanced and comprehensive assessment of how financial incentives and platform-based mobility services influence travel behavior and environmental outcomes in car-centric U.S. contexts.

### *1.3.1 MaaS Adoption Analysis*

The second chapter uses SP survey data collected from transit users in Nashville, Tennessee, to assess the likelihood of subscribing to MaaS bundles. A discrete choice experiment was embedded within the survey, allowing respondents to choose between different hypothetical subscription options or opt out. The data were analyzed using a random parameters logit model, which enabled the estimation of how individual-level characteristics, such as fare type, income, and employment status, influence preferences for MaaS subscription services. The model also accounts for unobserved heterogeneity in users' sensitivity to pricing and service features.

### *1.3.2 E-Bike Substitution Behavior*

The third chapter analyzes pooled cross-sectional data from e-bike user surveys conducted in 2017 and 2023. The focus is on identifying which travel modes users report replacing with their most recent e-bike trip, across various trip purposes. The data are structured in long format to support a pooled multinomial logit (MNL) model, which estimates the probability of substituting e-bike trips for other modes (e.g., private car, public transit, walking) as a function of

demographic, temporal, and behavioral variables, including survey year. This method enables the comparison of substitution patterns across user groups and over time, although it does not follow individuals longitudinally.

### *1.3.3 Cost-Effectiveness of E-Bike Incentives*

The fourth chapter combines SP data from a national survey with behavioral substitution data to simulate the potential for emissions reduction through e-bike purchase incentives. The simulation framework estimates per-person VMT displacement and calculates resulting $CO_2$ reductions under varying incentive levels and budget constraints. The analysis produces estimates of the cost per metric ton of $CO_2$ avoided, stratified by income group and incentive size, to assess program efficiency. The modeling approach incorporates both adoption probabilities and self-reported travel behavior to simulate real-world emissions outcomes.

Together, these methods provide a robust empirical foundation for evaluating the behavioral, environmental, and economic dimensions of transportation incentives.

## 1.4 Contributions

This dissertation contributes original empirical evidence and analytical tools to three key domains within the sustainable transportation literature:

- **Behavioral transportation research**: By identifying individual-level determinants of MaaS and e-bike adoption, the dissertation adds to a growing body of literature on the responsiveness of users to mobility innovations, particularly in car-dependent U.S. environments.
- **Environmental and policy analysis**: The emissions simulation framework developed in Chapter 4 offers one of the few quantitative estimates of carbon reductions attributable to e-bike incentive programs in the United States, providing a benchmark for cost-effectiveness relative to other climate mitigation strategies.
- **Equity and demographic analysis**: Across all empirical chapters, special attention is given to the differential impacts of incentives across income levels, fare types, and user groups, offering insights into how mobility policies can be designed to enhance transportation equity rather than exacerbate existing disparities.

## 1.5 Structure of the Dissertation

This dissertation is organized into four chapters, each addressing a key dimension of sustainable urban mobility through the lens of e-bike adoption, incentive policy, and MaaS. The chapters are designed to build upon one another conceptually and methodologically, while each stands as an independent analysis contributing to the broader research agenda.

- **Chapter 1** introduces the motivation, background, and conceptual framework guiding the dissertation. It outlines the policy relevance of e-bikes and MaaS interventions, formulates the main research questions, and presents the methodological approaches used across chapters.
- **Chapter 2** investigates the adoption potential of MaaS in a car-centric U.S. city. Using a SP experiment conducted among transit users in Nashville, the chapter applies a random parameters logit model to identify behavioral and demographic factors associated with subscription uptake, highlighting implications for equity and service design.
- **Chapter 3** examines mode substitution patterns among e-bike users, using pooled national survey data from 2017 and 2023. A multinomial logit model is employed to examine which modes are displaced by e-bike use across various trip purposes and user groups, offering empirical insights into how substitution patterns have evolved as e-bike adoption has expanded beyond early adopters.
- **Chapter 4** assesses the emissions reduction and the cost-effectiveness of e-bike purchase incentives. Through a simulation framework that combines adoption probabilities with self-reported VMT substitution, this chapter estimates the $CO_2$ reduction attributable to various incentive levels and calculates the cost per ton of avoided emissions, situating e-bike policies within broader decarbonization benchmarks.
- **Chapter 5** synthesizes the empirical findings to highlight how MaaS bundles, e-bike mode substitution, and incentive-driven emissions reductions collectively inform user-centered, low-carbon transportation strategies. It frames these results within a broader policy context, illustrating how targeted incentives can shift behavior and support equitable, sustainable mobility. The chapter concludes by identifying cross-cutting limitations and outlining future research needs to advance demand-side transport decarbonization.

# CHAPTER 2 MOBILITY-AS-A-SERVICE - A SOLUTION FOR MODE SUBSTITUTION?

## 2.1 Introduction

Service bundling, initially conceptualized in marketing and economics, has long offered a way to package multiple products or services under a single offering for greater efficiency and customer appeal (Dearden, 1978; Guiltinan, 1987). Over the past several decades, these bundling principles have permeated transportation through monthly and annual transit passes, steering a shift in how individuals plan and pay for travel (White, 1981; Le Vine et al., 2011). This convergence of marketing theory, technology, and mobility practice has set the stage for the emergence of MaaS. This framework aggregates multiple service-based transportation modes (public transit, car-sharing, ride-hailing, bike-sharing, etc.) within unified digital platforms (Hietanen, 2014; Kamargianni et al., 2016). MaaS not only introduces more flexible travel options but also builds on the notion that integrated bundles can reduce costs, consolidate payments, and simplify trip planning for users (Ho et al., 2020).

Despite its promise, MaaS faces distinct challenges compared to traditional service bundles. Transportation demand is shaped not only by pricing and convenience but also by trip purpose diversity, prevalent private vehicle ownership, and complex travel patterns (Ho et al., 2018). Moreover, successful MaaS deployment requires consistent collaboration among public agencies, private mobility operators, and intermediary technology platforms (Smith et al., 2019). While European cities such as Helsinki, Gothenburg, and Madrid have showcased pilot programs that highlight MaaS's potential to alter travel habits and encourage multimodality (Sochor et al., 2014; Hirschhorn et al., 2019), implementation in car-centric regions, including much of the United States, remains relatively nascent (MoveGPH, 2023). Here, limited public familiarity, the dominance of private automobiles, and inconsistent policy support often constrain the perceived value of bundled mobility services (Ho et al., 2020).

Accordingly, this chapter aims to investigate MaaS demand in a U.S.-based urban context with conventional bus-based public transit and a mix of available transportation services. Transit riders in the United States remain largely unfamiliar with multimodal transportation subscription

services. Drawing on an onboard survey partnership with the WeGo Public Transit agency in Nashville, Tennessee, we developed and administered a stated choice experiment to explore how existing transit users respond to hypothetical MaaS bundles. Our objective is to examine how demographic and behavioral factors (e.g., income, payment method, age) condition the likelihood of subscribing. This approach helps determine whether existing transit riders are likely to switch to other transportation services and which user characteristics are associated with a higher likelihood of making such a switch. We contribute to the growing body of MaaS literature, emphasizing price sensitivity, service integration depth, and user segmentation (Caiati et al., 2020). We also contribute to the broader debate on whether integrated mobility packages can effectively promote sustainable travel behavior in automobile-oriented U.S. cities (Hensher et al., 2021).

## 2.2 Review of Literature

In the transportation sector, service bundling gained traction with the introduction of monthly or annual transit passes, significantly influencing travel choices and usage patterns (White, 1981; Le Vine et al., 2011; Wittmer et al., 2014). Over time, this evolved into what is now termed MaaS, an approach that aggregates multiple modes, including public transportation, bike-sharing, car-sharing, ride-hailing, and others under subscription-based bundles (Hietanen, 2014; Kamargianni et al., 2016). However, unlike traditional bundles, transportation services face distinct challenges due to varied trip purposes, the predominance of private vehicle ownership, and diverse service providers with competing objectives (Guiltinan, 1987; Ho et al., 2018).

MaaS is a multimodal, user-centric mobility paradigm integrating public and private transportation options into a single digital platform for integrated planning, booking, payment, and real-time information (Heikkilä, 2014; Hietanen, 2014; Kamargianni et al., 2016; Hensher et al., 2020). It combines traditional public transport modes (e.g., buses, trains) with emerging ones (e.g., ride-hailing, car-sharing, bike-sharing, micro-transit) under subscription bundles or pay-as-you-go pricing (Ho et al., 2018; Wong et al., 2018; Matyas et al., 2021). Central to this model is user-centric design, focusing on convenience, integration, and personalization (Hensher et al., 2021). Rapid technological developments, particularly in real-time data analytics, e-payment systems, and customizable apps, have made integrated MaaS platforms increasingly feasible

(Chang et al., 2019; Shang et al., 2022). As a result, MaaS aims to reduce private car reliance (Jittrapirom et al., 2017), encourage multimodal travel behavior (Matyas et al., 2019) ,and enhance transport sustainability (Jang et al., 2021). Consistent with its origins in service bundling, MaaS employs marketing and telecommunications principles to offer a unified subscription package that spans multiple transportation modes (Dearden, 1978; Guiltinan, 1987; Li et al., 2017; Ho et al., 2020).

### *2.2.1 MaaS Integration Levels and Ecosystem*

Building on the foundation of service bundles and multimodal integration, researchers have proposed integration tiers to describe the depth of MaaS implementation (Sochor et al., 2016; Sochor et al., 2018).

- **Level 0** denotes a non-integrated system (e.g., single-mode travel).
- **Level 1** adds integrated information (real-time data, route planning).
- **Level 2** integrates booking and payment into a single interface (Li et al., 2017).
- **Level 3** introduces subscription-based bundling and unifies invoicing (Kamargianni et al., 2016; Arias-Molinares et al., 2020).
- **Level 4** aligns MaaS with broader societal goals, such as equity, accessibility, and environmental targets (Sochor et al., 2016; Sochor et al., 2018).

Within this hierarchical integration, public transport is frequently regarded as the backbone of MaaS (Hietanen, 2014; Ho et al., 2021), ensuring baseline coverage and reliability (Mulley, 2017; Crozet, 2020). Meanwhile, private operators supply complementary services, ranging from micromobility (e-scooters, bike-sharing) to ride-hailing and car-sharing (Arias-Molinares et al., 2020; Liu et al., 2020), thereby expanding the ecosystem.

Public agencies often regulate, coordinate, or provide the MaaS ecosystem. In Helsinki, for example, public authorities mandated open ticketing APIs, enabling third-party integration (Smith et al., 2018; Hirschhorn et al., 2019). Similarly, Taipei's MaaS demonstration received government support through the National ITS Program (2017-2020), streamlining cooperation between public and private entities (Chang et al., 2019). Over time, Public Transportation

Authorities may evolve into Micromobility Managers or Multimodal Mobility Authorities, reflecting their expanding role in coordinating multiple services (Crozet, 2020).

Meanwhile, private mobility operators bring innovation, flexible business models, and advanced communication technologies to MaaS (Shaheen et al., 2020; Zhang et al., 2021). Ride-hailing firms, car-sharing companies, and data analytics specialists typically collaborate with transit agencies to integrate real-time data, dynamic routing, and smartphone applications (Matyas et al., 2019; Shang et al., 2022; Vij et al., 2022). Yet, these alliances can face challenges; public actors often prioritize service coverage and equity, while private firms often focus on profitability and market share (Hirschhorn et al., 2019; Mulley et al., 2020). Data sharing and revenue distribution persist as notable hurdles (Audouin et al., 2018; Smith et al., 2020).(Smith et al., 2020)

Beyond public and private stakeholders, intermediary actors aggregate multiple services into the MaaS platform. Smith et al. (2020) illustrate the importance of stakeholder alignment, clear value propositions, and strategic rollouts in analyzing the failure of Sweden's Mobilitetstorget. These insights underscore the vital importance of effective governance, collaboration, and technological readiness in advancing MaaS ecosystems.

### *2.2.2 Stated Preference and Willingness-To-Pay (WTP)*

SP techniques are widely used to collect data on products and services that are not yet available in the market (Louviere et al., 2000). In SP experiments, respondents select hypothetical alternatives with different attribute levels, allowing researchers to analyze various attributes efficiently. SP techniques have been fundamental for estimating user demand and mode-shift potential in MaaS, particularly since many MaaS offerings remain formative and cannot be easily studied through revealed preference data (Louviere et al., 2000; Kamargianni et al., 2016; Ho et al., 2020). Through these experiments, participants are presented with hypothetical bundles of transport modes, encompassing public transport, car-sharing, bike-sharing, or ride-hailing, and the attributes of each bundle (e.g., subscription pricing, usage limits, or payment structure) can be systematically varied. Researchers then analyze how respondents choose among these bundles and infer the relative importance of specific features, such as cost, reliability, convenience, and service coverage. A central finding across numerous SP-based MaaS studies is that users exhibit

pronounced price sensitivity, with cost-effectiveness often determining whether they opt for a monthly subscription over alternative pay-as-you-go options (Ho et al., 2018; Caiati et al., 2020; Tsouros et al., 2021). By contrast, car-sharing and ride-hailing bring in more moderate WTP and appeal most when users require flexibility for unpredictable commutes or errands, echoing findings that pay-as-you-go options may remain more attractive for infrequent car usage(Ho et al., 2018; Guidon et al., 2020).

Recent research underscores the impact of occasional activities and broader travel uncertainties on overall MaaS plan preferences. When survey respondents anticipate frequent schedule changes or spontaneously occurring errands, credits for taxis or ride-hailing services become substantially more attractive (Liu et al., 2023). This supports the notion that "premium" features, such as guaranteed ride-home services, flexible cancellation policies, a rollover option, and loyalty rewards, can incentivize the adoption of higher-tier plans (Hensher et al., 2020; Mulley et al., 2020). Parallel insights emerge from real-world validation efforts. The Sydney MaaS trial, for example, noted that participants gravitated toward mid-priced bundles (e.g., Fifty50, GreenPass) mainly because these offered a perceived balance of financial savings and reliability across multiple modes. Similar outcomes were observed in Kaohsiung, Taiwan, where a government-led MaaS pilot linked discounted monthly passes with increased usage of shared modes. This outcome might not have materialized without clear monetary incentives (Chang et al., 2019). Moreover, early adoption of the Helsinki Whim App highlights the viability of unlimited transit integrated with limited taxi credits. However, sustained retention has been shown to hinge on whether users deem the overall package worth the recurring fees (Sochor et al., 2016; Audouin et al., 2018). Altogether, these SP studies and pilot programs consistently reinforce the conclusion that the success of MaaS bundles hinges on striking the right balance of pricing, flexibility, and integration depth. While unlimited transit often anchors user willingness to pay, additional benefits, ranging from micro-mobility connectivity to guaranteed ride-home services, can further boost adoption when they align with travelers' lifestyle needs, budget constraints, and the unpredictability of day-to-day mobility.

### *2.2.3 User Segmentation*

User segmentation has become a key research focus for understanding MaaS adoption, as it provides insights into why certain population groups readily adopt integrated mobility solutions, while others remain hesitant or uninterested. Scholars note that various factors, including demographic characteristics, habitual travel behavior, attitudes toward digital technology, and environmental consciousness, influence the adoption of MaaS (Alonso-González et al., 2020; Matyas et al., 2021). This heterogeneity highlights the need to tailor MaaS bundles, communication strategies, and policy initiatives to the diverse preferences and constraints of potential users, rather than assuming a one-size-fits-all approach.

Many studies use latent class or cluster analyses to identify distinct user segments that systematically differ in their motivations and barriers to MaaS. Among the most common clusters are MaaS-ready or "FLEXI" enthusiasts, typically younger, better-educated, and multimodal individuals with a high receptivity to new technologies and subscription-based services (Kamargianni et al., 2016; Feneri et al., 2022). This group's willingness to experiment with ride-hailing or micromobility, combined with their strong pro-environmental attitudes, makes them early adopters who can drive the initial success of MaaS trials. In contrast, other clusters include car-centric or "conservative" users who remain heavily attached to private vehicles, often due to suburban or rural living contexts, age factors, or deeply ingrained perceptions of automotive convenience (Moser et al., 2018; Hensher et al., 2021). These individuals typically require substantial cost incentives or guaranteed parking solutions to overcome their car reliance (Eckhardt et al., 2018; Kayikci et al., 2022). A third segment, public transport dependents, relies heavily on transit for affordability or accessibility, typically finding MaaS add-ons, such as bike-sharing or discounted taxi services, beneficial for bridging the first/last-mile gaps (Caiati et al., 2020)  add-ons, such as bike-sharing or discounted taxi services, beneficial for bridging the first/last-mile gaps (Caiati et al., 2020). However, their limited disposable income can reduce their willingness to pay for higher-tier bundles with premium features. Lastly, occasional (unimodal) travelers adopt MaaS only for specific trips or recreational purposes and often perceive monthly plans as irrelevant to their infrequent mobility needs (Alonso-González et al., 2020; Guidon et al., 2020).

Beyond these socio-demographic clusters, emerging literature highlights how deeper psychological constructs, e.g., openness to technology, environmental consciousness, privacy concerns, and habit strength, further differentiate users' MaaS adoption patterns. Individuals with strong eco-friendly dispositions tend to be more receptive to multimodal subscriptions, whereas those who distrust data sharing may resist any platform that aggregates personal travel information (Cottrill, 2020; Pangbourne et al., 2020). Additionally, habitual car drivers exhibit pronounced "inertia," remaining reluctant to try MaaS unless presented with clear advantages, such as exclusive parking, real-time travel information, or significantly reduced transport costs (Hensher et al., 2020; Mulley et al., 2020) . Conversely, travelers already at ease with subscription services like Netflix or ride-hailing apps are more apt to view MaaS bundles as a natural extension of their consumption habits, thus lowering psychological barriers(Matyas et al., 2019).

With these segmentation insights, practitioners and policymakers can better tailor MaaS offerings through targeted bundles, differential pricing, and marketing. For example, a "Multimodal Explorer" plan, with flexible micromobility options, unlimited public transit, and modest car-sharing credits, may attract younger urban dwellers, whereas a "Family-Friendly" bundle, emphasizing secure park-and-ride locations or free child seats, could sway suburban parents. Likewise, lower-priced basic subscriptions may suit cost-conscious or infrequent travelers, whereas more premium tiers can appeal to car-dependent individuals seeking extra convenience or reliability (Hensher et al., 2020; Vij et al., 2022). Strategic messaging can also be tailored, publicizing environmental benefits and digital connectivity for tech-savvy segments, while emphasizing comfort or time savings for older motorists (Pangbourne et al., 2020). Field demonstrations offer practical evidence of segmentation's value, as shown by the Sydney MaaS pilot, where participants' cluster affiliations corresponded to differing preferences for subscription tiers, and by UbiGo in Gothenburg, which revealed that some user groups shifted substantially away from car usage. In contrast, others replaced one private mode with another type of car-based travel (Sochor et al., 2016; Smith et al., 2018; Ho et al., 2021). Such variations highlight the importance of segmentation in designing and deploying MaaS systems that cater to the diverse needs and constraints of contemporary urban travelers.

### *2.2.4 MaaS Implementations and Case Studies*

A growing body of literature offers insights into how MaaS platforms function in practice, with field trials and real-world implementations providing valuable evidence on the effects of integrated mobility bundles, their operational feasibility, and user acceptance. Early research on MaaS implementation focused on identifying key integration opportunities and developing evaluation criteria (Kamargianni et al., 2016; Li et al., 2017; Hensher et al., 2020). Subsequent studies have assessed the feasibility of MaaS in diverse contexts, addressing issues such as service integration opportunities (Kamargianni et al., 2016; Daou et al., 2024), criteria development for MaaS (Li et al., 2017), and feasibility and service enhancement (Kamargianni et al., 2015; Storme et al., 2020). Other studies investigated barriers and opportunities to MaaS implementation (Li et al., 2017; Matyas et al., 2019; Smith et al., 2019; Cottrill, 2020; Karlsson et al., 2020; Matyas, 2020), typology of services (Kamargianni et al., 2016; Sochor et al., 2016; Jittrapirom et al., 2017), end-user demand (Sochor et al., 2014; Kamargianni et al., 2016; Ho et al., 2017; Lyons et al., 2019; Caiati et al., 2020), governance and policy (Heikkilä, 2014; Smith et al., 2019; Mulley et al., 2020; Saleem et al., 2024), and impact on specific transportation modes (Ho et al., 2017; Smith et al., 2017). While the MaaS trial findings generally highlight the concept's promise for changing travel behavior, they underscore the significant complexities, technical, institutional, and behavioral, associated with deploying bundled mobility services at scale.

### *2.2.5 United States Contexts*

One of the earliest MaaS-like pilots in the United States, MovePGH, launched in July 2021 in Pittsburgh, aiming to unify trip planning and payment across multiple mobility services through the Transit app (MoveGPH, 2023). While the program has seen positive indicators, such as Transit usage surpassing pre-pandemic levels, incomplete integration, particularly for ride-hailing and scooters, has limited its impact on steering users away from private cars. Additionally, concerns about sidewalk obstructions and regulatory hurdles led to mixed responses, resulting in the eventual withdrawal of certain modes. This experience highlights a recurring theme in MaaS literature: although centralized planning and payment can enhance multimodal adoption, achieving full-scale success requires robust integration, equitable design, and careful coordination with stakeholders. Existing research consistently highlights the potential

of MaaS to influence travel choices and sustainability outcomes. Still, experiences like MovePGH reveal the importance of tailoring bundle design, resolving cost-effectiveness challenges, and aligning consumer preferences.

## 2.3 Research Objectives

This chapter aims to assess the potential of MaaS to encourage mode substitution away from private car use in an automobile-dominated urban context. Specifically, the research focuses on understanding user preferences for MaaS subscription bundles among transit users in Nashville, Tennessee, a city characterized by automobile dependency and a developing public transportation system. By analyzing SP data collected through a discrete choice experiment (DCE), this study aims to identify the key demographic, behavioral, and fare-related factors that influence the likelihood of MaaS adoption.

The primary research objectives of this chapter are threefold:

1. To assess the general willingness of transit users to subscribe to integrated MaaS bundles.
2. To identify user characteristics associated with MaaS subscription propensity.
3. To examine the influence of existing fare pass types and digital payment methods on subscription preferences.

## 2.4 Data

This study draws on collaboration with WeGo Public Transit (WeGo) in Nashville, Tennessee, to investigate the adoption potential of MaaS bundles among transit riders. In Fall 2022, WeGo conducted a systemwide onboard rider survey, where 765 respondents consented to participate in a follow-up. Of these, 742 provided valid contact information. In Spring 2023, we invited this group to complete a SP survey hosted on a secure Qualtrics platform, which was distributed through personalized text messages with an incentive of a $10 Amazon gift card. Ultimately, valid responses were collected (response rate: 13.9%), generating a dataset that combines stated mobility preferences with real-world transit usage. Full survey can be referenced in **Appendix** 1.

The relatively low response rate (103 out of 742) is consistent with typical limitation observed in follow-up panel survey and may reflect limited contact method (text-based invitations for online survey), competing demands for participants' time, limited internet access, or unfamiliarity with

bundled mobility offerings. Future studies could explore additional outreach channels or incentive structures to improve survey engagement.

### *2.4.1 Survey Design*

Building on established SP methods (Louviere et al., 2000), we developed a web-based survey with a discrete choice experiment (DCE) to evaluate preferences from bundled MaaS offerings. To maintain statistically efficient and respondent manageability, a D-efficient experimental design was conducted for four respondent segments, defined by their access to key transportation modes, specifically, whether they possessed a valid driver's license and whether they were able to ride a bicycle. Each design incorporated only the service option relevant to that subgroup.

For the full-access group (those with both a valid driver's license and the ability to bike), the candidate set included seven transportation services (e.g., transit, bike-share, e-scooter, ride-hailing, car rental, and car share), and the D-efficient design was blocked into 16 blocks, each containing 12 unique MaaS bundle profiles. For the group with a driver's license but no biking ability, the experimental design excluded bike-based services and was divided into five blocks of 12 bundles each. For the group with biking ability but no driver's license, the design excluded the car-based services and was divided into five blocks. Finally, for the most constrained group, respondents with neither a driving license nor biking ability, the design included three services. It was blocked into four blocks, again with 12 bundles per block.

Respondents were first segmented based on their mobility eligibility. Within each segment, individuals were randomly assigned to one of the pre-assigned blocks. Each block contained 12 bundles, grouped into four choice tasks of three bundles each, accompanied by a fourth opt-out option. This structure mirrors best practices in DCE design by balancing practicality, efficiency, and feasibility (Louviere et al., 2000; Caiati et al., 2020).

Respondents were shown concise descriptions of the transportation services included in each bundle, consistent with recommendations for clarity in emerging mobility services (Jittrapirom et al., 2017) . These services included public transit (WeGo), bike-sharing (BCycle), scooter-sharing (Bird/Lime), ride-hailing (Uber/Lyft/Taxi), car-sharing (Zipcar), and car rental

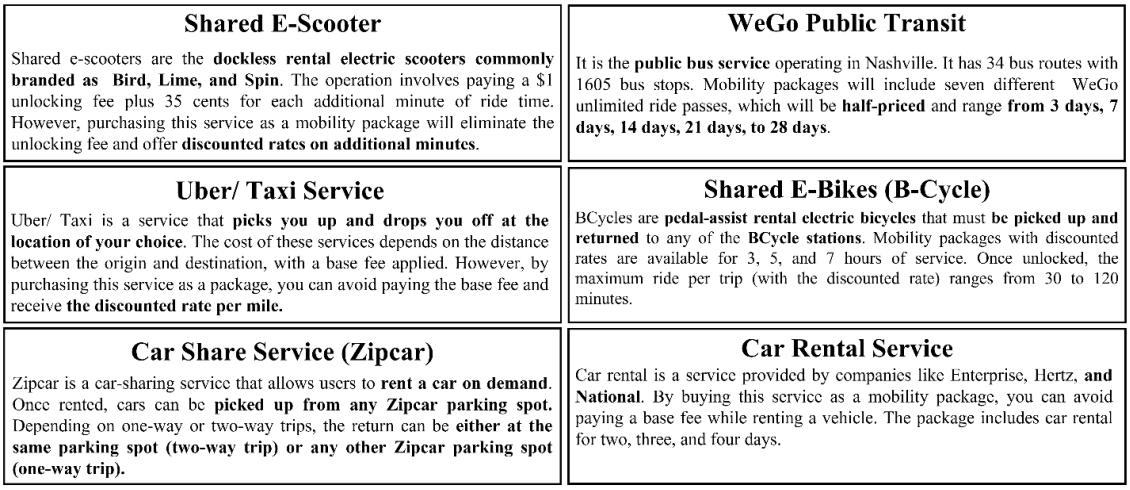


Figure 2-1. Description of each transportation service in the MaaS bundles in the distributed survey.

(Enterprise and others), all of which were available in Nashville during the survey period. AS shown in **Figure** 2-1, descriptions were supplemented with brief text and hyperlinks to aid interpretation.

The hypothetical bundles were designed to simulate potential cost savings by offering discounted access to multiple modes under a fixed monthly price. In line with real-world MaaS trials that emphasize the simplicity and transparency of bundles (Melinda et al., 2019), respondents were informed that each bundle consolidated services into a single monthly price. Service attributes were varied by plausible usage caps: mode: transit in access-day increments (3–28 days); e-scooters in minutes (120–480 minutes); bike-share in ride-hour limits (3–7 hours total, with capped ride durations); ride-hailing in mileage (20–40 miles); and car-rental and car-share by days or hours, respectively. These allotments reflected flexibility, non-consecutive use patterns typically among multimodal travelers (Corinne et al., 2020). **Table** 2-1 lists all services and attribute levels included in the experiment.

### *2.4.2 Discrete Choice Experiment Design*

To capture realistic decision-making processes, each choice task presented three bundle alternatives, labeled low-cost, medium-cost, and high-cost, and an opt-out option. This approach reflects real-world user behavior, providing greater insights into adoption decision (Louviere et al., 2000).

Table 2-1. Transportation service attributes and their levels used in our MaaS survey design.

| Transportation service | Service attribute levels | Transportation service | Service attribute levels |
|---|---|---|---|
| Public Transit (Bus) | 3 days | Ride hailing (Uber) | 20 miles |
| | 7 days | | 30 miles |
| | 14 days | | 40 miles |
| | 21 days | Car rental | 2 days |
| | 28 days | | 3 days |
| Car sharing | 3 hours | | 4 days |
| | 5 hours | Rental E-Scooter | 120 minutes |
| | 7 hours | | 240 minutes |
| | 9 hours | | 360 minutes |
| Car sharing type | One way | | 480 minutes |
| | Two ways | Unused credit transfer | Available |
| | | | Not available |

Variations across scenarios included both the amount of service offered (e.g., e-scooter minutes, transit days) and features like credit rollover. Public transit was consistently included due to its central role in MaaS (Melinda, 2020). **Figure** 2-2 illustrates a representative choice scenario

### *2.4.3 Experimental Design and Base Level*

The experimental designs were generated using the AlgDesign R package, beginning with a near full factorial candidate set for each subgroup. D-efficient subsets were selected using the Federov algorithm to optimize parameter estimation accuracy under constraints of respondent burden. Each subgroup's design was partitioned into 4-16 blocks, as described in Section 2.4.1. Respondents each completed four distinct scenarios from their assigned block, producing a total of 412 choice observations for modeling.

Respondents evaluated bundles classified by price tiers: a low-cost (average: $118.7), a medium-cost (average: $140.0), a high-cost (average: $164.2), and a zero-cost opt-out option. While base attribute levels were hidden during the experiment to prevent anchoring effects, they were assigned during post-experiment modeling to enable estimation of alternative-specific constants and attribute level utilities. Service attributes and their corresponding levels are fully detailed in **Table** 2-1.

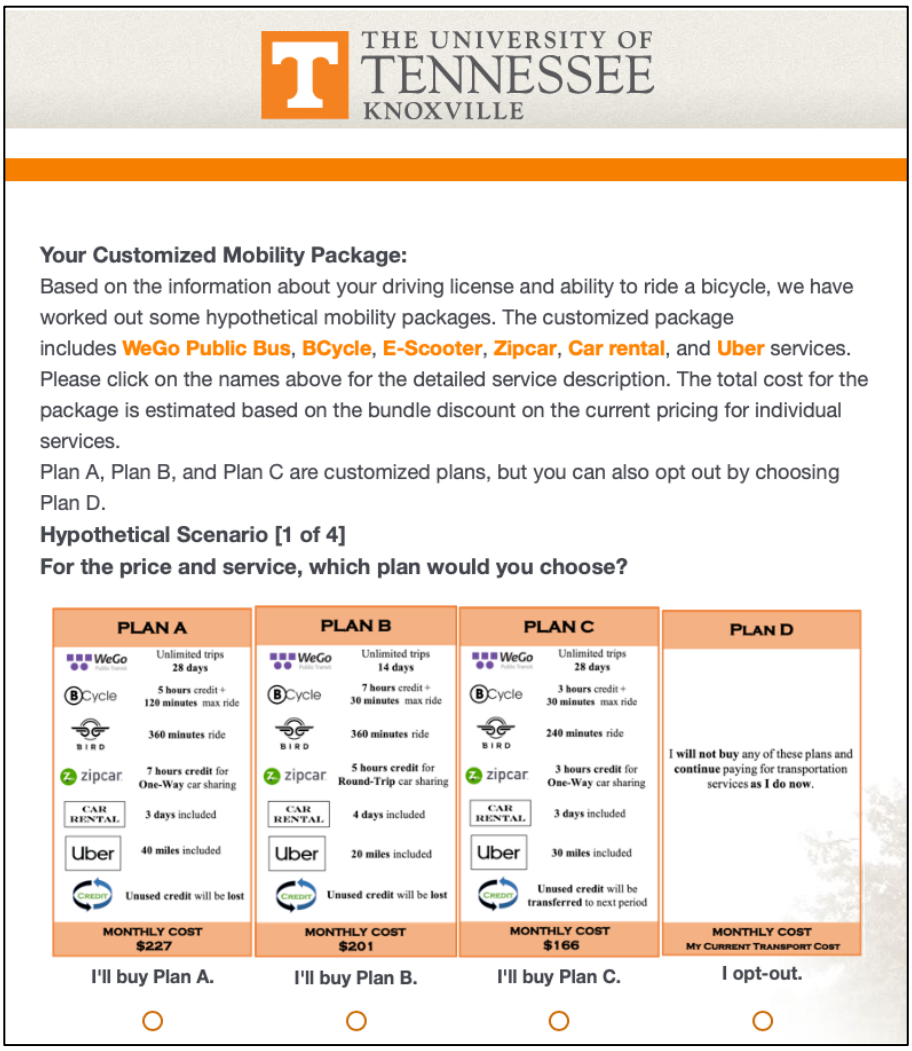



Figure 2-2. Example of a stated choice situation for the choice experiment for respondents with valid driving licenses and the ability to ride a bicycle

### *2.4.4 Descriptive Statistics and Demographics of Our Sample*

Demographic characteristics of the 103 MaaS respondents are summarized alongside the original WeGo onboard survey sample (n = 742) in **Table** 2-2. While broadly representative, the MaaS respondent sample shows overrepresentation of women, younger adults, students, and certain income groups (e.g., $12,000-$14,999). Older adults were less represented. These demographic nuances provide important context for interpreting the model results and evaluating the appeal of MaaS across diverse rider segments.

Table 2-2. Demographics for MaaS and System-wide survey respondents.

| Total system-wide survey sample size | 742 | | Count | |
|---|---|---|---|---|
| MaaS Survey sample size | 103 | | Count | |
| Response rate | 13.9 | | Percent | |
| Survey type | MaaS Survey | | System-wide Survey | |
| Income | Count | Percent | Count | Percent |
| Less than $12,000 | 18 | 17.5 | 174 | 23.5 |
| $12,000 - $14,999 | 21 | 20.4 | 49 | 6.6 |
| $15,000 - $29,999 | 9 | 8.7 | 88 | 11.9 |
| $30,000 - $39,999 | 4 | 3.9 | 69 | 9.3 |
| $40,000 - $49,999 | 9 | 8.7 | 61 | 8.2 |
| $50,000 - $59,999 | 6 | 5.8 | 35 | 4.7 |
| $60,000 - $74,999 | 6 | 5.8 | 29 | 3.9 |
| $75,000 - $89,999 | 2 | 1.9 | 14 | 1.9 |
| $90,000 - $114,999 | 2 | 1.9 | 7 | 0.9 |
| Over $115,000 | 2 | 1.9 | 7 | 0.9 |
| Not Available | 24 | 23.3 | 209 | 28.2 |
| Gender | | | | |
| Male | 43 | 41.7 | 428 | 57.7 |
| Female | 60 | 58.3 | 311 | 41.9 |
| Not Available | -- | -- | 3 | 0.4 |
| Age | | | | |
| 16 - 19 | 12 | 11.7 | 47 | 6.3 |
| 20 - 24 | 16 | 15.5 | 73 | 9.8 |
| 25 - 34 | 19 | 18.4 | 189 | 25.5 |
| 35 - 44 | 20 | 19.4 | 154 | 20.8 |
| 45 - 54 | 22 | 21.4 | 135 | 18.2 |
| 55 - 65 | 10 | 9.7 | 97 | 13.1 |
| 65 and Older | 4 | 3.9 | 40 | 5.4 |
| Not Available | -- | -- | 7 | 0.9 |
| Employment Status | | | | |
| Employed full-time (at least 35 hours) | 48 | 46.6 | 391 | 52.7 |
| Employed part-time (less than 35 hours) | 32 | 31.1 | 126 | 17 |
| Not employed and NOT seeking work | 18 | 17.5 | 101 | 13.6 |
| Retired | 5 | 4.9 | 35 | 4.7 |
| Not Available | | | 89 | 12 |
| Race | | | | |
| American Indian / Alaska Native | 4 | 3.7 | 5 | 0.7 |
| Asian | 2 | 1.8 | 14 | 1.9 |
| Black / African/ African American | 50 | 48.6 | 407 | 54.8 |
| Hispanic / Latino | 12 | 12.1 | 32 | 4.3 |
| Native Hawaiian / Pacific Islander | 1 | 1 | 3 | 0.4 |
| White/ Caucasian | 34 | 32.8 | 270 | 36.4 |
| Mixed | -- | -- | 11 | 1.5 |

**Table** 2-3 further details transit-specific behaviors. A higher proportion of MaaS respondents had valid driver's licenses (51.5%) compared to the overall rider population (47.2%). Respondents predominantly used QuickTicket cards (27.2%) and mobile apps (19.4%) over cash payments (29.1%). MaaS respondents were also more likely to use employer/university-sponsored passes (16.5%) and were more likely students (23.3%) compared to the broader transit user base (8.5%). Transit riding frequency among respondents was high, with most riding five or more times weekly (53.4%).

Table 2-3. Transit riding characteristics of MaaS and system-wide survey respondents.

| | **MaaS Survey** | | **System-wide Survey** | |
|---|---|---|---|---|
| | Count | Percent | Count | Percent |
| **Driving license availability** | | | | |
| User with a driving license | 53 | 51.5 | 350 | 47.2 |
| User without a driving license | 50 | 48.5 | 392 | 52.8 |
| **Users transit frequency** | | | | |
| Less than 1 year | 24 | 23.3 | 194 | 26.1 |
| 1 - 2 years | 22 | 21.4 | 119 | 16 |
| 3 - 4 years | 16 | 15.5 | 73 | 9.8 |
| More than 4 years | 41 | 39.8 | 310 | 41.8 |
| Not available | | | 46 | 6.2 |
| **Payment used for transit user** | | | | |
| Cash | 30 | 29.1 | 288 | 38.8 |
| Employer/University Sponsored Pass | 17 | 16.5 | 54 | 7.3 |
| Paper ticket (Black Stripe) | 1 | 1 | 18 | 2.4 |
| QuickTicket card | 28 | 27.2 | 239 | 32.2 |
| QuickTicket Mobile Application | 20 | 19.4 | 86 | 11.6 |
| School-Sponsored Pass | 6 | 5.8 | 21 | 2.8 |
| Not Available | 1 | 1 | 36 | 1.1 |
| **User student status** | | | | |
| User is a student | 24 | 23.3 | 63 | 8.5 |
| User is not a student | 73 | 70.9 | 601 | 81 |
| Not available | 6 | 5.8 | 78 | 10.5 |
| **Transit riding frequency** | | | | |
| First-time rider | 3 | 2.9 | 30 | 4 |
| 1 - 2 times a week | 7 | 6.8 | 57 | 7.7 |
| 3 - 4 times a week | 22 | 21.4 | 128 | 17.3 |
| 5+ times a week | 55 | 53.4 | 431 | 58.1 |
| 1 - 3 times a month | 1 | 1 | 29 | 3.9 |
| Less than once a month | 10 | 9.7 | 21 | 2.8 |
| Not available | 5 | 4.9 | 46 | 6.2 |

These descriptive analyses emphasize the transit dependency and demographic diversity of respondents, underscoring the need for nuanced MaaS designs that cater specifically to their preferences and constraints.

## 2.5 Modeling Framework

Given the discrete choice experiment structure of the survey, original analytical framework was based on estimating a mixed multinomial logit (MMNL) model. The MMNL model is particularly suited for discrete choice experiments, as it captures heterogeneity in individual preference across different service attributes (Louviere et al., 2000). We estimated multiple specifications of the MMNL model, aiming to derive reliable marginal utilities for each bundle attribute. Detailed discussion and results for these approaches are presented in **Appendix** 2. Despite efforts to improve the model's stability, including consolidating service attribute levels and systematically varying model structures, the MMNL approach faced significant estimation challenges. Severe multicollinearity emerged between bundle price and included service quantities, yielding theoretically inconsistent signs and larger standard errors. Post-estimate diagnostics confirmed instability, with variance inflation factor (VIF) exceeding acceptable threshold and model coefficients lacking behavioral plausibility.

While we also explored standard panel multinomial logit model and error components specifications (Hensher et al., 2015), these alternatives similarly failed to converge reliably. The combination of a limited number of choice tasks per respondent (four), a modest sample size (n=103), and sparse coverage of attribute combinations contributed to weak identification and model instability. Given these persistent issues, we concluded that utility-based modeling at the choice-task level was not feasible. As a practical alternative, we pivoted to a respondent-level binary logistic regression framework, which though less granular, enabled investigation of factors associated with the general likelihood of MaaS bundle adoption.

### *2.5.1 Binary Logit*

We employed a binary logistic regression model to analyze respondents' likelihood of subscribing to a MaaS bundle, using demographic characteristics, travel behavior, fare payment preferences, and access to driving alternatives. A binary logit framework effectively captures the dichotomous choice of subscribing or not, and enables the estimation of marginal effects to

illustrate how incremental changes in explanatory factors affect subscription probabilities (Liljamo et al., 2020; Hasselwander et al., 2022). Drawing on prior research highlighting factors like demographics, habitual travel patterns, and fare payment preferences (Song et al., 2021), our model included variables such as driving license status, current transit payment methods, preferred transit fare passes, transit usage frequency, employment status, student status, age, gender, and income groups.

Respondents were classified as a subscriber (coded as 1) if they selected any hypothetical MaaS bundle in at least one choice scenario, or as a non-subscriber (coded as 0) if they consistently chose the opt-out option. The binary logit model specifies the relationship between subscription probability (p) and explanatory variables (X) using log-odds formulation:

$$\ln(p / (1 - p)) = \beta_0 + \beta^T X \quad \text{……Equation 2-1}$$

where $\beta_0$ is the intercept, $\beta$ is the vector of the coefficients, and X includes socio-demographic characteristics, travel behavior indicators, fare payment preferences, and accessibility variables. The log-odds form ln(p/(1-p)) links the explanatory variables to the probability of subscribing to any MaaS bundle. Although our experiment included attributes (e.g., pricing, service type, quantity), this model specifically evaluates explicitly respondent-level factors rather than bundle-level attributes. This approach aims to identify general demographic and behavioral predictors of subscription intent and to pinpoint user segments likely to be receptive to MaaS offerings, irrespective of specific bundle attributes.

For stability and interpretability, categorical variables were consolidated into broader groups. Payment methods originally included "cash," "paper pass with magnetic strip," "QuickTicket app," "smart card," and "stored value card (SVC)." Due to small sample sizes and functional similarities, "cash" and "paper pass" were grouped together (Cash or Paper Pass), "reloadable smart card" was modeled separately, and the base category combined magnetic pass, QuickTicket app, and SVC. Fare types were simplified by merging "Individual Ride" and "2-Hour Pass" into a base category, with other pass types (“All-Day Pass,” “7-Day Pass,” “20-Ride Pass,” and “31-Day Pass”) modeled individually. Transit frequency was recoded from a six-point scale into three categories: Infrequent (less than once a month), Regular (1–4 times per week), and Frequent (5+ times per week, base). Employment status categories included Employed

(base), Not Employed, and Retired; student status was binary, using student as reference. Age groups were simplified into Youth (16–24), Adult (25–44, base), Middle-aged (45–64), and Senior (65+). Gender was binary, with Female as the base, and income was categorized into Low (<$30,000, base), Moderate ($30,000–$59,999), High ($60,000+), and Refused. These recordings mitigated data sparsity, enhanced statistical power, and improved model interpretability

## 2.6 Result

### *2.6.1 Travel Behavior and Fare Preferences*

Understanding the characteristics of survey respondents and their interaction with transit is foundational to interpreting the results of this study. This section draws on three key dimensions, average daily trips by mode, fare payment methods, and fare product choices, to provide context for interpreting bundle selection behavior. **Figure** 2-3 presents the average number of daily trips by mode of transport for the survey respondents.

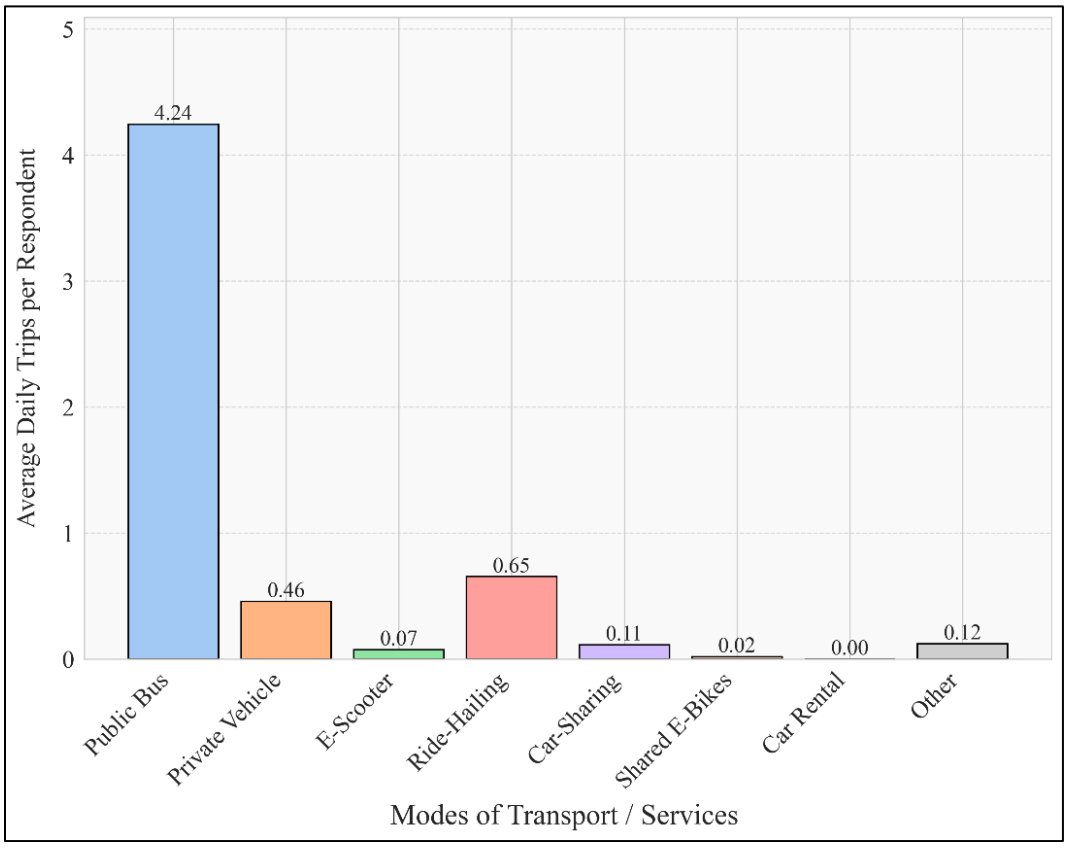



Figure 2-3. Average daily trips per survey respondent by mode of transport.

The data show that respondents rely heavily on the WeGo public transit system, with an average of 4.24 daily trips, far outpacing their use of private vehicles (0.46 trips) and ride-hailing services (0.65 trips). Micromobility options, such as shared e-scooters and e-bikes, accounted for only a small share of travel. This heavy reliance on public transit indicates that the sample consists predominantly of transit-dependent riders, a fact that frames the remainder of the analysis. Specifically, this dependence may influence how respondents perceive the value, feasibility, and appeal of MaaS bundles, particularly in contrast to individuals with greater access to private vehicles or more multimodal flexibility.

**Figure** 2-4 illustrates the diversity of payment methods reported by respondents. Approximately one-third (32.6%) indicated they pay cash per ride, while others favored digital options such as the QuickTicket mobile app (26.5%) and reloadable smart cards (20.4%). Smaller segments used magnetic stripe paper passes or stored-value cards. These patterns suggest that while many riders are familiar with digital fare tools, a substantial portion still rely on more traditional payment forms. This variation has direct implications for the adoption of MaaS platforms: digital-ready users may find it easier to transition to app-based subscription systems, whereas cash-preferred users may face greater adoption barriers due to their lower comfort with digital interfaces or the need for upfront payments.

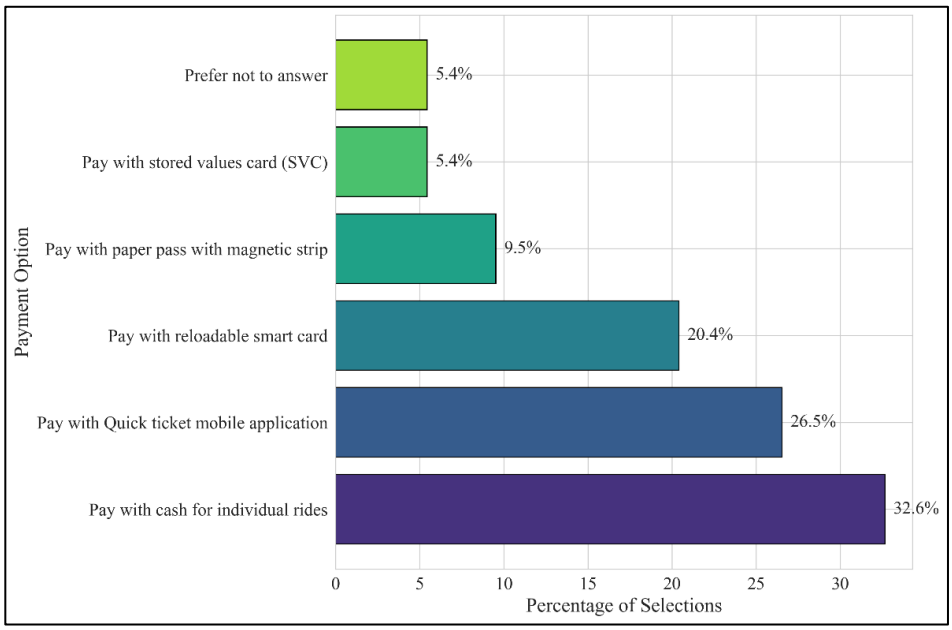


Figure 2-4. Distribution of payment used by respondents for transit fare.

**Figure** 2-5 shows respondents' fare product preferences. A majority reported purchasing multi-use passes, including 31-day passes (30.2%) and all-day passes (24.5%), indicating a general openness to fare structures that reward frequent use. Meanwhile, 21.7% continued to rely on single-ride fares, signaling a preference for flexibility or lower up-front costs. These patterns reflect varied preferences in how riders manage cost, convenience, and commitment, core trade-offs inherent in MaaS bundle decisions. The presence of both bulk fare users and pay-as-you-go riders underscores the need for flexible, customizable MaaS offerings that can cater to different user segments within a transit-reliant population.

Together, these behavioral indicators, frequent transit usage, diverse payment preferences, and mixed fare product selections highlight how closely respondents' existing habits are tied to public transit. They also underscore the importance of designing MaaS bundles that align with these lived experiences, recognizing that levels of digital engagement, financial flexibility, and habitual usage will shape how riders evaluate and adopt integrated mobility services.

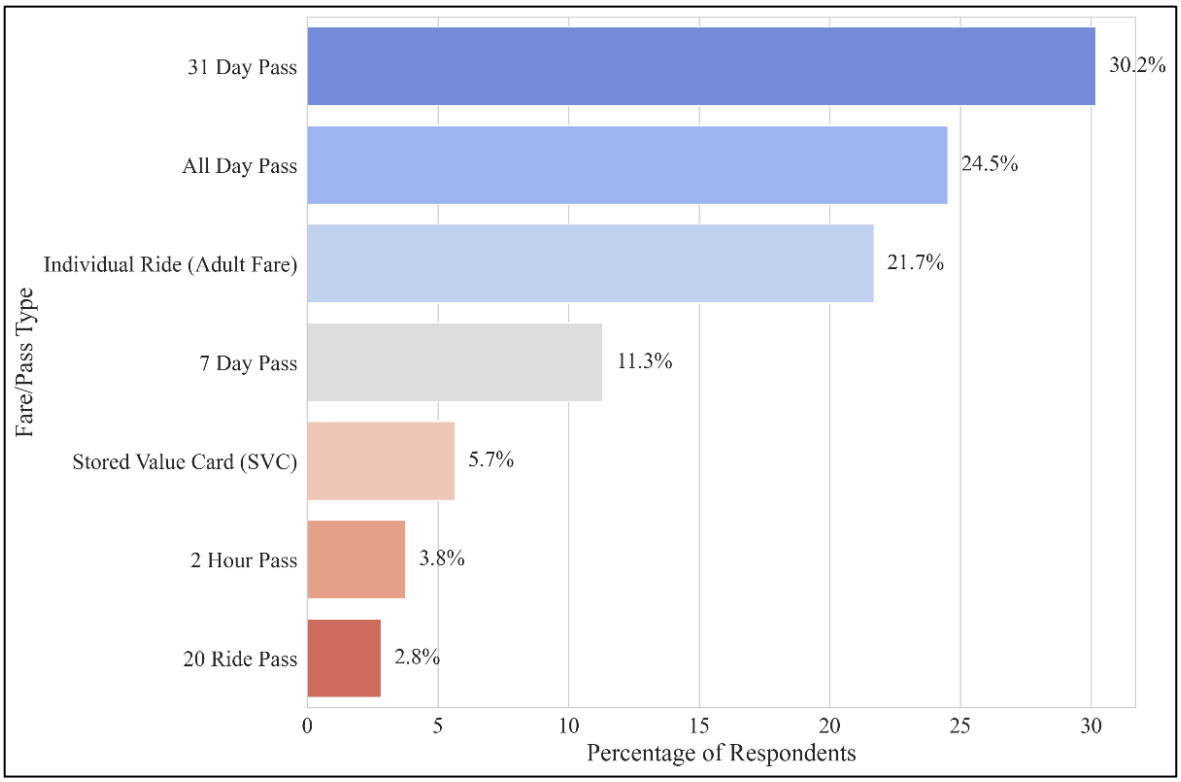


Figure 2-5. Distribution of preferred fare/pass preference for public transit.

### *2.6.2 Binary Logit Model Findings*

Among the findings as presented in **Table** 2-4 respondents using multi-ride fare products, specifically the 20-Ride Pass (Coef. = 2.1, p = 0.05) and All-Day Pass (Coef. = 1.6, p = 0.02), were significantly more likely to subscribe compared to users of the 2-Hour Pass. These results suggest that individuals accustomed to prepaid, multi-use fare structures are more receptive to MaaS subscriptions, likely due to a preference for cost predictability and service integration.

In contrast, users of reloadable smart card were significantly less likely to subscribe (Coef. = -0.86, p = 0.05) compared to those paying with magnetic paper passes, stored value cards, or the QuickTicket app. Correlation analysis revealed that smart card use was moderately associated with moderate-income respondents (r = 0.24) and longer-term transit users (r = 0.30), suggesting that these individuals may already find their current fare arrangements convenient and sufficient, thereby reducing the perceived value of a MaaS bundle. Employment status also influenced subscription behavior. Unemployed respondents were significantly more likely to subscribe (Coef. = 1.35, p < 0.01) than employed individuals. While seemingly counterintuitive, this result can be partially attributed to overlap with student status (r = 0.15) and infrequent transit use (r = 0.39), suggesting a preference for flexible, bundled options among users with limited or irregular mobility needs. Retired individuals did not differ significantly from the employed group.

Table 2-4. Binary logit regression results estimating the association of respondent-level factors with MaaS subscription adoption.

| | Coeff. | std err | z | P>\|z\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| **Constant** | -0.9 | 0.8 | -1.2 | 0.2 | -2.5 | 0.6 |
| **Driving License availability** | | | | | | |
| Do not have a driving license | *Base category* | | | | | |
| Have a driving license | 0.5 | 0.3 | 1.4 | 0.2 | -0.02 | 1.1 |
| **Current payment method for transit service** | | | | | | |
| Magnetic strip paper pass | *Base categories* | | | | | |
| Quick ticket mobile app | | | | | | |
| Stored value card | | | | | | |
| Cash for individual ride | -0.4 | 0.3 | -1.1 | 0.3 | -0.1 | 0.3 |

Table 2-4. Continued

| | | | | | | |
|---|---|---|---|---|---|---|
| Reloadable smart card | -0.9 | 0.4 | -2.0 | 0.05 | -1.7 | -0.0 |
| Prefer not to answer | -0.1 | 0.5 | -0.2 | 0.8 | -1.1 | 0.9 |
| **Transit fare pass category** | | | | | | |
| 2-hour pass | *Base category* | | | | | |
| Individual ride | 1.3 | 0.7 | 1.8 | 0.07 | -0.1 | 2.6 |
| 20 ride passes | 2.1 | 1.1 | 2.0 | 0.05 | 0.01 | 4.1 |
| All day pass | 1.6 | 0.7 | 2.4 | 0.02 | 0.3 | 2.9 |
| 7-day pass | 0.1 | 0.8 | 1.3 | 0.2 | -0.7 | 2.4 |
| 31-day pass | 0.8 | 0.8 | 1.2 | 0.2 | -0.5 | 2.1 |
| **Transit riding frequency** | | | | | | |
| Frequent | *Base category* | | | | | |
| Infrequent | 0.4 | 0.5 | 0.8 | 0.4 | -0.6 | 1.6 |
| Regular | -0.5 | 0.3 | -1.5 | 0.2 | -1.1 | 0.2 |
| **Employment Status** | | | | | | |
| Employed | *Base category* | | | | | |
| Not employed | 1.4 | 0.3 | 3.9 | 0.0 | 0.7 | 2.0 |
| Retired | 0.7 | 0.6 | 1.1 | 0.3 | -0.5 | 1.8 |
| **Student Status** | | | | | | |
| Not a student | *Base category* | | | | | |
| Student | -0.5 | 0.4 | -1.2 | 0.2 | -1.4 | 0.3 |
| **User age group** | | | | | | |
| Adult (25 to 44) | Base category | | | | | |
| Senior (65+) | | | | | | |
| Youth (16 to 24) | 0.4 | 0.4 | 1.1 | 0.03 | -0.3 | 1.2 |
| Middle-aged (45 to 64) | -0.4 | 0.4 | -1.0 | 0.3 | -1.1 | 0.4 |
| Gender | | | | | | |
| Female | Base category | | | | | |
| Male | -0.1 | 0.3 | -0.4 | 0.7 | -0.6 | 0.4 |
| **Income group** | | | | | | |

Table 2-4. Continued

| | | | | | | |
|---|---|---|---|---|---|---|
| Low | Base category | | | | | |
| Moderate | -0.7 | 0.4 | -1.7 | 0.08 | -1.5 | 0.1 |
| High | -1.1 | 0.5 | -2.8 | 0.01 | -2.4 | -0.4 |
| Refused | -0.3 | 0.4 | -0.8 | 0.4 | -0.9 | 0.3 |
| **Transit riding history** | | | | | | |
| Less than 1 year | Base category | | | | | |
| 1 to 2 years | -0.3 | 0.4 | -0.8 | 0.4 | -1.2 | 0.5 |
| 3 to 4 years | -0.9 | 0.6 | -1.5 | 0.1 | -2.0 | 0.2 |
| More than 4 years | -0.6 | 0.5 | -1.3 | 0.2 | -1.5 | 0.3 |
| No. Observations: 412 | | | | | | |
| Pseudo R-squ.: 0.1839 | | | | | | |
| Log-Likelihood: -217.08 | | | | | | |
| LL-Null: -266.00 | | | | | | |
| LLR p-value: 3.324e-11 | | | | | | |

Age was also a significant factor, with respondents aged 16–24 more likely to subscribe than those aged 25–44 (Coef. = 0.42, p = 0.03). This finding aligns with previous research indicating that younger individuals are more receptive to innovative, digitally enabled mobility options. Income, on the other hand, showed a negative association with subscription likelihood. Respondents with moderate incomes ($30,000–$59,999) were less likely to subscribe (Coef. = -0.68, p = 0.08), and those with high incomes ($60,000+) were significantly less likely to subscribe (Coef. = -1.14, p = 0.01), relative to the low-income group. This pattern is consistent with correlation findings showing negative associations between higher income and fare pass types commonly linked to MaaS adoption, such as all-day and multi-ride passes. It suggests that higher-income individuals may favor private vehicles or flexible pay-as-you-go services over structured subscription models. Other variables, such as gender and transit frequency, were not significant predictors. Neither infrequent nor regular riders differed significantly from frequent users (reference group), and males were no more likely to subscribe than females.

Together, these findings highlight the significance of demographic and behavioral segmentation strategies in promoting the adoption of MaaS. Younger, lower-income, and unemployed users

with a convenient existing payment system may require different approaches or incentives to engage with MaaS offerings. While a correlation matrix was used to support the interpretation of several overlapping user traits, it can be found in **Appendix** 3.

### 2.7 Implications

The discrete choice experiment revealed that 65% of choice scenarios resulted in opting out of selecting any MaaS bundle, indicating significant uncertainty or skepticism regarding the value of bundled mobility services. Among those who did choose a bundle, the low-cost option was selected most frequently (14.8% of choices), followed by the medium-cost bundle (10.4%) and the high-cost bundle (9.5%). This distribution suggests that while price sensitivity influenced decisions, even the availability of more comprehensive services in higher-priced bundles did not substantially increase their attractiveness. Similar patterns have been observed in Australian MaaS trials, where multi-tier bundling often requires targeted marketing and cross-subsidy mechanisms to reach distinct user groups effectively (David et al., 2021).

While the heavy reliance on WeGo transit services (averaging 4.24 daily trips) suggests that the respondent pool might be naturally aligned with bundled mobility concepts, other behavioral indicators reveal essential barriers. Notably, a substantial proportion of respondents (32.6%) still pay with cash for each boarding or rely on legacy fare systems, indicating a persistent attachment to familiar, pay-as-you-go models. This strong but narrowly focused transit usage profile, characterized primarily by lower-income, transit-dependent riders, may limit the perceived value of add-on services typically included in MaaS bundles, such as car-sharing or micromobility options.

These adoption patterns underscore the complexity of introducing MaaS in environments dominated by essential, low-cost transit usage. For many respondents, especially those with limited financial flexibility or minimal need for non-transit services, MaaS bundles may not present a noticeable improvement over the current option. The strong preference for the opt-out alternative likely reflects both a lack of perceived value and a mismatch between what is offered in the bundles and what this user base needs. In such contexts, bundled services may feel unnecessary or even burdensome, especially if they include unfamiliar components like car-

sharing or e-scooters that do not align with users' routines, capabilities, or neighborhood infrastructure.

This highlights an important consideration for policymakers and service providers: MaaS design must be grounded in the lived realities of the transit-dependent population it seeks to serve. For riders already paying per trip in cash or committing to low-cost monthly passes, bundling becomes attractive only if it offers tangible convenience, savings, or new mobility opportunities that are both relevant and accessible. Without that, MaaS risks being perceived as repackaging existing services at a higher cost or with unnecessary complexity.

Moreover, the behavioral segmentation revealed by the model suggests that not all low-income riders should be treated as a monolithic group. While some are price-sensitive and willing to explore bundles to stabilize travel costs, others appear content with existing arrangements, especially if those arrangements already offer predictability and control. In this regard, targeted outreach—perhaps through community-based trials or fare pilot programs—could help identify which subgroups are most receptive and which require additional education or incentives to consider switching.

The openness among younger riders further reinforces the opportunity for generational engagement strategies. Because younger users are more likely to adopt digital tools and experiment with new service models, they represent a prime audience for initial rollout and word-of-mouth diffusion. However, for MaaS to achieve broader penetration, efforts must also focus on bridging the gap for older riders and those unfamiliar with digital platforms. This might involve multi-channel access (e.g., phone-based registration, physical kiosks), customer support, or hybrid payment models that maintain compatibility with cash while encouraging gradual transitions.

Finally, the lack of influence from gender and transit frequency suggests that MaaS adoption hinges less on how often or by whom transit is used, and more on how it is integrated into broader lifestyle and economic contexts. Future MaaS strategies should avoid one-size-fits-all assumptions and embrace modularity, allowing users to customize bundles to match their

specific routines and budgets. A flexible, equity-oriented approach, combining targeted pricing, community outreach, and practical design, will be essential for moving MaaS from niche interest to an accessible urban utility.

In conclusion, despite the limited sample size constraining the generalizability of our findings, this study offers valuable insights into the factors influencing MaaS adoption in a car-centric U.S. context. Adoption appears to be shaped more by fare behavior, socioeconomic status, and perceived value than by transit usage alone. Users of multi-ride passes were more receptive to subscriptions. In contrast, higher-income and smart card users were less inclined, likely reflecting satisfaction with current systems or a preference for flexibility. Younger and unemployed respondents showed greater openness, highlighting opportunities for targeted outreach to digitally fluent and cost-sensitive groups. As MaaS remains relatively underdeveloped in the U.S., future efforts should prioritize large-scale empirical trials, refined bundle design, and inclusive recruitment to better capture diverse mobility needs. Ultimately, MaaS success will depend on aligning offerings with the lived realities of riders, ensuring that services are flexible, affordable, and more advantageous than existing alternatives.

### 2.8 Recommendations

Based on these findings, several policy recommendations can be made to support the effective implementation of MaaS in automobile-oriented cities, such as Nashville, TN. These recommendations are grounded in the key user characteristics and behavioral patterns identified through the binary logit model and correlation analysis:

- *Raise awareness among receptive user groups:* Younger riders (16–24 years old) and unemployed individuals showed a significantly higher likelihood of MaaS adoption. Targeted awareness campaigns, especially on digital platforms, can further activate these groups by highlighting the convenience and flexibility of subscription-based mobility services.

- *Implement segmented adoption strategies**:*** Given the greater adoption propensity among low-income and student populations, MaaS providers should design messaging and onboarding experiences tailored to these segments. Conversely, higher-income and long-term transit users, who showed lower adoption probabilities, may require additional

incentives, demonstrations of added value, or integration with preferred payment systems.

- *Offer competitive pricing and financial incentives:* The findings revealed that price-sensitive riders, particularly those utilizing multi-ride and all-day passes, are more receptive to MaaS. To encourage broader adoption, pricing strategies should include discounts, or trial offers for first-time users, students, unemployed individuals, and low-income households who are most likely to benefit.

- *Collaborate with educational institutions and employers:* The negative association between smart card users and MaaS subscription suggests resistance among entrenched users of institutional fare systems. Collaborations with universities, employers, and transit agencies can enable bundled plans that integrate with existing fare infrastructure or offer co-branded incentives.

# CHAPTER 3 MODE SUBSTITUTION PATTERN AMONG U.S. E-BIKE OWNERS

## 3.1 Introduction

Electric bicycles (e-bikes) are increasingly recognized as a promising component of sustainable urban mobility systems. Offering flexible and lower-impact alternatives to motorized transportation, e-bikes have the potential to support active travel, expand mobility options, and reduce reliance on private automobiles (Fishman et al., 2016; Gössling, 2020). As e-bike adoption has grown rapidly in North America, policymakers and planners have sought to better understand how e-bikes influence travel behavior and their integration into broader transportation systems (IEA, 2021; Shaheen et al., 2021).

A central concern in this landscape is mode substitution: the extent to which e-bike trips displace car travel, complement existing mobility options, or reshape travel behavior. Numerous studies suggested that e-bikes replace a significant portion of short-to-medium car trips (MacArthur et al., 2014; Ling et al., 2017; Neves et al., 2019). Yet substitution patterns vary across trip purpose, user demographics, and mobility baselines (Jones et al., 2016; Piatkowski et al., 2021; Lee et al., 2023). These variations are particularly salient in the U.S., where car-centric infrastructure and land use limit multimodal flexibility.

Despite this growing body of research, substantial gaps remain, particularly in the U.S. context, regarding the temporal evolution of substitution patterns and the influence of diverse demographic, behavioral, and trip-specific factors. Much of the existing evidence is based on single cross-sectional surveys, which limits our understanding of how substitution behavior changes over time as e-bike adoption matures. Additionally, relatively little research has examined how prior cycling experience, current e-bike use intensity, and prior mode use shape substitution outcomes in evolving markets.

This chapter contributes to the dissertation's broader investigation into incentivized and integrated mobility interventions by focusing on how e-bikes substitute for other travel modes across time and population segments. Unlike much of the existing research, which is based on

single-year or region-specific datasets, we employ a pooled dataset from two nationally distributed e-bike user surveys conducted in 2017 and 2023. This enables a temporal comparison of substitution dynamics as the e-bike market expands beyond early adopters (MacArthur et al., 2014) and into more diverse user groups with varying motivations and mobility needs (de Haas et al., 2022).

By estimating a pooled multinomial logit model, we examine how substitution behavior varies by trip purpose, income, gender, biking frequency, and prior travel mode, while explicitly assessing changes over time. In doing so, this chapter aligns with the behavioral and environmental evaluation framework established in earlier chapters: following Chapter 2's exploration of barriers and enablers to MaaS adoption, this chapter investigates how e-bikes are operationally integrated into users' travel patterns, setting the stage for emissions modeling and incentive policy analysis in Chapter 4.

Ultimately, this chapter provides new evidence on the dynamic nature of substitution behavior and its variation across diverse user contexts, this research contributes to a more nuanced understanding of the impacts of e-bikes in U.S. transportation systems. The findings inform both mobility planning and incentive program design, highlighting where e-bikes serve as viable substitutes for cars and how these patterns evolve as adoption scales. In doing so, the chapter advances the dissertation's overarching goal of evaluating scalable, incentive-driven strategies for sustainable urban mobility in the United States.

## 3.2 Review of Literature

Understanding mode substitution is crucial for evaluating the role of e-bikes in promoting sustainable urban mobility and reducing transportation-related greenhouse gas emissions. E-bikes offer a flexible alternative to motorized transportation, with the potential to reduce car dependency and encourage active travel (Fishman et al., 2016; Gössling, 2020). Global e-bike sales have surged in recent years, with projections indicating continued strong growth in North America and Europe (IEA, 2021; Gupta et al., 2023; Huang et al., 2024). As e-bikes become increasingly mainstream, there is growing academic interest in understanding their impacts on individual travel behavior, modal substitution, and the broader evolution of urban transportation

systems (Zhou et al., 2023). In particular, e-bike adoption aligns with urban goals to shift travel away from single-occupancy vehicles and toward more sustainable modes.

One of the most important areas of inquiry is modal substitution, or the degree to which e-bikes replace car, transit, or walking trips. Numerous studies have found that between 20% to 50% of e-bike trips, replace car travel, depending on user segment and geographic context (Fyhri et al., 2015; Hosseini et al., 2024). In North American surveys, reductions in vehicle mile travelled (VMT) among e-bike owners are well-documented (Popovich et al., 2014; McQueen et al., 2020; Piatkowski et al., 2021). E-bikes are particularly effective in substituting short-to-medium length car trips that are not well served by transit or active modes (MacArthur et al., 2014; Jones et al., 2016). In Europe and China, e-bikes have been shown to both complement existing cycling and replace car or transit use (Cherry et al., 2007; Fyhri et al., 2015; Haustein et al., 2016).

Substitution behavior, however, is far from uniform. A wide range of user-specific factors influences outcomes, including age, income, gender, and prior travel behavior (Rose, 2012; Popovich et al., 2014; Wolf et al., 2014; Fyhri et al., 2015). Early adopters in North America and Austria tended to be older, wealthier, and better educated (Rose, 2012; Popovich et al., 2014; Wolf et al., 2014), whereas the European market often shows broader demographic uptake (Fyhri et al., 2015; Hintermann et al., 2025). Motivations also matter: while convenience and reduced exertion are commonly cited, the explicit desire to replace car trips has emerged as a key driver of e-bike adoption (MacArthur et al., 2014; Johnson et al., 2015). Recent U.S. studies further document that the e-bike market is expanding beyond early adopters into more diverse demographic segments (Ballo et al., 2023; Johnson et al., 2023).

Trip purpose is another key driver of substitution behavior. Utilitarian trips, such as commuting, shopping, and personal errands, are most likely to be replaced by e-bike travel (Jones et al., 2016). In contrast, recreational trips are less likely to substitute motorized travel and may instead represent newly induced demand or replace other active modes (MacArthur et al., 2018; McQueen et al., 2020). Prior mode use is another predictor: individuals often revert to their previous travel mode if the e-bike is unavailable (Fyhri et al., 2015; de Haas et al., 2022).

Moreover, environmental values, trip distance, safety concerns, and weather conditions can further shape mode choice in the absence of an e-bike (Bai et al., 2020; Casier et al., 2022). A user's cycling history and intensity of e-bike use shape substitution behavior. Those with minimal prior biking experience are more likely to substitute car trips, whereas experienced cyclists may shift trips away from walking or transit (Fyhri et al., 2015; Haustein et al., 2016). Frequent e-bike users consistently report greater displacement of car and transit trips, and e-bikes have been linked to overall increases in total cycling participation (Gössling, 2013; Fyhri et al., 2015).

Socioeconomic status also influences substitution trajectories. Higher-income users are less likely to substitute transit or walking trips (Piatkowski et al., 2021; Lee et al., 2023), while lower-income users often show more multimodal patterns and substitute across a broader range of modes (Piatkowski et al., 2021). Though initial adopters were primarily affluent (Popovich et al., 2014; Wolf et al., 2014), the e-bike market has since become more demographically inclusive (Fishman et al., 2016).

Importantly, substitution patterns are dynamic and evolve over time. As e-bike adoption becomes more mainstream, user profiles and substitution effects are growing (O'Hern et al., 2020). Newer users may exhibit more substantial car displacement, but also display greater variations by trip purpose and individual context (McQueen et al., 2020; Piatkowski et al., 2021). While this temporal dimension is often acknowledged, it remains underexplored: most studies are based on single cross-sectional surveys, with limited capacity to capture behavioral shifts over time. Longitudinal or pooled analyses are rare, particularly in the U.S. (de Haas et al., 2022).

In summary, researchers have made progress in understanding the mode substitution effects of e-bikes. However, substantial gaps remain, particularly in the U.S., regarding the temporal dynamics of substitution and the influence of diverse demographic and contextual factors. This study addresses these gaps by examining how e-bike owners transition to other transportation modes, providing detailed demographic insights from multiple U.S. survey waves, and investigating the roles of prior behavior, motivations, and evolving market trends. By focusing on urban U.S. contexts and employing a pooled multinomial logit modeling approach, this

research contributes new evidence on the dynamic nature of e-bike substitution behavior and its implications for sustainable transportation policy.

## 3.3 Research Objectives

The primary objective of this chapter is to examine how e-bike ownership shapes mode substitution behavior in the United States, with particular emphasis on temporal shifts in these patterns as adoption broadens. Drawing on pooled data from two nationally distributed e-bike user surveys conducted in 2017 and 2023, this analysis seeks to identify the demographic, behavioral, and trip-specific factors that influence individuals' decisions to replace other modes of transportation with e-bike trips.

The study estimates a pooled multinomial logit model to quantify how substitution outcomes vary by prior biking frequency, current e-bike usage intensity, income level, motivation for adoption, and the availability of alternative travel options. The inclusion of a temporal variable enables a comparative assessment of whether substitution dynamics have evolved as e-bikes have diffused beyond early adopters and into a more demographically diverse user base.

## 3.4 Methodology

To understand how individual characteristics, trip purposes, and baseline mobility contexts shape e-bike users' substitution patterns, we estimate a pooled multinomial logit model of alternate mode choice. The surveys captured detailed information on recent e-bike trips, users' prior and current travel behaviors, sociodemographic characteristics, motivations for purchasing an e-bike, and prior mode of transportation use.

The dependent variable is categorical, capturing six possible alternative mode choices: personal car use, shared car use, transit, or walk, no trip, or other mode. Bike-based modes (including non-electric bicycles and bike shares) serve as the reference category. The trip-level sample includes a total of 13,972 observations pooled across both survey years. Pooling the two survey years enables identification of both cross-sectional and temporal variation in substitution patterns. It facilitates analysis of how mode substitution behavior has evolved as e-bike adoption has expanded into broader user segments.

We estimated a pooled multinomial logit model using maximum likelihood estimation. Let $U_{ij}$denote the utility of an individual $i$ choosing an alternate mode $j$. The model specifies utility as:

$$U_{ij} = \beta_j X_i + \gamma_j Z_{ij} + \varepsilon_{ij} \quad \ldots\ldots\ldots \text{ Equation 3-1}$$

where $X_i$ represents a vector of individual characteristics, including prior biking frequency, current e-bike riding frequency, year of purchase, and income class (based on Federal Poverty Guidelines), stated reasons for e-bike purchase, and prior mode use for five trip purposes. $Z_{ij}$ includes trip-specific variables, notably recent e-bike trip purpose and its interaction with the year of purchase. The error term $\varepsilon_{ij}$ follows an independent and identically distributed Gumbel distribution, consistent with standard multinomial logit assumptions. The probability that an individual $i$ selects the alternate mode $j$ is given by:

$$P_{ij} = \frac{\exp(U_{ij})}{\sum_k \exp(U_{ik})} \quad \ldots\ldots\ldots \text{ Equation 3-2}$$

Model parameters are estimated by maximizing the following log-likelihood function:

$$L = \sum_i \sum_j y_{ij} \log(P_{ij}) \quad \ldots\ldots\ldots \text{ Equation 3-3}$$

where $y_{ij}$ equals to 1 if individual *i* selects alternative *j*, and 0 otherwise.

Clustered standard errors at the respondent's level account for within-respondent correlation, as each respondent contributes up to three observations (one for each of their last three e-bike trips). The pooled model specification allows for the identification of both cross-sectional and temporal variation in substitution patterns.

### 3.5 Data

This study leverages a pooled dataset drawn from three iterations of a North American survey of electric bicycle (e-bike) owners. These surveys capture evolving patterns of e-bike ownership and use across the continent, providing a unique longitudinal perspective on e-bike substitution behavior. While each survey employed a cross-sectional design with distinct respondent samples,

the core survey structure was intentionally maintained across waves, allowing for comparative analysis of substitution patterns over time.

This analysis focuses on pooled data from the 2017 and 2023 surveys, which included a consistent question set regarding alternate mode choice for recent e-bike trips, a variable central to this study's aim of modeling of substitution behavior. The first wave, conducted in 2013, MacArthur et al. (2014) did not include this measure, and it is not used in the present analysis. In the 2017 wave, MacArthur et al. (2018) achieved a sample of 1,796 respondents, collected between April and July 2017 through an expanded distribution strategy that included social media, manufacturers, retail email lists, and in-person outreach at e-bike shops and events. The 2023 wave Bennett (2024) retained core questions from prior waves and introduced refinements to capture substitution behavior more effectively. The detailed survey questioner for 2017 and 2023 e-bike owner survey can be referenced in **Appendix** 4 and **Appendix** 5 respectively. It also improved demographic coverage and sampling diversity by recruiting across broader national e-bike networks and local partnerships.

Following data cleaning to remove incomplete or invalid responses, the final sample consists of 1,002 respondents from the 2017 wave and 3,674 respondents from the 2023 wave. Each respondent was asked to report on their last three e-bike trips, including the alternative mode they would have used had the e-bike not been available. This design yields a total of 13,972 trip-level observations (2,950 from 2017 and 11,022 from 2023), which form the basis of the modeling analysis. Pooling the 2017 and 2023 waves is appropriate because the survey structure and key variables remained consistent across these waves, allowing for the valid measurement of substitution patterns and their evolution over time. This pooled dataset forms the basis for both descriptive and modeling analyses of alternate mode choice following e-bike adoption.

### *3.5.1 Respondent Demographics*

In both survey waves, most respondents identified as White or Caucasian (85.4% in 2017; 84.2% in 2023), followed by smaller proportions of Asian, Hispanic or Latino/Latina, Black or African American, American Indian or Alaska Native, and other groups. The gender distribution shifted

across waves, with a decrease in the proportion of male respondents (from 70.5% to 60.8%) with an increase in female respondents (from 28.5% to 36.2%).

The age distribution indicates a broadening user base, with increased representation among both younger (25-34) and older (65 and older) age groups in 2023. Educational attainment was high in both survey years, with a growing share of respondents reporting a bachelor's or graduate degree in 2023. Prior to purchasing an e-bike, respondents reported varying levels of bicycling frequency; in both years, a substantial share were regular cyclists (daily or weekly), although the proportion of infrequent or non-cyclists declined over time. These shifts in sample composition reflect the evolving demographics of U.S. e-bike owners, providing important context for interpreting changes in mode substitution behavior across survey waves. The number of responses for alternative modes is higher than the number of survey participants because each respondent reported up to three recent e-bike trips. This trip level reporting resulted in 3,646 substitution cases in 2017 and 13,059 in 2023, allowing for a more detailed view of the travel modes e-bike are replacing. The demographic composition of the sample is presented in **Table** 3-1.

Table 3-1. Respondent demographics from the 2017 and 2023 e-bike user surveys

| Year | 2017 | 2023 |
|---|---|---|
| | Value (%) | Value (%) |
| Ethnicity | (n = 1,578) | (n = 4,194) |
| White or Caucasian | 85.9 | 84.5 |
| Hispanic or Latino/Latina | 2.3 | 2.7 |
| Black or African American | 1.2 | 1.8 |
| Asian | 4.1 | 3.4 |
| American Indian or Alaska Native | 0.7 | 0.7 |
| Other | 2.3 | 4.3 |
| Prefer not to say | 3.5 | 2.6 |
| Gender | (n = 1,578) | (n = 4,188) |
| Male | 70.8 | 61.0 |
| Female | 28.5 | 36.1 |
| Other | 0.3 | 1.8 |
| I prefer not to answer | 0.4 | 1.1 |
| Age (years) | (n = 1,578) | (n = 4,114) |
| Younger than 25 | 2.4 | 1.8 |

Table 3.1. Continued

| | | |
|---|---|---|
| 25 to 34 | 10.7 | 14.8 |
| 35 to 44 | 20.1 | 20.8 |
| 45 to 54 | 20.2 | 14.9 |
| 55 to 64 | 27.8 | 18.9 |
| 65 and older | 18.9 | 28.9 |
| Education | (n = 1,578) | (n = 4,195) |
| High School or less | 5.1 | 2.7 |
| Some college | 21.9 | 11.8 |
| Associate degree | 7.7 | 6.5 |
| Bachelor's degree | 30.1 | 36.2 |
| Graduate degree | 34.1 | 41.9 |
| I prefer not to answer | 1.1 | 0.9 |
| Biking frequency before e-bike purchase | (n = 1,578) | (n = 3,973) |
| Daily | 25.2 | 30.7 |
| Weekly | 29.9 | 38.1 |
| Monthly | 15 | 12.9 |
| A few times a year | 19.2 | 13.1 |
| Once a year or less | 6.3 | 3.4 |
| Never | 4.4 | 1.8 |

## 3.6 Results

This section presents empirical results on mode substitution behavior following e-bike acquisition, using data from two nationally representative e-bike user surveys conducted in 2017 and 2023. We organize the results into two subsections: the first examines descriptive substitution patterns by mode and trip purpose; the second presents a pooled multinomial logit model estimating the predictors of substitution behavior. Together, these analyses reflect evolving dynamics in how e-bike use displaces other transportation modes across income levels, trip purposes, and temporal cohorts.

### *3.6.1 Mode Substitution Pattern*

**Figure** 3-1 shows the frequency of e-bike use frequency across five distinct trip purposes: commuting (work or school), entertainment, personal errands, visiting friends and family, and exercise and recreational, for both the 2017 and 2023 surveys. Between these two survey periods, the frequency of daily e-bike use declined across most utilitarian categories. Specifically, daily commuting fell notably from 33% in 2017 to 23% in 2023, while daily e-bike use for errands, entertainment, and social visits also decreased modestly.

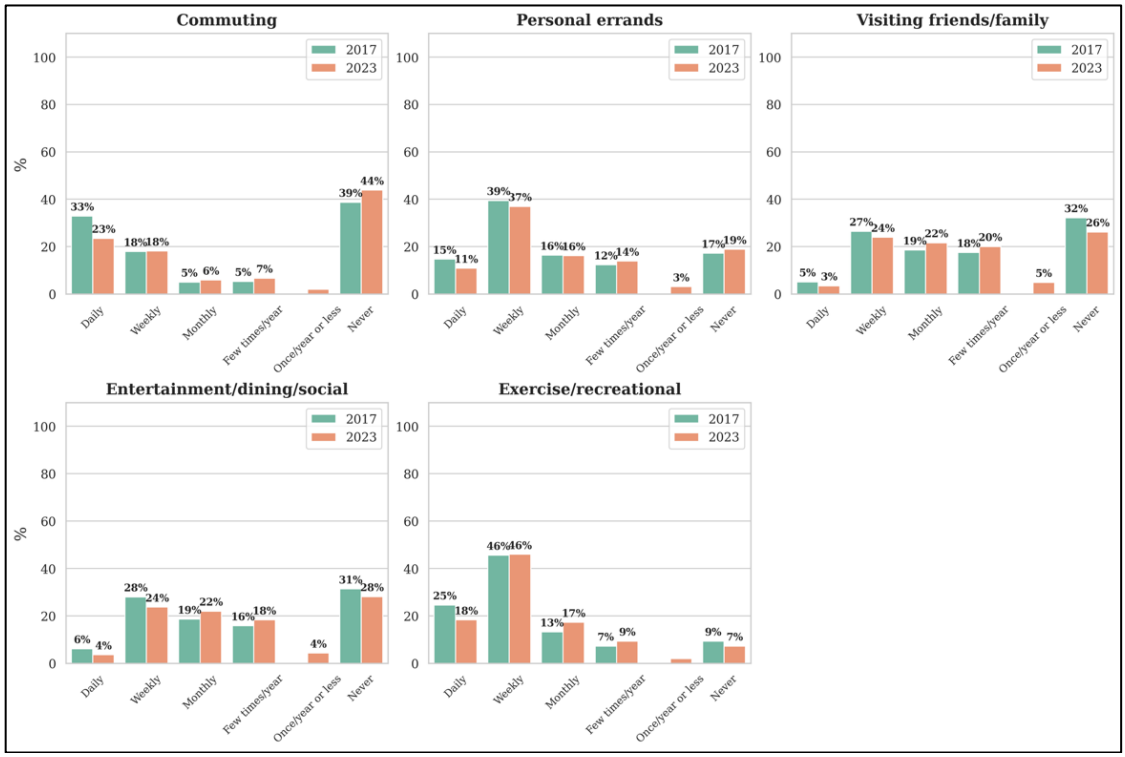


Figure 3-1: E-bike use frequency distributed by trip purpose (2017 vs 2023)

Recreational usage patterns were consistent across years. Approximately half of the respondents in both years reported using their e-bike for recreational or exercise at least weekly. Although daily recreational use saw a slight decline (from 21% to 17%), recreational use remained the predominant purpose for e-bike travel. This suggests a broadening of the e-bike user base toward more leisure-oriented riders.

### *3.6.2 Mode Substitution Pattern Across All Trip Purposes*

Mode substitution patterns reported in the 2017 and 2023 surveys reveal both stability and notable changes in how e-bike trips displace other transportation modes. **Figure** 3-2 summarize respondent-reported substitutions segmented by trip purpose for all e-bike trips.

Personal car use was consistently displaced by e-bike commuting, accounting for 48% of the trips that would have otherwise been made by car in 2017 and 42% in 2023. Similarly, e-bike trips frequently replaced transit trips, predominantly for commuting purposes (68% in 2017; 59% in 2023). These patterns highlight the sustained potential of e-bikes to substitute traditional, motorized commuting modes.

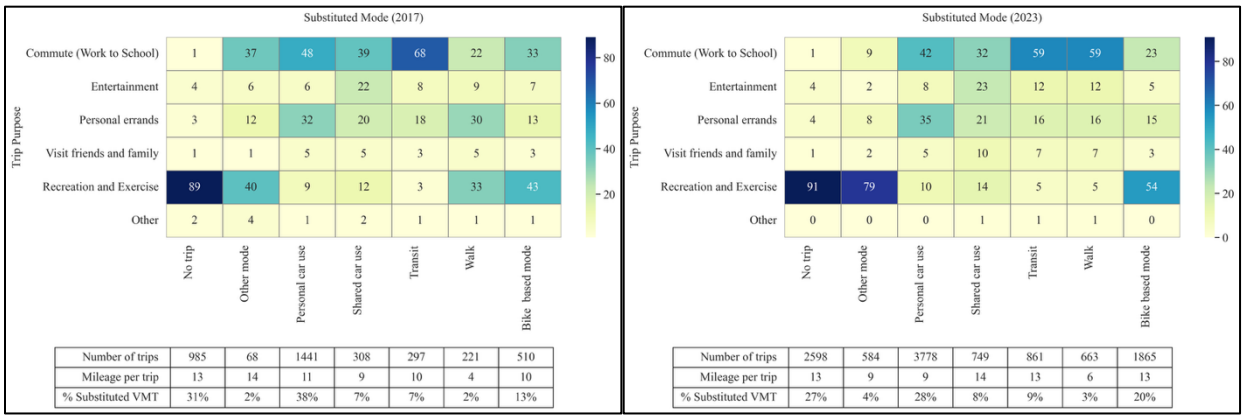



Figure 3-2:Reported mode substitution patterns for e-bike trips across all trip purposes, 2017 and 2023.

Recreational e-bike trips were often induced rather than substituted, meaning these trips might not have occurred without e-bike availability. Recreational trips represent approximately 90% of trips classified as “no trip” substitutions in both surveys, highlighting the role of e-bikes in generating new leisure travel opportunities. Additionally, substitution from conventional bike-based trips increased noticeably for recreational purposes (from 43% to 54%), suggesting e-bikes are increasingly replacing traditional cycling activities.

When considering substituted VMT, personal car substitution remained dominant but decreased from 38% in 2017 to 28% in 2023. To estimate these figures, we first identified each respondent’s reported substituted mode for each trip and its respective trip purpose. We then multiplied the share of each mode by the average round-trip distance reported for that trip purpose to approximate total substituted VMT. The proportional contribution of each mode to substituted VMT was then aggregated across all respondents.

Substitution from bike-based modes increased from 13% to 20% of total VMT, driven primarily by longer recreational and errands-related trips. Transit and shared-car substitution shares showed minor changes, stabilizing at 7-9%, while walking substitution remained minimal (2-3%), indicating that e-bike growth is not significantly detracting from active transportation modes.

### *3.6.3 Mode Substitution Pattern Utilitarian Trips*

Focusing solely on utilitarian trips highlights clearer substitution dynamics (**Figure** 3-3). In both survey years, personal car travel accounted for the largest share of substituted VMT (59% in 2017, 45% in 2023). Although this proportion declined over time, indicating broader substitution across other modes, e-bikes remained highly effective at reducing private automobile use for utilitarian trip purposes.

Notably, the proportion of transit substitution increased significantly from 12% to 16% of substituted VMT between surveys, and shared-car substitution rose similarly from 10% to 13%. This trend may reflect a shift in traveler preferences towards personal mobility, possibly influenced by pandemic-era behavioral adaptations. The proportion of substituted VMT from traditional cycling also increased notably, from 9% in 2017 to 16% in 2023, reflecting a shift towards longer-distance e-bike trips that might previously have been completed via conventional bicycle.

Despite increased adoption, e-bikes have shown limited substitution of walking (1.6% in 2017; 4% in 2023). The share of induced trips also slightly decreased from 5.7% to 4%, highlighting that most utilitarian e-bike trips replace existing travel rather than generating entirely new trips. Overall, these evolving substitution patterns highlight the role e-bikes play in reshaping urban travel behavior, substantially displacing car use, and increasingly substituting transit and shared transportation modes.

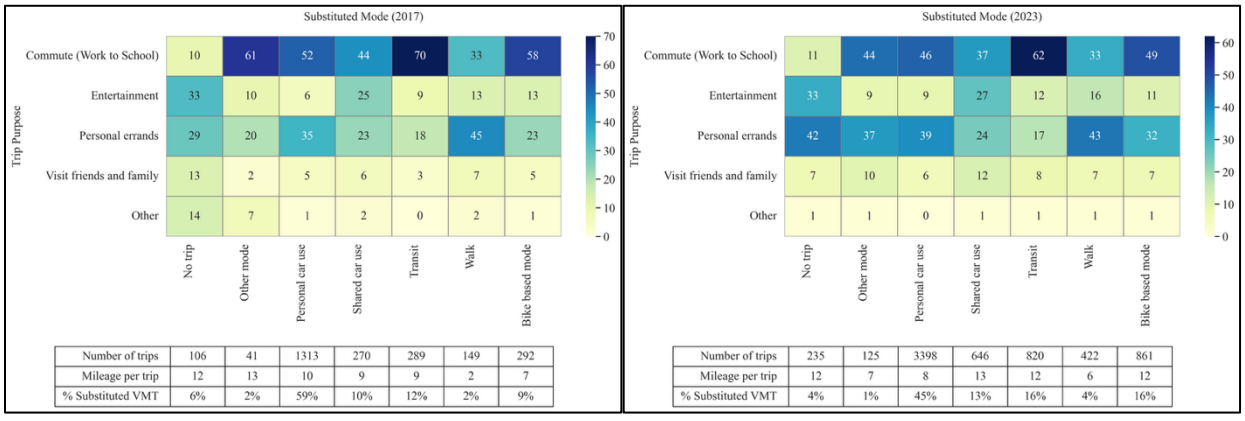


Figure 3-3: Mode substitution patterns for utilitarian e-bike trips purposes in 2017 and 2023.

### *3.6.4 Multinomial Logit Result: Predictors of Alternate Mode Substitution*

The multinomial logit model quantifies predictors that are correlated with e-bike substitution. The dataset is generated at the trip level as a travel diary and the survey question was framed as "If you had not taken your e-bike, how would you have traveled to your destination?". The model includes 13,972 trips from the 2017 and 2023 surveys, with bike-based travel as the base category. It demonstrates an acceptable fit (pseudo R2 = 0.22, $p<0.001$), and standard errors are clustered at the respondent level. **Tabel** 3-2 presents only statistically significant predictors; the complete model output is provided in **Appendix** 6.

Prior biking frequency is the most consistent predictor of substitution. Compared to daily cyclists, those who biked less frequently had significantly higher odds of substituting to all alternate modes, including personal car use ($\beta=3.94$, $p<0.001$), transit ($\beta=3.86$, $p<0.001$, shared car use ($\beta=3.66$, $p<0.001$), walking ($\beta=3.18$, $p<0.001$), and even forgoing the trip entirely ($\beta=3.86$, $p<0.001$ for "once a year or less"). This suggests e-bikes particularly expand mobility for non-cyclists.

E-bike riding frequency after purchase also shapes substitution. Weekly and monthly riders were significantly less likely to substitute with a personal car ($\beta = -0.37$ and $-0.69$, both $p < 0.001$), transit ($\beta = -0.58$ and $-0.83$, both $p < 0.001$), or walk ($\beta = -0.35$ and $-0.64$, $p < 0.05$). These patterns suggest habitual e-bike users develop stronger dependence on e-bikes for essential trips.

Trip purpose strongly affects substitution behavior. Relative to commute trips, errands were significantly more likely to be substituted with no trip ($\beta = 1.42$, $p < 0.001$), personal car ($\beta = 0.64$, $p < 0.001$), shared car ($\beta = 0.59$, $p = 0.03$), and walking ($\beta = 1.23$, $p < 0.001$). "Other" trips also had positive associations with substitution to multiple modes. In contrast, recreational trips were less likely to be substituted at all, especially to personal car ($\beta = -3.29$, $p < 0.001$), transit ($\beta = -3.04$, $p < 0.001$), and shared car ($\beta = -1.78$, $p < 0.001$).

Purchase motivations modestly influence fallback mode. Respondents citing recreation/other reasons were less likely to substitute with personal car ($\beta = -0.51$, $p = 0.01$), and more likely to walk ($\beta = 0.16$, $p = 0.53$). Practicality-based purchasers were more likely to fall back on transit

(β = 0.71, p = 0.01), but less so in 2023 (interaction β = –0.66, p = 0.03), indicating temporal shifts in substitution behavior.

Table 3-2. MMNL model results from the e-bike user survey from 2017 and 2023 for alternate mode choice after E-Bike purchase.

| | Coeff | std err | z | P>\|z\| |
|---|---|---|---|---|
| **Alternate Mode = Personal car use** | | | | |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.89 | 0.10 | 8.69 | 0.00 |
| Monthly | 2.02 | 0.17 | 11.82 | 0.00 |
| Once a year or less | 3.94 | 0.48 | 8.23 | 0.00 |
| A few times a year | 2.48 | 0.21 | 11.75 | 0.00 |
| Never | 2.03 | 0.54 | 3.78 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.37 | 0.11 | -3.35 | 0.00 |
| Monthly | -0.69 | 0.21 | -3.36 | 0.00 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | -0.17 | 0.35 | -0.48 | 0.63 |
| **Reason for purchasing an e-bike** | | | | |
| Practicality | -0.34 | 0.19 | -1.82 | 0.07 |
| Recreational and other | -0.51 | 0.18 | -2.82 | 0.01 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | 0.64 | 0.20 | 3.21 | 0.00 |
| Other | -0.40 | 0.12 | -3.26 | 0.00 |
| Recreational | -3.29 | 0.25 | -13.03 | 0.00 |
| **Modes used for commuting before purchasing an e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | 0.81 | 0.34 | 2.38 | 0.02 |
| **Modes used for personal errands before purchasing an e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | 0.75 | 0.22 | 3.47 | 0.00 |
| **Interaction terms** | | | | |
| **Purpose of last e-bike trip and year of purchase** | | | | |
| Purpose Recreation : Year 2023 | 0.57 | 0.28 | 2.07 | 0.04 |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | 0.46 | 0.22 | 2.14 | 0.03 |

Table 3.2. Continued

| | | | | |
|---|---|---|---|---|
| **Alternate Mode = Shared car use** | | | | |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.57 | 0.14 | 4.06 | 0.00 |
| Monthly | 1.75 | 0.21 | 8.32 | 0.00 |
| Once a year or less | 3.66 | 0.53 | 6.85 | 0.00 |
| A few times a year | 2.32 | 0.25 | 9.38 | 0.00 |
| Never | 2.21 | 0.55 | 4.01 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.45 | 0.15 | -3.02 | 0.00 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | 0.23 | 0.53 | 0.44 | 0.66 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | 0.59 | 0.28 | 2.14 | 0.03 |
| Other | 1.02 | 0.15 | 6.74 | 0.00 |
| Recreational | -1.78 | 0.30 | -5.99 | 0.00 |
| **Modes used for commuting before purchasing an e-bike** | | | | |
| Walk | Base category | | | |
| Shared car | 0.85 | 0.45 | 1.90 | 0.06 |
| **Modes used for personal errands before purchasing an e-bike** | | | | |
| Walk | Base Category | | | |
| Shared car | 0.66 | 0.30 | 2.23 | 0.03 |
| Other modes | -45.79 | 0.55 | -83.76 | 0.00 |
| Do not participate in the activity | 1.13 | 0.50 | 2.26 | 0.02 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| More than 400% FPG | -0.40 | 0.18 | -2.19 | 0.03 |
| **Interaction terms** | | | | |
| **Reason per purchase and year of purchase** | | | | |
| Recreation and other : Year 2023 | -0.6 | 0.30 | -1.98 | 0.05 |
| **Alternate Mode = Transit** | | | | |
| **Constant** | 1.30 | 0.63 | 2.05 | 0.04 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.76 | 0.14 | 5.56 | 0.00 |
| Monthly | 1.80 | 0.22 | 8.11 | 0.00 |
| Once a year or less | 3.86 | 0.52 | 7.38 | 0.00 |
| A few times a year | 2.00 | 0.26 | 7.81 | 0.00 |
| Never | 1.85 | 0.60 | 3.09 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |

Table 3.2. Continued

| | | | | |
|---|---|---|---|---|
| Weekly | -0.58 | 0.15 | -3.94 | 0.00 |
| Monthly | -0.83 | 0.29 | -2.87 | 0.00 |
| Once a year or less | -0.85 | 0.46 | -1.83 | 0.07 |
| A few times a year | -1.18 | 0.44 | -2.71 | 0.01 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | -0.11 | 0.46 | -0.25 | 0.81 |
| **Reason for purchasing an e-bike** | | | | |
| Practicality | 0.71 | 0.26 | 2.71 | 0.01 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Recreational | -3.04 | 0.46 | -6.61 | 0.00 |
| **Modes used for commuting before purchasing an e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | -1.20 | 0.40 | -2.97 | 0.00 |
| Public transit | 1.21 | 0.44 | 2.78 | 0.01 |
| **Modes used for personal errands before purchasing an e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | -0.86 | 0.24 | -3.68 | 0.00 |
| Bike based | -0.68 | 0.22 | -3.03 | 0.00 |
| Shared car | -1.03 | 0.32 | -3.29 | 0.00 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| More than 400% FPG | -0.38 | 0.19 | -2.02 | 0.04 |
| **Interaction terms** | | | | |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | -0.66 | 0.30 | -2.23 | 0.03 |
| **Alternate Mode = Walking** | | | | |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.54 | 0.14 | 3.78 | 0.00 |
| Monthly | 1.78 | 0.21 | 8.37 | 0.00 |
| Once a year or less | 3.18 | 0.54 | 5.92 | 0.00 |
| A few times a year | 2.27 | 0.25 | 8.92 | 0.00 |
| Never | 2.31 | 0.58 | 4.02 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.35 | 0.15 | -2.35 | 0.02 |
| Monthly | -0.64 | 0.28 | -2.32 | 0.02 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | 0.04 | 0.53 | 0.08 | 0.94 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |

Table 3.2. Continued

| | | | | |
|---|---|---|---|---|
| Errands | 1.23 | 0.29 | 4.29 | 0.00 |
| Other | 0.62 | 0.18 | 3.44 | 0.00 |
| **Modes used for commuting before purchasing an e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | -0.71 | 0.38 | -1.87 | 0.06 |
| Bike based | -1.11 | 0.38 | -2.95 | 0.00 |
| Shared car | -1.23 | 0.48 | -2.55 | 0.01 |
| Do not participate in the activity | -0.93 | 0.37 | -2.51 | 0.01 |
| **Modes used for personal errands before purchasing an e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | -0.79 | 0.24 | -3.26 | 0.00 |
| Bike based | -0.76 | 0.23 | -3.25 | 0.00 |
| Shared car | -0.50 | 0.30 | -1.68 | 0.09 |
| Public transit | -1.01 | 0.49 | -2.07 | 0.04 |
| Other modes | -1.95 | 0.71 | -2.75 | 0.01 |
| **Alternate Mode = No Trip** | | | | |
| **Constant** | -2.90 | 0.59 | -4.91 | 0.00 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.79 | 0.12 | 6.40 | 0.00 |
| Monthly | 2.02 | 0.19 | 10.39 | 0.00 |
| Once a year or less | 3.86 | 0.48 | 8.09 | 0.00 |
| A few times a year | 2.71 | 0.22 | 12.18 | 0.00 |
| Never | 2.48 | 0.50 | 4.95 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.32 | 0.13 | -2.48 | 0.01 |
| Monthly | -0.54 | 0.21 | -2.56 | 0.01 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | -0.42 | 0.42 | -1.00 | 0.32 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | 1.42 | 0.37 | 3.88 | 0.00 |
| Other | 2.21 | 0.25 | 8.78 | 0.00 |
| Recreational | 2.72 | 0.29 | 9.49 | 0.00 |
| **Modes used for personal errands before purchasing an e-bike** | | | | |
| Walk | Base Category | | | |
| Public transit | -1.19 | 0.56 | -2.12 | 0.03 |
| **Interaction terms** | | | | |
| **Purpose of last e-bike trip and year of purchase** | | | | |
| Purpose Recreation : Year 2023 | 0.52 | 0.27 | 1.92 | 0.06 |
| **Alternate Mode = Other modes** | | | | |
| **Constant** | -3.23 | 0.77 | -4.20 | 0.00 |

Table 3.2. Continued

| | | | | |
|---|---|---|---|---|
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.73 | 0.13 | 5.76 | 0.00 |
| Monthly | 1.72 | 0.21 | 8.32 | 0.00 |
| Once a year or less | 3.63 | 0.51 | 7.06 | 0.00 |
| A few times a year | 2.19 | 0.24 | 9.13 | 0.00 |
| Never | 2.52 | 0.54 | 4.68 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.50 | 0.13 | -3.87 | 0.00 |
| Monthly | -0.60 | 0.22 | -2.69 | 0.01 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | 2.61 | 0.60 | 4.32 | 0.00 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Other | 0.51 | 0.15 | 3.44 | 0.00 |

Trip purpose strongly affects substitution behavior. Relative to commute trips, errands were significantly more likely to be substituted with no trip ($\beta = 1.42$, $p < 0.001$), personal car ($\beta = 0.64$, $p < 0.001$), shared car ($\beta = 0.59$, $p = 0.03$), and walking ($\beta = 1.23$, $p < 0.001$). “Other” trips also had positive associations with substitution to multiple modes. In contrast, recreational trips were less likely to be substituted at all, especially to personal car ($\beta = –3.29$, $p < 0.001$), transit ($\beta = –3.04$, $p < 0.001$), and shared car ($\beta = –1.78$, $p < 0.001$).

Purchase motivations modestly influence fallback mode. Respondents citing recreation/other reasons were less likely to substitute with personal car ($\beta = –0.51$, $p = 0.01$), and more likely to walk ($\beta = 0.16$, $p = 0.53$). Practicality-based purchasers were more likely to fall back on transit ($\beta = 0.71$, $p = 0.01$), but less so in 2023 (interaction $\beta = –0.66$, $p = 0.03$), indicating temporal shifts in substitution behavior.

Income class shows limited significance. Only respondents earning more than 400% of the federal poverty level were less likely to substitute with shared cars ($\beta = –0.40$, $p = 0.03$) and transit ($\beta = –0.38$, $p = 0.04$). This may reflect higher car access or preferences among high-income users.

Temporal effects are apparent. E-bike users in 2023 were more likely to substitute with "other modes" ($\beta = 2.61$, $p < 0.001$) but showed no significant difference in substitution to car or transit compared to 2017. Some interaction effects by year approached significance, e.g., recreational trips in 2023 were marginally more likely to be substituted with no trip ($\beta = 0.52$, $p = 0.06$), suggesting modest shifts in fallback behavior among recent adopters.

Several covariates, while theoretically relevant, were not statistically significant predictors of substitution outcomes. The main effect of e-bike purchase year (2023) was not significant across most modes, suggesting that temporal variation is more effectively captured through interaction terms. Income class also showed limited explanatory power, with most categories failing to influence substitution probabilities. Similarly, prior mode use variables (e.g., public transit, shared car, bike-based modes) and infrequent post-purchase e-bike users did not exhibit consistent effects, likely due to small subsample sizes or limited behavioral variation. These results reinforce that substitution is principally driven by trip purpose, prior biking frequency, and habitual e-bike use, while static socioeconomic factors and retrospective mode histories play a more limited role.

Taken together, substitution patterns vary systematically across behavioral, trip-level, and temporal factors. The model underscores the role of e-bikes in replacing car travel, preventing trip suppression, and integrating users into lower-emission modes, particularly among those with prior cycling experience.

## 3.7 Implications

This chapter provides new insights into how e-bike users' mode substitution patterns vary across user characteristics, trip purposes, and prior travel contexts, and how these patterns are evolving as e-bike adoption expands in the U.S. Several key findings emerge, contributing to the growing literature on e-bike impacts and supporting recent calls for more longitudinal and temporally sensitive analyses (Shaheen et al., 2021; de Haas et al., 2022).

### *3.7.1 E-Bike as Partial Car Substitution, Not Full Replacement*

Across both descriptive and model-based analyses, private car use remains the most frequently displaced mode, particularly for utilitarian trips such as commuting and errands. However, while

car substitution is consistent, it is neither complete nor uniform. The decline in car substitution from 59% of utilitarian VMT in 2017 to 45% in 2023 suggests that e-bike use is expanding beyond simply replacing car travel. Instead, e-bikes appear to be substituting a more diverse mix of travel modes over time, including transit, shared car use, and traditional bicycle. This diversification may reflect a diffusion effect; early adopters may have been more likely to replace car use, while most recent users include recreational or lifestyle adopters less car-dependent to begin with (Fishman et al., 2016).

The multinomial logit results further complicate the narrative. While car use remains the baseline for many e-bike adopters, the marginal negative association with car substitution among 2023 adopters suggests declining marginal effectiveness in targeting car users. Importantly, substitution appears stronger among users with infrequent biking habits, implying that car substitution is more likely among those with low prior mobility flexibility, i.e., users from whom the e-bike represents a transformative rather than marginal mode shift (McQueen et al., 2020; Piatkowski et al., 2021).

### *3.7.2 Recreational E-Bike Trips: Induced Demand or/and Added Physical Activity?*

One notable finding is the high share of recreational e-bike use and corresponding substitution profile. In both 2017 and 2023, over 20% of "no trip" substitutions were for recreational purposes, suggesting that many leisure-oriented e-bike trips are induced rather than replacing existing motorized travel. While such trips may have minimal direct impacts on reducing transportation emissions, they still offer important co-benefits such as increased physical activity, expand mobility for those with limited transportation options, and opportunity for building comfort and confidence with e-bike use. Over time, these factors may contribute to more sustained shifts in travel behavior and support broader transportation and public health objectives.

The increase in substitution from the conventional bike mode for recreational (from 43% to 54%) also raises concern about "techno-substitution": the replacement of zero-emission cycling with e-bike, which, while still low carbon, does not reduce emissions compared to traditional biking. Of e-bike riders ride more often than physical activity and health impacts could still grow (Castro et

al., 2019). Our study framework does not allow for understanding specific trip frequency or overall physical activity. If a growing share of e-bike trips disassembles active modes, the net emissions benefits could be overstated. European studies have similarly noted that e-bike growth involves tradeoffs between car and bike substitution, particularly in the recreational market (Haustein et al., 2016).

### *3.7.3 Transit and Shared Modes: Growing Displacement or Unintended Competition?*

While much of the sustainable mobility literature views e-bikes as complements to transit, our findings suggest potential competitive interactions. The increase in transit substitution for utilitarian trips, from 12% to 16% of VMT, and the sharp rise in predicted substitution among low-frequency cyclists raise the possibility that e-bikes may be drawing users away from shared transportation. While this may increase user autonomy, it also risks undermining public transit ridership, particularly in medium-density areas where fixed-route service is less competitive. Given the persistent struggles of public transit systems to recover in the post-pandemic period, the possibility that e-bikes are drawing riders away from transit warrants closer and more critical examination.

The same applies to shared car use; the rising VMT share from shared car substitution (from 10% to 13%) is presumably positive, but the effects are highly user-dependent. For low-income riders, shared mobility often serves as a substitute for transit; for higher-income users, it supplements car use. Without disaggregated modeling by income and car access, it is challenging to determine whether e-bikes are replacing emissions-intensive travel or merely shifting users from a relatively low-carbon mode to other modes.

### *3.7.4 Who Benefits and Who is Excluded*

The behavioral model makes clear that substitution patterns vary across income, motivations, and prior mobility behavior. Higher-income respondents (300-400% and > 400% FPG) are significantly less likely to substitute transit or walking, suggesting that e-bikes in these groups may be functioning more as recreational or lifestyle tools than as an alternative to necessity-driven transport. Meanwhile, low-income users (<100% FPG) are less likely to substitute with other modes, which may reflect constrained mobility choice rather than preference.

This highlights a potential equity blind spot: while e-bike incentives may reach a broader public, the resulting modes are shaped by prior access and structural inequities. If low-income users face barriers to biking (e.g., infrastructure, safety, or storage), then e-bikes may deliver limited substitution. Conversely, high-income users may substitute low-emission modes (e.g., walking, transit) with e-bike, achieving comfort gains but few climate benefits.

#### *3.7.5 Are Substitution Patterns Stable or Transitional?*

Finally, there is an unresolved question about the temporal stability. Substitution patterns among recent adopters differ notably from those in 2017. Some of these differences may reflect the pandemic's lingering behavioral impact, while others may signal long-run shifts. The finding that substitution to "no trip" decreased over time is promising, suggesting that e-bikes are becoming more integrated into daily routines rather than used infrequently. However, without longitudinal data, it remains unclear whether new adopters evolve towards more utilitarian or recreational usage over time.

### 3.8 Conclusions

This chapter provides new insights into the integration of e-bikes into daily travel across various trip purposes and population segments, utilizing nationally representative data from two waves of the U.S. e-bike user survey. By combining descriptive analysis with a pooled multinomial logit model, we demonstrate that e-bikes continue to substitute for personal car travel primarily, but increasingly displace other modes, including transit, shared car use, and traditional cycling, especially for utilitarian purposes. While this mode shift aligns with broader goals of decarbonization and congestion reduction, the observed substitution of transit and active transportation modes raises critical questions about long-term sustainability trade-offs.

Importantly, substitution patterns are not static. They evolve significantly over time, with rider characteristics and trip purposes. E-bike users in 2023 exhibit broader substitution profiles than earlier adopters, suggesting that the market is maturing and diversifying. Prior biking frequency, motivations for purchase, income level, and trip purpose all emerge as significant predictors of substitution outcomes. These results highlight the complexity of e-bike adoption effects, where both climate mitigation potential and equity outcomes depend on who adopts, for what reason, and under what mobility constraints.

This study contributes to the present literature, demonstrating that e-bikes are not a monolithic solution to car dependency. Their role in shaping mode shift, VMT reduction, and travel generation is context dependent. Policy makers must therefore approach e-bike promotion with greater nuance, particularly as incentive programs expand globally. Unintended consequences, such as induced leisure travel, erosion of transit ridership, or crowding out of walking and cycling, deserve greater scrutiny, especially in contexts with a fragile multimodal system.

### 3.9 Recommendation

The results of this chapter offer several insights that can inform the design of e-bike policies and planning efforts, as well as guide future research on evolving substitution patterns:

1. *Account for variation in substitution behavior across user segments*: Substitution patterns differ substantially by prior biking frequency, current e-bike use, and trip purpose. Recognizing these differences can help policymakers and planners better understand how e-bikes are used within diverse mobility contexts and how their impacts on overall travel behavior may vary across user groups.
2. *Protect transit integration*: E-bike growth should be accompanied by policies that reinforce, rather than erode, transit use. Clear policies related to secure station parking or support of on-board transport of e-bikes could support first/last mile connectivity.
3. *Consider the trip purpose in infrastructure and policy design*: Given the distinct substitution patterns observed across trip purposes, particularly for utilitarian versus recreational trips, planning efforts should consider these differences when developing infrastructure, incentives, and supportive policies to accommodate and encourage e-bike use where users value it most.
4. *Support longitudinal monitoring*: Future research and program evaluation should adopt a longitudinal design to track how substitution evolves, particularly as the e-bike market matures and the urban transportation context shifts post-COVID**.**

By incorporating these insights, policymakers and planners can develop more informed and context-sensitive approaches to integrating e-bikes into broader transportation systems.

Continued research on substitution dynamics and their evolution will be essential for supporting evidence-based decision-making in this area.

# CHAPTER 4 INCENTIVE, ADOPTION, AND EMISSION REDUCTION

## 4.1 Introduction

The transportation sector remains a dominant source of greenhouse gas (GHG) emissions in the U.S., contributing approximately 29% of total national emissions, with the vast majority stemming from light-duty vehicles (IEA, 2022). To mitigate these emissions, promoting alternative modes and sustainable fuels has become more critical than ever. Over the last decade, many cities, countries, and regions have introduced various policies to promote sustainable transportation (Semenescu et al., 2020). Among the alternatives, bicycles, particularly electric bicycles (e-bikes), have garnered attention for their potential to replace car-based trips and reduce overall travel-based GHG emissions (Jones et al., 2016; Bucher et al., 2019). E-bikes present a compelling alternative to private vehicle trips, providing mobility advantages and reducing barriers to cycling that have the potential to reduce car-based trips at a greater rate than conventional bicycles (Philips et al., 2022; Johnson et al., 2023). In addition to environmental benefits, e-bikes are also associated with other transportation benefits, such as health benefits (Langford et al., 2017) and efficient urban mobility (Fishman et al., 2016; Hoj et al., 2018; MacArthur et al., 2018).

E-bike purchase incentives are a way to accelerate adoption and increase access to e-bikes. Over 160 e-bike incentive initiatives have emerged across the U.S. and Canada, aiming to stimulate adoption and promote equitable access to e-bike benefits (TREC, 2023). More than half of them primarily focus on reducing GHG emissions or are administered by electric utility districts (Jones et al., 2024). Incentive programs for e-bikes take various forms, often targeting the purchase price, a known barrier to adoption (Bennett et al., 2022). To address purchase costs, such incentive programs offer a monetary discount for the purchase of e-bikes. Studies show that purchase incentives increase the likelihood of purchasing e-bikes and replacing traditional modes of travel (De Kruijf et al., 2018; Máca et al., 2020).

While similar incentive schemes have long existed for electric vehicles (EVs), e-bike subsidies remain relatively underdeveloped and under-evaluated, particularly in terms of their cost-effectiveness in reducing GHG emissions. Most existing studies have focused on descriptive

outcomes such as uptake rates, user demographics, or trip characteristics (Henao et al., 2019), but few have examined how financial incentives influence both the likelihood of purchase and the magnitude of emissions displaced. Moreover, rigorous evaluations that incorporate behavioral intention, substitution potential, and policy scalability remain limited.

This study addresses this gap by evaluating the emissions reduction potential and cost-effectiveness of e-bike purchase incentives using nationally collected stated-preference survey data in the U.S. We combine discrete choice modeling of e-bike adoption with self-reported travel behavior to simulate the influence of incentives on e-bike purchase and resulting car-based vehicle miles traveled (VMT) replacement and carbon dioxide ($CO_2$) reductions. Our analysis focuses on flat, point-of-purchase incentives and identifies cost-effective incentives across a range of total program budgets. We then evaluate the marginal emissions returns and cost per metric ton of $CO_2$ avoided.

The findings offer timely insights for transportation and climate policymakers seeking affordable and equitable tools to reduce emissions. In particular, this work contributes to the growing literature that positions micromobility not only as a sustainable mode of transport but also as a practical policy option for reducing emissions, especially when considering alongside more resource-intensive strategies such as electric vehicle programs

This chapter builds directly on the behavioral insights presented in Chapter 3, where e-bike substitution patterns were shown to vary by income and usage frequency. These findings inform the assumptions underlying our emissions simulation framework, which assesses the cost-effectiveness of financial incentives within a fixed budget. Although the datasets are distinct, the logic of who substitutes and how much travel is displaced draws clear conceptual continuity from the previous chapter.

## 4.2 Review of Literature

Growing global interest in sustainable transportation has led to an increased scholarly focus on e-bikes as a viable alternative to car travel. A growing body of literature highlights their potential for reducing urban congestion, enhancing accessibility, and mitigating transportation-related $CO_2$

emissions (Rérat, 2021). Empirical studies across Europe and North America have consistently demonstrated that e-bikes can meaningfully reduce reliance on automobiles and promote active travel. For instance, Chatterton et al. (2015) and Fishman et al. (2016) found that e-bikes could significantly displace car trips, thereby reducing GHG emissions. Similarly, Bourne et al. (2020) and Bigazzi et al. (2021) demonstrated that in traffic-congested urban environments, e-bike adoption can result in substantial emissions savings. Andersson et al. (2021) and Johnson et al. (2023) further supported these findings by demonstrating that e-bikes offer greater utility and versatility, making them an attractive alternative to conventional cars, which leads to more significant emission reduction.

To estimate these environmental benefits, several studies have quantified the average annual CO2 savings per e-bike user. Hiselius et al. (2017) reported an average reduction of 272 kg of CO2 per e-bike user per year, while Bigazzi et al. (2021) synthesized multiple studies to estimate a net annual CO2 reduction of 460 kilogram (kg) per e-bike. Cairns et al. (2017) and Fyhri et al. (2017) similarly observed significant VMT substitution in Europe, including a 20% reduction in car distance traveled among participants in the UK. U.S.-specific study by McQueen et al. (2020) suggests savings ranging from 225 to 394 kg of CO2 per user annually, figures that underscore the environmental potential of e-bike adoption in auto-oriented contexts.

Beyond emission reduction, another branch of the literature has explored how e-bike use varies by income and travel behavior. Fyhri et al. (2015) and Johnson et al. (2023) note that early adopters tend to be more affluent and often use e-bikes for recreational purposes. However, growing access and policy support have begun to diversify the user base, with some incentive programs yielding utilitarian travel shifts even among lower-income groups.

The 2023 legislative cycle in North America saw a notable expansion in state- and province-level purchase assistance programs. Reviews such as those by Bennett et al. (2022) have assessed a range of financial (e.g., purchase subsidies, rebates) and non-financial (e.g., dedicated lanes) incentives, finding that point-of-sale discounts are generally the most efficient. Jones et al. (2024) confirmed these findings through a nationwide stated-preference survey in 20 U.S. cities,

showing that point-of-sale discounts were approximately 30% more effective than mail-in rebates in motivating purchases.

In another instance, Portland State University's Electric Bike Rebate Program demonstrated a notable increase in e-bike sales and usage following the introduction of the financial rebates (McQueen et al., 2019). Similarly, the European Union's "Cycle to Work" schemes have encouraged e-bike adoption by offering tax incentives for purchasing bicycles (Behrendt et al., 2021). Although extensive research has been conducted on e-bike use in Europe, evidence regarding the influence of e-bike adoption on travel behavior in the United States remains limited. Research findings indicate that among early e-bike adopters who did not receive incentives, younger users tend to use e-bikes more for utilitarian purposes (Vandenbulcke et al., 2009; Heinen et al., 2010). In contrast, older adults primarily use them for recreational and social activities, whereas individuals with less experience cycling are more likely to use e-bikes mainly for recreational purposes (MacArthur et al., 2018; Bourne et al., 2020).

Despite these advances, a gap persists in the literature regarding the cost-effectiveness of e-bike incentives specifically for emission reduction. Much of the existing research focuses on adoption rates, user satisfaction, or trip substitution patterns; however, fewer studies rigorously evaluate emissions outcomes in relation to the dollar spent. Bigazzi et al. (2025) in their analysis of Saanich's income-tiered rebate program, found that $CO_2$ reductions cost between CAD 190 and CAD 720 per metric ton, with lower-income participants showing the most pronounced behavior change. Their findings reinforce earlier modeling work by Bigazzi et al. (2021), which emphasized the role of household car ownership, travel purpose, and regional travel distances in moderating incentive outcomes.

Jones et al. (2024) contribute additional granularity by demonstrating how choice modelling can isolate the relative effectiveness of different policy levers within incentive programs. Their models of e-bike adoption are paired with simulations to provide a more nuanced understanding of how incentive design influences program cost effectiveness. This aligns with studies by Bigazzi et al. (2021), who emphasize the need for context-sensitive policy design that accounts for behavioral heterogeneity.

Despite the growing empirical base, much of the existing literature focuses either on observational uptake data or post-intervention surveys, which limits the generalizability of the results. Few studies integrate detailed simulation-based models that pair SP and travel behavior data to assess adoption and emissions impacts across a range of incentive scenarios. Moreover, guidance on the design of e-bike incentive programs remains largely anecdotal. As highlighted by Jones et al. (2024), many existing programs lack proper empirical frameworks for determining optimal subsidy values or evaluating program outcomes. This study addresses these gaps by combining SP modeling and respondent-level simulation to evaluate the cost-effectiveness of e-bike purchase incentives for reducing $CO_2$ emissions. This approach allows for the comparison of incentive scenarios across a range of budget levels while accounting for heterogeneity in baseline travel behavior and responsiveness to incentives.

By combining behavioral data from choice experiments with self-reported travel patterns, our study contributes to a more comprehensive understanding of the emission reduction potential of e-bike subsidies. Unlike many prior studies that isolate discrete choice outcomes or behavioral intentions Huang et al. (2024), our analysis integrates both purchase probabilities and trip substitution patterns to comprehensively estimate the emissions impacts of incentive programs across a range of budget scenarios.

The method also permits scalability across different population sizes and allows for more robust policy comparisons. In doing so, it advances the existing literature on sustainable transportation incentives by demonstrating a replicable, empirical framework for evaluating emissions outcomes and cost effectiveness.

### 4.3 Research Objective

This chapter aims to evaluate the cost-effectiveness of flat financial incentives for e-bike adoption as a means of reducing transportation-related $CO_2$ emissions. By integrating SP data from a nationwide survey with self-reported VMT substitution estimates, the study models individual-level adoption probabilities and quantifies the emissions impact of e-bike adoption under a range of budget-constrained incentive scenarios. The objective is to simulate real-world

program implementation conditions, specifically, fixed total budgets with flat per-recipient incentives, and assess the resulting lifetime $CO_2$ reductions and associated abatement costs.

The chapter also seeks to identify how cost-effectiveness varies with program scale, user income, and substitution behavior, providing critical insight into the marginal returns of financial incentives in micromobility policy. By combining behavioral choice modeling with emissions simulation, this work contributes a replicable analytical framework for evaluating e-bike incentive programs from both climate mitigation and equity perspectives. The findings are intended to inform the design of fiscally efficient and environmentally impactful e-bike subsidy policies within broader transportation decarbonization strategies.

## 4.4 Methodology

The methodology employed in this study integrates discrete choice modeling with emissions simulation to evaluate the cost-effectiveness of e-bike incentives. By leveraging stated-preference data, we estimate individual-level probabilities of purchasing different bike types, conventional, standard e-bike, and cargo e-bike, under various incentive scenarios. These purchase probabilities, combined with self-reported driving behavior and trip substitution, are used to quantify expected reductions in car-based $CO_2$ emissions. We then calculate the cost per metric ton of emissions avoided across a range of program budget levels. A flow chart of the full methodological framework is shown in **Figure** 4-1.

### *4.4.1 Survey-Based Discrete Choice Modelling*

We start with the discrete choice model of e-bike purchase from Jones et al. (2024), which was estimated using data from the 2022 nationwide stated-preference survey. Respondents evaluated hypothetical bike purchase scenarios featuring four alternatives: no purchase, a conventional bicycle, a standard e-bike, or a cargo e-bike. Jones et al. (2024) used the response data to estimate the parameters of a conditional logit model, with respondent utility determined by product features (price, speed, range, throttle, battery removability, incentives) and individual characteristics (income, gender, commute frequency, vehicle access, presence of children). The model also allowed the effectiveness of incentives to vary by type, and for consumer responses to prices and incentives to vary by income group.

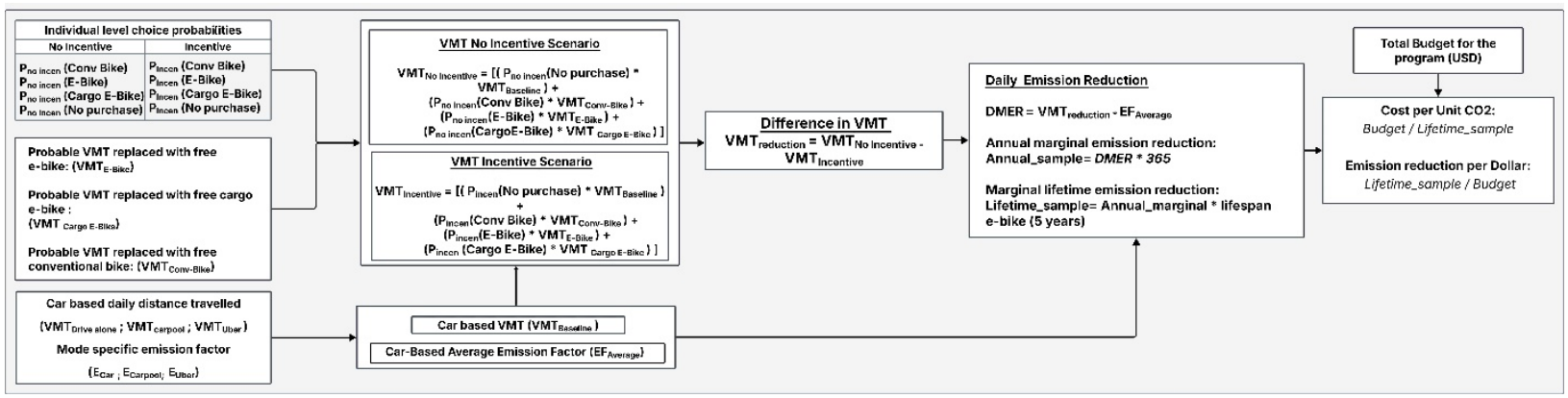


Figure 4-1. Flow chart to calculate expected emission reduction per dollar for e-bike purchase incentives.

### *4.4.2 Purchase Probability Calculation*

Using the estimated model coefficients from Jones et al. (2024) and recalibrated alternative-specific constants[1] we are able to calculate the probability of selecting each alternative, given an incentive scenario, for each individual in the restricted sample of 1,579 respondents. Formally, the probability that respondent i chooses alternative j is given by:

$$P_{ij} = \frac{\exp(U_{ij})}{\sum_{k=1}^{J} \exp(U_{ik})} \quad \text{.....Equation 4-1}$$

where respondent *i*'s utility for alternative *j*, $U_{ij}$, is a linear function of product features, including incentive type and amount, individual characteristics, and the estimated conditional logit coefficients.

These individual probabilities are multiplied by sample weights aligned with national household income distribution benchmarks gathered from the 5-year American Community Survey, 2021. This is important, given that responsiveness to prices and incentives, along with travel substitution patterns, may vary with income. The weighted probabilities were used during the simulations to yield outcomes that more closely reflect real-world population patterns.

### *4.4.3 Emission Rate Estimation from Travel Pattern*

For five common trip purposes (commuting, errands, social engagement, child transport, and recreation), respondents indicated their most frequently used travel mode. These responses were mapped into three drive-based categories, each with an associated emission factor: drive alone (0.4 kg CO2/mile) (EPA, 2023), carpool (0.163 kg CO2/mile) (EPA, 2023), and ride-hailing (0.307 kg CO2/mile) (Uber, 2022).

To estimate an individualized emissions profile, we computed the share of each respondent's trips falling into each drive-based mode and normalized these ratios across trip purposes. These proportions were then used to allocate the respondent's total daily VMT across modes. Finally, a

[1] Model constants were calibrated using expected actual market shares. The details of the procedure are discussed in Jones et al. (2024). For the current analysis, the constants were recalibrated for the restricted sample of 1,579.

personalized average emission factor was calculated by weighting each mode's emission factor by its share of that respondent's VMT. This respondent-specific average emission rate was used in all subsequent emission and substitution calculations.

### *4.4.4 Emission Reduction via Substitution*

Respondents reported how many daily miles they would likely replace with each bike type if they had access to a bike of that type. These substitution values were filtered to ensure they did not exceed baseline daily VMT. Based on the estimated probability of each purchase outcome and the reported VMT substitution, we estimated per-person $CO_2$ emissions for a given incentive amount. The total $CO_2$ emissions for respondent *i* under a given e-bike incentives were calculated as:

$$\boldsymbol{E(C_i|s) = r_i}\left[\begin{array}{c}\boldsymbol{p_i^{none}(s).VMT_i^{none} + p_i^{bike}(s).VMT_i^{bike} + p_i^{e-bike}(s).VMT_i^{e-bike}} \\ \boldsymbol{+p_i^{cebike}(s).VMT_i^{cebike}}\end{array}\right] \text{..... Equation 4-2}$$

where *Ci* is daily $CO_2$ emissions for participant *i*, ***s*** is the flat incentive amount in dollars received with the purchase of an e-bike or cargo e-bike, $\boldsymbol{r_i}$ is the respondent-specific average $CO_2$ emission rate, $p_i^j(s)$ is the estimated sample-weighted probability of purchase outcome j given incentive s, and $VMT_i^j$ is the daily VMT if alternative *j* is chosen. Outcome *j = none* indicates no purchase. To estimate emission reductions resulting from a given e-bike incentive, we subtracted each respondent's emissions with the incentive from their emissions under the baseline (no-incentive) scenario, i.e., s = 0.

### *4.4.5 Incentive Selection and Emission Reduction Simulation*

We simulate emissions reductions across a range of potential program budgets and corresponding incentive amounts. By program budget, we mean the total amount of funding available for distributing e-bike purchase incentives. For our sample of 1,579 respondents, we examine budgets ranging from $1,000 to $80,000 (approximately $0.63 to $50.67 per respondent), increasing in $1,000 increments.

For this analysis, we focus on flat, point-of-purchase incentives, that is, a fixed incentive amount offered equally across all consumers and e-bike types, applied at the point of sale to reduce the

upfront purchase price. Jones et al. (2024) found point-of-purchase incentives to be the most efficient among several types evaluated, and flat incentives to be nearly as cost-effective as differentiated ones, while offering the practical advantage of lower administrative complexity. At each budget level, we identify and simulate emissions reductions using the cost-effective flat incentive, that is, the incentive amount that maximizes emissions reductions while satisfying the budget constraint. Under a flat incentive structure, this is also the incentive that maximizes e-bike adoption by exactly exhausting the budget in expectation, with no leftover funds and no excess demand (Jones et al., 2024).

For each program budget and its corresponding flat incentive amount, we estimated the number of total and net additional e-bike adopters, and the associated reductions in daily and lifetime CO2 emissions over a five-year horizon.

#### *4.4.6 Cost-Effectiveness Assessment*

We evaluate the cost-effectiveness at each budget level by dividing the expected total incentive spending, equal to the program budget, by the estimated lifetime $CO_2$ reduction achieved under the corresponding cost-effective flat incentive amount:

$$\text{Cost per ton} = \frac{\text{Total incentive spending}}{\text{Lifetime } CO_2 \text{ reduction (metric tons)}} \quad \text{.....Equation 4-3}$$

This metric allows us to evaluate e-bike purchase incentives on a cost per-ton basis and assess how cost-effectiveness varies with program scale and total emission reduction achieved.

### 4.5 Data

This study draws on a nationwide stated-preference survey conducted by the authors in 2022 in collaboration with QuestionPro (Jones et al., 2024). The online survey was administered across 20 major U.S. cities selected to capture a range of bike infrastructure investments, e-bike policies, and geographic diversity. Respondents were 3,360 adults aged 18 – 64 who expressed openness to purchasing a bicycle or e-bike for themselves or a household member. The questions contained in the survey provide a detailed view of consumer preferences regarding e-bike purchases under various incentive scenarios, as well as household characteristics and self-

reported vehicle substitution patterns. Full details on the survey and data collection procedure are reported in Jones et al. (2024).

Initial cleaning of the data to exclude respondents with missing or internally inconsistent responses across key behavioral and demographic variables yielded a refined sample of 2,245 valid responses (Jones et al., 2024). For our analysis in this paper, we further restricted the sample to respondents who reported an average daily VMT between 0 and 200 miles, consistent with national travel statistics. This resulted in an analyzed sample size of 1,579, with an average daily VMT of approximately 39, which is close to the U.S. average daily VMT per driver (FHWA, 2022).

Table 4-1 presents descriptive statistics for the surveyed and analyzed sample, along with a comparison to U.S. demographics (U.S. Census Bureau, 2022). The demographic composition of both the full sample (n = 3,360) and the analyzed sample (n = 1,579) reflects a relatively diverse group of potential e-bike adopters. The analyzed sample was predominantly composed of adults aged 25–44 (80.5%), with women representing 60.5% and 3.6% identifying as non-binary or another gender. In terms of race and ethnicity, 56.9% identified as White, 18.3% as African American, 6.8% as Hispanic, and 5.7% as Asian. Compared to the U.S. population, the sample underrepresents individuals above 400% of the Federal Poverty Guidelines (20.4% vs. 42.0%) and overrepresents lower- and middle-income groups. E-bike familiarity was high: 41.2% of respondents reported being familiar with e-bikes but had never ridden one, while 22.0% had ridden an e-bike, and 6.4% reported current ownership.

Table 4-1. Sample demographics for e-bike incentive survey

| | **Surveyed Sample** | **Percentage** | **Analyzed Sample** | **Percentage** | **U.S. Population** |
|---|---|---|---|---|---|
| **Sample size** | **3360** | **100%** | **1579** | **47%** | |
| **Household Income (% of FPG)** *(a)* | | | | | |
| *0- 100% FPG* | 484 | 14.40% | 209 | 13.20% | 12.80% |
| *100 - 200% FPG* | 778 | 23.10% | 371 | 23.50% | 15.80% |
| *200 - 300% FPG* | 741 | 22.10% | 384 | 24.30% | 15.90% |
| *300 - 400% FPG* | 522 | 15.50% | 293 | 18.60% | 13.50% |
| *400+ % FPG* | 701 | 20.70% | 322 | 20.40% | 42.00% |

Tabel 4-1. Continued

| | | | | | |
|---|---|---|---|---|---|
| *Missing* | 134 | 4.00% | 0 | 0.00% | |
| **Age** *(b)* | | | | | |
| *Under 18** | 0 | 0.00% | 0 | 0.00% | 24.30% |
| *18 - 24* | 12 | 0.30% | 0 | 0.00% | 6.70% |
| *25 - 34* | 1643 | 48.90% | 828 | 52.40% | 13.60% |
| *35 - 45* | 923 | 27.50% | 443 | 28.10% | 13.20% |
| *45 - 54* | 474 | 14.10% | 196 | 12.40% | 12.10% |
| *55 - 64* | 283 | 8.40% | 112 | 7.10% | 12.60% |
| *Above 64* | 25 | 0.70% | 0 | 0.00% | 17.30% |
| **Gender** *(b)* | | | | | |
| *Female* | 1885 | 56.10% | 956 | 60.50% | 50.40% |
| *Male* | 1211 | 36.00% | 567 | 35.90% | 49.60% |
| *Multiple/ Non Binary* | 138 | 4.10% | 56 | 3.60% | |
| *Missing* | 126 | 3.80% | 0 | 0.00% | |
| **Race** *(b)* | | | | | |
| *White* | 1927 | 57.40% | 898 | 56.90% | 60.90% |
| *African American* | 486 | 14.50% | 289 | 18.30% | 12.20% |
| *American Indian* | 90 | 2.70% | 31 | 2.00% | 1.00% |
| *Asian* | 176 | 5.20% | 90 | 5.70% | 5.90% |
| *Hispanic* | 192 | 5.70% | 107 | 6.80% | 19.00% |
| *Middle Eastern* | 13 | 0.40% | 8 | 0.50% | |
| *Multiple or other* | 325 | 9.70% | 146 | 9.30% | 12.50% |
| *Native Hawaiian* | 30 | 0.90% | 10 | 0.60% | 0.20% |
| *Missing* | 121 | 3.60% | 0 | 0.00% | |
| **Familiarity with e-bike** | | | | | |
| *Currently own* | 257 | 7.70% | 101 | 6.40% | |
| *Familiar but never ridden* | 1335 | 39.70% | 651 | 41.20% | |
| *Not familiar* | 642 | 19.10% | 303 | 19.20% | |
| *Own cargo e-bike* | 200 | 6.00% | 78 | 4.90% | |
| *Owned before* | 210 | 6.30% | 99 | 6.30% | |
| *Ridden before* | 716 | 21.30% | 347 | 22.00% | |

*a)* US population source: 5-year American Community Survey, 2021

*b)* US population source: 5-year American Community Survey, 2022

*US percentage is based on under 19

## 4.6 Results and Discussion

This section presents results from the emissions reduction simulations and the cost-effectiveness assessment of e-bike purchase incentives. To provide additional context for the main findings, we begin with descriptive results from the survey, including stated interest in e-bike adoption, purchase intent, and patterns of VMT substitution across income groups. We then present the simulation results for emissions reductions and cost-effectiveness under the flat, point-of-purchase incentive structure.

### *4.6.1 E-Bike Interest and Purchase Intent*

This section provides context for the incentive simulations by presenting self-reported consumer interest in e-bikes and intent to purchase in the absence of any incentives within the analyzed sample. Survey respondents were asked to indicate their level of interest in purchasing three types of bicycles: conventional bikes, standard e-bikes, and cargo e-bikes. **Figure** 4-2 presents a heatmap of respondents' purchase interest across these categories, disaggregated by income group. Overall, there was high interest in e-bikes within the sample that tended to increase with income.

For conventional bikes, interest levels clustered heavily around "Neutral" across all income brackets, with 30-34% of individuals selecting this option. Lower-income groups (e.g., below 100% of the FPL) showed higher rates of hesitancy or ambivalence, while individuals above 300% FPL were more likely to indicate "Somewhat Interested" or "Interested."

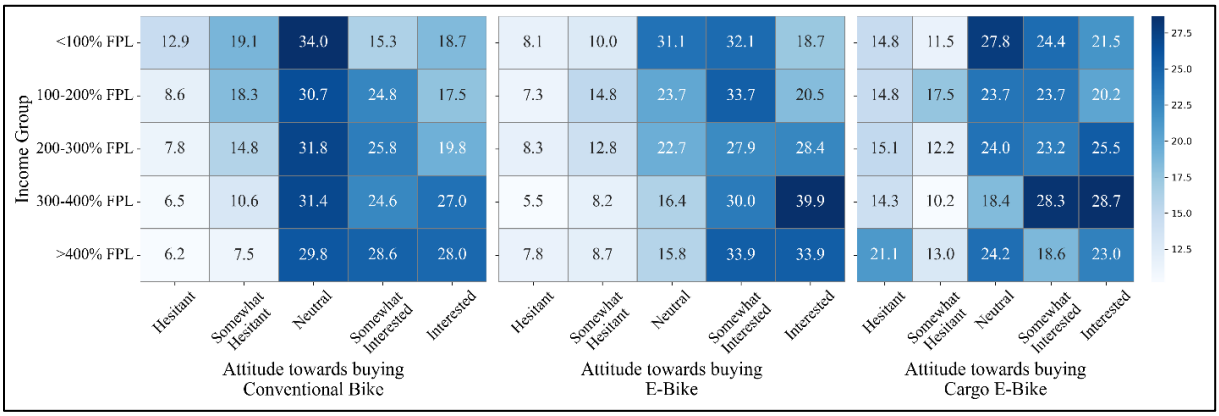


Figure 4-2. Self-reported attitudes toward purchasing conventional bikes, standard e-bikes, and cargo e-bikes across income groups (analyzed sample).

Interest in standard e-bikes was markedly higher across all income groups. The share of respondents expressing interest rose with income, peaking at 39.9% in the 300-400% FPL group. Even among those below 100% FPL, over half reported interest, indicating a broader appeal relative to conventional bicycles. This finding is consistent with the benefits that e-bikes provide relative to conventional bicycles, such as reduced physical barriers to cycling while maintaining utility over medium-range distance (Zhang et al., 2025).

Cargo e-bikes elicited moderate but positive interest, with the highest enthusiasm again found among upper-income groups. While lower-income respondents expressed slightly more hesitation, a sizable portion still selected "Somewhat Interested," suggesting a broad latent demand contingent on affordability. These attitudinal patterns reinforce the role of financial capacity in shaping adoption readiness and highlight standard e-bikes as the most promising entry point for wide-scale mode shift initiatives.

While these interest measures reflect general attitudes towards different bicycle types, they do not directly capture behavioral intent to adopt. Therefore, respondents were also asked how likely they would be to purchase an e-bike within the next year, assuming no financial incentive. These likelihood ratings, shown in **Figure** 4-3, offer a rough gauge of unaided consumer adoption potential.

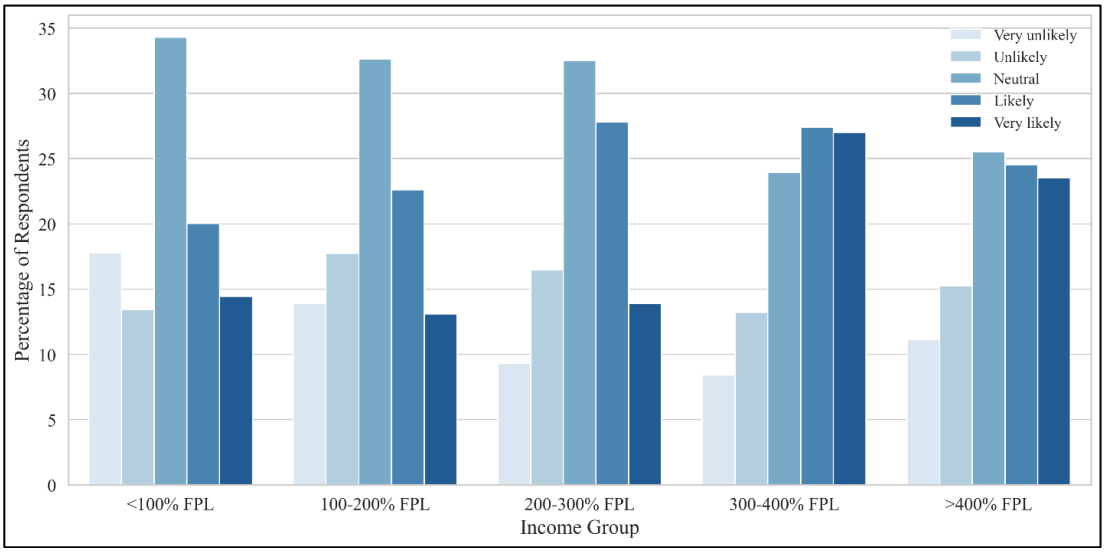


Figure 4-3. Likelihood of purchasing an e-bike within the next year, without financial incentives, by income category (analyzed sample).

**Figure** 4-3 displays the distribution of likelihood responses, ranging from "Very Unlikely" to "Very Likely" by income group. A clear trend emerges that higher-income respondents (particularly >300% FPL) were more likely to report being "Likely" or "Very Likely" to adopt an e-bike without incentives. The 300-400% FPL group shows the highest proportion of "Very Likely" responses. In contrast, respondents below 100% FPL were the most likely to select "Very Unlikely," with relatively few expressing strong intent to adopt. Middle-income groups (200-400% FPL) displayed the most ambivalence, with "Neutral" and "Likely" responses occurring in roughly equal proportions. These transitional income segments may be particularly responsive to modest subsidies that trip hesitant interest into active purchasing behavior (Sundfør et al., 2022).

### *4.6.2 Potential for Vehicle Miles Substitution*

Understanding how e-bike adoption may displace car travel is crucial for estimating emissions reductions. We examine both relative and absolute substitution patterns using self-reported data from the survey, with results segmented by income group and e-bike type. **Figure** 4-4 presents the average daily VMT replacement ratios, representing the proportion of daily car miles respondents reported they would substitute with an e-bike if one were made available. The ratios range from 0.0 (no substitution) to 1.0 (complete replacement). In the full sample (all respondent group), the average ratio was 0.37 for standard e-bikes and 0.36 for cargo e-bikes, with peak substitution observed among the 300-400% FPL income group. In the analyzed sample used for the emission simulations, these values were slightly lower and more evenly distributed across income groups, ranging from 0.36 to 0.44 for standard e-bikes and 0.35 to 0.43 for cargo e-bikes.

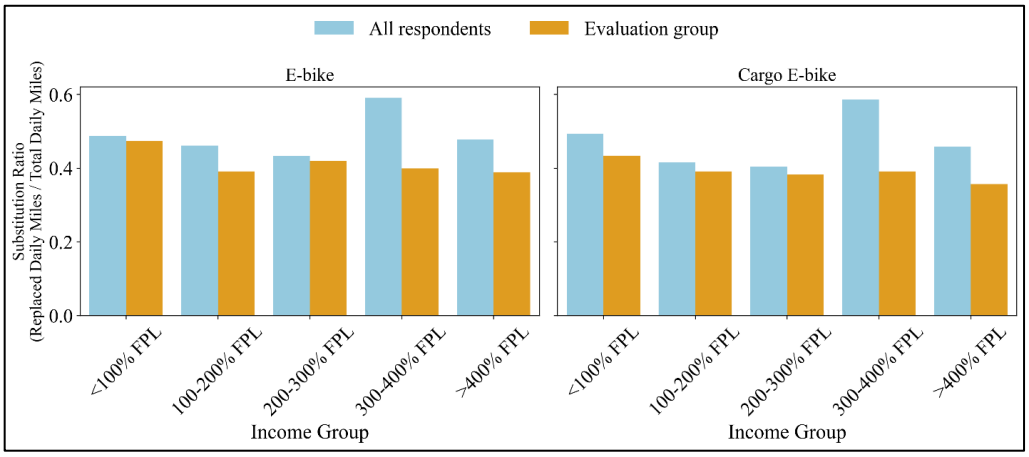



Figure 4-4. Average vehicle miles traveled (VMT) replacement ratios by income group for standard and cargo e-bikes.

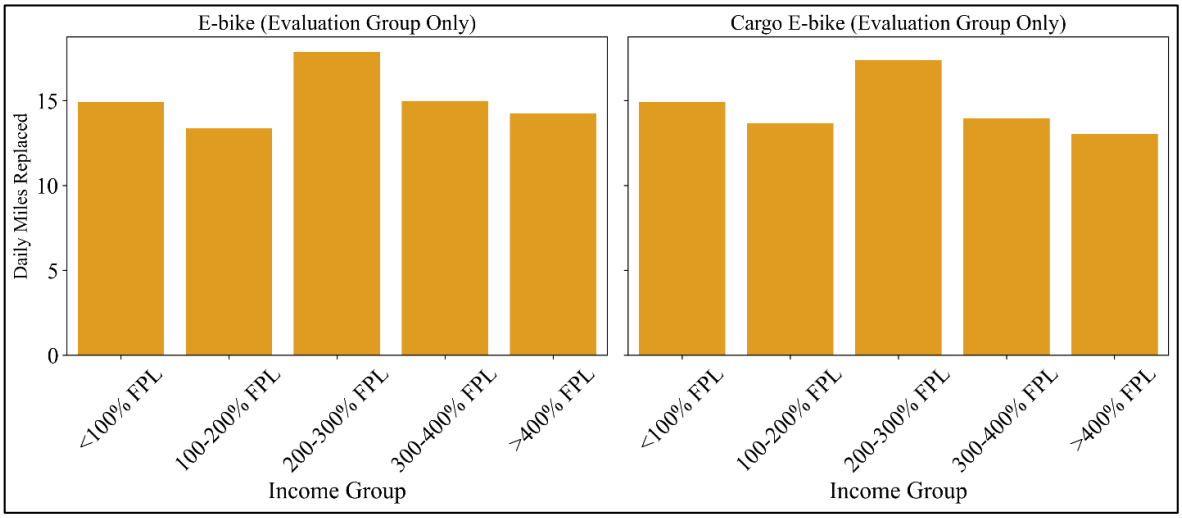


Figure 4-5. Average daily vehicle miles replaced with standard and cargo e-bikes by income group

While these ratios provide a behavioral signal, actual distance displaced matters for carbon modeling. **Figure** 4-5 shows the absolute daily VMT respondents reported they would replace. On average, respondents across most income groups indicated a willingness to substitute between 13 and 18 car miles per day. Notably, the 200-300% FPL group reported the highest absolute reductions, despite only moderate substitution ratios. Lower-income respondents (<100% FPL) also reported meaningful daily reductions (over 14 miles on average).

### *4.6.3 Emission Reduction Simulation and Cost Effectiveness of Flat Incentives*

**Figure** 4-6 illustrates the relationship between total program cost and cost-effectiveness, measured in terms of dollars per metric ton of lifetime $CO_2$ avoided. As expected, cumulative emissions reductions increase with program spending, but at a diminishing rate. For the 1,579-person evaluation sample, a total program budget of $1,000 with a corresponding cost-effective flat incentive of $57 yields approximately 1.6 metric tons of lifetime $CO_2$ reduction. At the other end of the range, an $80,000 budget with a cost-effective incentive of $2,394 results in nearly 98 metric tons of reduction within the sample. This concave pattern of returns leads to a rising cost per unit of abatement, from an estimated $601 per metric ton at the lowest budget level to over $830 per metric ton at the highest.

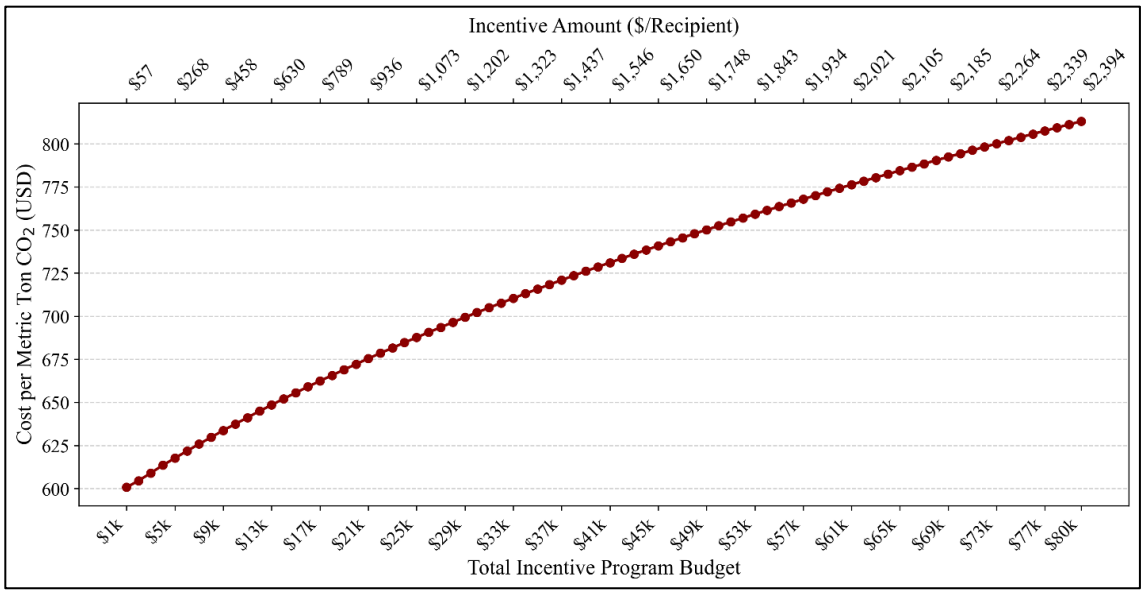


Figure 4-6. Cost per metric ton of lifetime $CO_2$ reduction across varying incentive budget levels.

Such diminishing returns are consistent with cost-effectiveness profiles observed in many behavioral incentive programs, where early adopters are more responsive and later-stage recipients require greater inducement to change. Notably, even at the higher end of the cost curve, e-bike incentives remain competitive when benchmarked against other transportation decarbonization strategies. For example, U.S. electric vehicle (EV) subsidies frequently exceed $1,000 per metric ton of avoided $CO_2$ when accounting for marginal adoption and typical displacement rates (Sheldon et al., 2023).

To contextualize these findings at a realistic policy scale, we translate the sample-level budgets to a per capita framing. The $1,000–$80,000 budget range corresponds to an investment of roughly $0.63 to $50.66 per person in our 1,579-person evaluation sample. Scaling this up to a hypothetical target market of 2 million urban residents, assumed to mirror the travel characteristics and income distribution of our evaluation group, suggests practical program budgets ranging from $1 million to $10 million (equivalent to $0.50 – $5.00 per capita). At these levels, projected total lifetime $CO_2$ reductions span from approximately 2,100 to 16,100 metric tons, with the cost per metric ton of $CO_2$ rising from about $601 to $630 over this focused range of budgets.

## 4.7 Conclusion

This study contributes to the growing body of literature examining the climate mitigation potential of micromobility by evaluating the cost-effectiveness of e-bike incentives in the U.S. context. Using nationwide stated-preference survey data, we combine discrete choice modeling with simulation-based emissions analysis. Building on prior studies, our approach integrates both purchase probabilities and self-reported trip substitution patterns to estimate the emissions impacts and cost-effectiveness of e-bike incentive programs.

The simulated outcomes indicate that modest flat point-of-purchase e-bike incentives can lead to meaningful reductions in VMT and associated $CO_2$ emissions. While total emissions reductions increase with program spending, the rate of increase slows as program scale and total emissions reductions rise, reflecting diminishing marginal returns. The cost per metric ton of $CO_2$ abated rises gradually across the budget range, suggesting that although returns taper, program efficiency remains relatively strong even at higher funding levels. These findings align with insights from prior cost-effectiveness studies on sustainable transport interventions by Jones et al. (2024), while offering a more granular perspective on vehicle substitution and emissions.

A key strength of this approach is its integration of behavioral choice data with self-reported travel patterns, allowing for a more comprehensive and policy-relevant estimate of emissions impacts. The resulting framework provides a replicable, data-driven tool for scalable, scenario-based assessments of e-bike incentive programs across varying policy contexts.

This study, however, has several limitations. First, while the SP design captures a wide range of behaviors, the actual uptake and usage in real-world settings may differ due to latent barriers, such as safety concerns, infrastructure availability, or maintenance burdens, which are not directly modeled here. Second, the emission factors used in the simulation assume a complete replacement of car-based VMT for specific travel, without accounting for potential mode switching from walking, transit, or partial replacement. Future work could address these limitations through field trials, longitudinal adoption tracking, or integration with trip-diary datasets.

In addition, while our analysis focuses on flat incentives, descriptive patterns from the survey highlight the importance of income in shaping both affordability and adoption readiness. Lower-income individuals stand to benefit significantly from e-bike access but are also the least likely to adopt without financial support. For policymakers seeking inclusive, low-carbon mobility transitions, this suggests that effective incentive design may need to go beyond cost reduction and consider strategies that directly target underrepresented populations. Future research could build on these findings to evaluate the comparative effectiveness of income-targeted or differentiated incentive structures.

Nonetheless, the findings offer timely evidence on the financial viability of e-bike incentives as a strategy for shifting short-distance car trips to low-carbon modes. Relatively modest investments in e-bike ownership through purchase incentives can yield scalable emissions benefits, with cost-effectiveness that compares favorably to alternative strategies such as EV subsidies.

### 4.8 Recommendation

Based on the findings of this study, we outline the following policy recommendations to maximize the emission reduction potential of e-bike incentive programs:

1. *Prioritize incentive efficiency over magnitude*: Our results suggest that flat, point-of-purchase incentives set at cost-effective amounts, ranging from approximately $57 to $412 per person and corresponding to modest program budgets of $0.50 to $5.00 per capita, yield significant emissions reductions at a cost of $600 to $630 per metric ton. Rather than maximizing individual subsidy amounts, while remaining mindful of the diminishing cost-effectiveness of larger program budgets.
2. *Incorporate trip substitution metrics into program design*: Future incentive programs should track not only purchase outcomes but also the actual substitution of car-based trips. Surveys and follow-up monitoring can help ensure that emission reductions are realized beyond the initial adoption.
3. *Design for urban-scale replication*: Scaling results to a 2-million-person market implies a feasible program in the $ 1 -$10 million range with a total lifetime reduction of up to 16,000 metric tons. Cities with similar modal baselines and VMT profiles could replicate the framework for local climate planning.

# CHAPTER 5 GENERAL CONCLUSION AND IMPLICATIONS

## 5.1 Introduction

This dissertation set out to investigate how emerging mobility interventions, particularly electric bicycles (e-bikes), financial incentives, and integrated mobility platforms, can reshape transportation behavior in car-dependent U.S. contexts. Rooted in the framework of sustainable transportation planning, the research addressed environmental, economic, and equity dimensions of urban mobility systems (Litman, 2003; Banister, 2008). Across three empirical chapters, this work explored (1) the potential for MaaS-style subscription bundles to encourage multimodal travel, (2) the dynamics of e-bike mode substitution behavior across time, and (3) the cost-effectiveness of flat-rate e-bike purchase incentives as a strategy for reducing $CO_2$ emissions.

Each chapter targeted a different facet of behavior change and policy intervention, using survey data, discrete choice modeling, and simulation methods. This final chapter synthesizes these findings, highlights their contributions, and outlines implications for policy, planning, and future research.

## 5.2 Synthesis of Key Findings

### *5.2.1 Multimodal Subscription Bundles and MaaS (Chapter 2)*

The first empirical chapter investigated how MaaS-style bundles could be structured to encourage mode shift among transit users in Nashville. Using a SP experiment embedded in a transit rider survey, the study identified three distinct market segments: “Multimodal Enthusiasts,” “Skeptical Transit Loyalists,” and “Car-Prone Pragmatists.” Results showed that while price sensitivity was widespread, the inclusion of flexible micromobility options (e.g., e-scooters, bike-share) and guaranteed ride-home features improved bundle attractiveness, particularly for groups inclined toward multimodal habits.

This chapter underscored the importance of bundling not just modes, but motivations, such as convenience, safety nets, and price certainty, within MaaS offerings. It also provided early evidence that thoughtfully structured subscription packages could attract latent demand for low-carbon travel, even in auto-centric regions.

### *5.2.2 Temporal Dynamics of E-Bike Mode Subscription (Chapter 3)*

Chapter 3 addressed a fundamental knowledge gap: how mode substitution patterns evolve as e-bike markets mature. By pooling data from two nationally collected surveys of e-bike owners (2017 and 2023), and estimating a multinomial logit model, the chapter showed that substitution behavior is not static. More recent e-bike adopters reported higher substitution away from car and transit trips, particularly for utilitarian purposes.

Crucially, substitution effects were shaped by user characteristics (income, biking experience), trip purpose, and prior mode use. High-income and low-frequency cyclists in 2023 displayed stronger substitution effects than comparable 2017 cohorts, suggesting deeper market penetration and greater behavioral change among previously car-dependent groups. This temporal lens adds new urgency to policy conversations: as adoption diffuses, the sustainability potential of e-bikes expands.

### *5.2.3 Cost-Effectiveness of E-Bike Incentives (Chapter 4)*

The final empirical chapter modeled emissions outcomes under a range of flat-rate e-bike incentive scenarios. Using choice model estimates, trip substitution behavior, and VMT displacement ratios, the simulations revealed that modest investments, ranging from $0.50 to $5.00 per capita, could yield meaningful $CO_2$ reductions.

While emissions reduction increased with total program budget, the cost per metric ton of $CO_2$ abated also rose, reflecting diminishing returns at higher spending levels. At low-to-mid budget levels, the modeled cost-effectiveness of e-bike incentives (~$600–$800/ton) was comparable to or better than the U.S. EV subsidy (Sheldon et al., 2023). Importantly, the chapter also highlighted the equity implications of flat incentives: even low-income groups demonstrated a high VMT substitution potential, despite having a lower baseline likelihood of purchase in the absence of subsidies.

## 5.3 Cross-Cutting Theme and Contribution

Several insights emerge across chapters:

- **Behavioral change is conditional and segmented.** Whether in MaaS preferences or e-bike substitution, individuals respond differently based on prior behavior, income, and

trip purpose. Recognizing these heterogeneities is critical to designing interventions that resonate with target users.

- **Temporal change matters.** Chapter 3 shows that substitution dynamics shift as markets mature. Static policy tools built on early-adopter data may underperform or miss new opportunities. Policymaking must evolve alongside user behavior.
- **Low-carbon mobility is not just a technical issue; it's a policy design challenge.** Chapters 2 and 4 demonstrate that the framing of offerings (bundles, subsidies) affects who participates, how they substitute, and whether equity goals are advanced. Design matters as much as delivery.
- **Micromobility is both a decarbonization and equity strategy.** While Chapters 3 and 4 highlight the benefits of emissions reductions, they also demonstrate that low-income individuals, when supported, can make disproportionate contributions to mode shift. This creates a robust case for subsidies targeted not just at environmental goals, but also at mobility justice.

## 5.4 Policy Implications

The research offers several direct implications for urban transportation planning:

- **Flat-rate e-bike incentives** can be a cost-effective addition to climate portfolios, particularly when targeted at ambivalent middle-income adopters and high-substitution groups.
- **Micromobility access in MaaS bundles** should be prioritized, not as a niche offering but as a key complement to transit, particularly for first-/last-mile coverage.
- **Equity-oriented policies** (e.g., tiered incentives, community-based access programs) are essential if the full decarbonization and social benefits of e-bike adoption are to be realized.

Policymakers should pair financial incentives with infrastructure investments, educational campaigns, and regulatory reforms to maximize uptake and minimize rebound effects.

## 5.5 Conclusion

This dissertation presents an integrated, empirically grounded examination of how incentives and integration can promote urban transportation toward more sustainable modes. By analyzing latent demand, substitution behavior, and emissions outcomes, it fills critical gaps in the

literature and offers actionable pathways for policy. In a climate-constrained, equity-challenged mobility future, such interventions are not merely desirable, but they are essential.

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# APPENDIX

## APPENDIX 1: SURVEY DISTRIBUTED TO NASHVILLE TRANSIT USERS FOR ACCESSING PREFERENCE FOR THE MOBILITY-AS-A-SERVICE.

**Start of Block: Statement of Consents**

Q162 **Statement of Consents**

You are being asked to volunteer in a study conducted by researchers at the University of Tennessee Knoxville on behalf of the Tennessee Department of Transportation (TDOT). This study aims to evaluate the effectiveness of the new fare payment system and the pricing bundle scheme in a step toward integrating transit into a Mobility-as-a-Service system. The survey data collected in this study will be kept strictly confidential. The risk of participating in this study is not greater than those you may encounter in your daily activities. This survey should take you around 5 minutes to complete. You will receive a code for a $10 amazon electronic gift card for your participation. Your participation in this study is entirely voluntary, and you have the right to reject or retrieve from the study at any point without any liability.

If you have any questions or concerns about the study, you may contact

1. Dr. Christopher Cherry

Email: cherry@utk.edu

Phone: 865-684-8106

2. Sameer Aryal

Email: saryal2@vols.utk.edu

Phone: 816-349-7425

**By clicking the button below, you acknowledge the following:** Your participation in the study is voluntary. You are 18 years of age or older. You are aware of whom to contact if you have any further questions. You are aware that you may choose to terminate your participation at any time for any reason.

- Yes, I consent in participating in the research study.
- No, I don't consent, and I will not participate in the research study.

End of Block: Statement of Consents

Start of Block: Travel Behavior Block

A full day travel The picture below shows an example of different trips made through a full day of travel. A trip here is a single one-directional journey between two points in a specific mode. A total of 6 trips with different modes are present in the picture and are listed as follows; **Trip 1 (from 1 to 2)**: via Public Bus; **Trip 2 (from 2 to 3)**: via E-Scooter; **Trip 3 (from 3 to 2):** via E-Scooter; **Trip 4 (from 2 to 4)**: via Shared Bicycle; **Trip 5 (from 4 to 5):** via Public Bus; **Trip 6 (from 5 to 1)**: Via Public Bus; **Please consider the concept of the trip as in the example above while answering the question below.**

Q1 Please recall all your trips from 4:00 AM yesterday until 3:59 AM today. How many trips do you make with these vehicles/services? "Enter 0 if you did not make any trips."

WeGo Public Buses _____

Private Vehicle _____

Electric-Scooter (Bird,Lime or similar)

_____

Uber/Taxi/Lyft _____

Car share (Zip car or similar) _____

Electric bicycle (B-Cycle or similar)

_____

Car rental services (Enterprise, Hertz or similar)

_____

Any other vehicles/services _____

End of Block: Travel Behavior Block

Start of Block: MaaS Section Intro

Q175 How do you pay for WeGo transit service fares? Please select all that apply.

- Pay with cash for individual rides
- Pay with non-reloadable tickets (Paper pass with magnetic strips)
- Pay with QuickTicket mobile application
- Pay with a reloadable smart card

- Pay with Stored Value Card (SVC)
- I prefer not to answer.

Q9 What type of WeGo fare/pass do you usually prefer to buy?
▼ Individual ride (Adult fare) ... 31-day senior discounted pass

Q21 Do you have a valid U.S. driving license?

- Yes
- No

Q22 Do you have experience riding a bicycle?

- Yes
- No

Q174
Mobility-as-a-Service (MaaS) is a subscription-based service that will allow you to access several transportation services as a single discounted monthly mobility package using a smartphone app. We have used six transportation services to create a monthly mobility package. All modes are described below.

End of Block: MaaS Section Intro
Start of Block: Design D1-1
Q23
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description.
The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**

**For the price and service, which plan would you choose?**

*WeGo public bus service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a

vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q24
**Hypothetical Scenario [2 of 4]**
**We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at

any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q25
**Hypothetical Scenario [3 of 4]**
**We have changed the volume of services; which one would you choose?** *(The customized package includes WeGo Public Bus, Bird E-Scooter, Zipcar, Car rental, and Uber services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month.

The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q26

**Hypothetical Scenario [4 of 4]**

**We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D1-1

Start of Block: Design D1-2

Q27

**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.

Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.

**Hypothetical Scenario [1 of 4]**

**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q28
**Hypothetical Scenario [2 of 4]**
**We have changed the volume of services; which one would you choose?**
*(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber.** You may click on the names above for the detailed service description.*

*WeGo public transit service*
WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q29

**Hypothetical Scenario [3 of 4]**

**We have changed the volume of services; which one would you choose?** *(The customized*

*package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt out.**

Q30
**Hypothetical Scenario [4 of 4]**
**We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D1-2

Start of Block: Design D1-3

Q31

**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services. Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D. **Hypothetical Scenario [1 of 4] For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q32
**Hypothetical Scenario [2 of 4]**
**We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** service. You may click on the names above for the detailed service description.)*

WeGo public transit service WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**

- **I'll buy Plan C.**
- **I opt-out.**

Q33

**Hypothetical Scenario [3 of 4]**

**We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your

choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q34 **Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

**WeGo public transit service** WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

**Shared E-Scooter** Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle

can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

**Car share** ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

**Uber/Taxi** Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

**Vehicle rental service** Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D1-3

Start of Block: Design D1-4

Q35

**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services. Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D. **Hypothetical Scenario [1 of 4]**

**For price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q36

**Hypothetical Scenario [2 of 4]**

**We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close

- **I'll buy Plan A.**

- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q37

**Hypothetical Scenario [3 of 4]**

**We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q38

**Hypothetical Scenario [4 of 4]**

**We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**

- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D1-4
Start of Block: Design D1-5

Q39
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows

you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q40

**Hypothetical Scenario [2 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and

destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q41
**Hypothetical Scenario [3 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service*

WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the

unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q42

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **Bird E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D1-5
Start of Block: Block 34

Q130 Would you like to receive $10 amazon electronic gift card for your participation?

- Yes
- No

End of Block: Block 34
Start of Block: Design D2-1

Q43
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. (The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.) The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.

**Hypothetical Scenario [1 of 4]**

**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q44

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
*Close*

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
*Close*

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
*Close*

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
*Close*

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q45
**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q46

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D2-1
Start of Block: Design D2-2

Q47

**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.

Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.

**Hypothetical Scenario [1 of 4]**

**For the price and service, which plan would you choose?**

*WeGo public transit service*

WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.

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Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q48
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in

Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q49

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
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*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in

Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q50

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
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*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**

- **I opt-out.**

End of Block: Design D2-2
Start of Block: Design D2-3

Q51
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. (The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.) The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
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**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
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*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the

extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q52 **Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *((The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q53

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q54

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D2-3
Start of Block: Design D2-4

Q55
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q56

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q57

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and*

***Uber*** *services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**

- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q58

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
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Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your

choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D2-4
Start of Block: Design D2-5
Q59
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and services, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an “unlocking fee.” But buying this service as a

bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q60

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month.

The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q61

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?**

*(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e- scooter rides included in the bundle presented below.

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*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the

bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q62
**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **Bird**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter service* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D2-5
Start of Block: Design D-1

Q63
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description.
The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and services, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C**
- **I'I opt-out.**

Q64
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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Close

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Close

- **I'll buy Plan A.**
- **I'll buy Plan B**

- **I'll buy Plan C**
- **I opt-out.**

Q65

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

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Close

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Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q66

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
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*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides

available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
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*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-1
Start of Block: Design D-2

Q67
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and services, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides

available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q68
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of

the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental

alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q69
**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-

scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q70

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park

the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-2
Start of Block: Design D-3

Q71
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for

individual services.

Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.

**Hypothetical Scenario [1 of 4]**

**For price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park

the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close
**I'll buy Plan A.**
**I'll buy Plan B.**
**I'll buy Plan C.**
**I opt-out.**

Q72
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month.

The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the

bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q73
**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-

bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q74

**Hypothetical Scenario [4 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-3
Start of Block: Design D-4

Q75

**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.

Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.

**Hypothetical Scenario [1 of 4]**

**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q76

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?**

*(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**,*

*and **Uber** services. You may click on the names above for the detailed service description.)*

**We have changed the volume of services; which one would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.

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Close

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Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q77
**Hypothetical Scenario [3 of 4]**
**We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q78
**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**

- **I opt-out.**

End of Block: Design D-4
Start of Block: Design D-5

Q79
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services. Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D. **Hypothetical Scenario [1 of 4] For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-

scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle. Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q80

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at

any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q81

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the

bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q82
**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**

- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-5
Start of Block: Design D-6
Q104
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These

rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q105

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can

be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q106

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes* ***WeGo Public Bus****,* ***BCycle****,* ***E-Scooter****,* ***Zipcar****,* ***Car rental****, and* ***Uber*** *services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month.

The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
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*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the

bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q107
**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

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Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**

- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-6
Start of Block: Design D-7

Q108
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**

- **I'll buy Plan C.**
- **I opt-out.**

Q109

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber services**. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can

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Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q110

**Hypothetical Scenario [3 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes* ***WeGo Public Bus****,* ***BCycle****,* ***E-Scooter****,* ***Zipcar****,* ***Car rental****, and* ***Uber*** *services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit days pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total amount of service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides

available in the bundle. Total service is calculated as the distance traveled between origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of different car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q111
**Hypothetical Scenario [4 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on

all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
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*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental

alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-7
Start of Block: Design D-8

Q112
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on

all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q113

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-

scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q114

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would**

**you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q115

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I Opt-Out.**

End of Block: Design D-8
Start of Block: Design D-9
Q116
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in

Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a

vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q117
**Hypothetical Scenario [2 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the

unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle. Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q118

**Hypothetical Scenario [3 of 4] We have changed the volume of services; which one would**

**you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q119

**Hypothetical Scenario 4 of 4: We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services). You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit days pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total amount of service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of different car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-9
Start of Block: Design D-10

Q120
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and

Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q121
**Hypothetical Scenario [2 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-

scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q122

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at

any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q123
**Hypothetical Scenario [4 of 4] We have changed the volume of services; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month.

The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and

destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-10
Start of Block: Design D-11

Q124
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the

bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**

Q125
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of the different car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**

- **I opt-out.**

Q126

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at

any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q127

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the

bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-11
Start of Block: Design D-12
Q128
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and

Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q129
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-

scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q130

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package consists of services for **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber**. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park

the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q131

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-12
Start of Block: Design D-13

Q132
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and

Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q133
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-

scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
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*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q134

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park

the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q135

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the

bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-13
Start of Block: Design D-14

Q136
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q137
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**

- **I'll buy Plan C.**
- **I opt-out.**

Q138

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can

be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q139

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides

available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-14
Start of Block: Design D-15

Q140
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides

available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q141
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on

all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q142

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. )*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the

unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q143

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at

any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-15
Start of Block: Design D-16

Q144
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. Please click on the names above for the detailed service description. The total

cost for the package is estimated based on the bundle discount on the current pricing for individual services.

Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.

**Hypothetical Scenario [1 of 4]**

**For the price and service, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park

the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q145
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the

bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q146
**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**

- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q147

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **BCycle**, **E-Scooter**, **Zipcar**, **Car rental**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Bike* BCycle is one of the pedal-assist shared electric bicycles available operated in Nashville. These rental e-bikes are docked; hence they must be picked up and returned to any of the BCycle stations. By buying this service as a bundle, you avoid paying the activation fee on all rides available in the bundle. Once activated, the maximum ride per trip (without paying the extra cost) ranges from 30 minutes to 120 minutes. The table below presents the list of shared e-bike alternatives in the bundle.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Car share* ZipCar is one of the car-sharing services operated in Nashville. This service allows you to rent a car on demand, with services ranging from 3 hours to 9 hours. These vehicles can be picked up and left at designated parking locations. One-way car share allows you to park at any designated location at the end of the trip, whereas round-trip car share requires you to park the vehicle at the original pick-up location. The table below presents the list of car share alternatives included in the bundle.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

*Vehicle rental service* Car rental is a service provided by the companies like Enterprise and Hertz. By buying this service as a bundle, you can avoid paying a base fee while renting a vehicle for the days available within the bundle. The table below presents the list of car rental alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D-16
Start of Block: Design D3-1

Q148
**Your Customized Mobility Package:** Based on the information about your driving license and

ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and services, which plan would you choose?**

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**

- **I opt-out.**

Q149

**Hypothetical Scenario [2 of 4] We have changed the volume of services; which one would you choose?** *( The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q150

**Hypothetical Scenario [3 of 4] We have changed the volume of services; which one would you choose?** *( The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

- **I'll buy this plan.**
- **I'll buy this plan.**
- **I'll buy this plan.**
- **I opt-out.**

Q151

**Hypothetical Scenario [4 of 4] We have changed the volume of services; which one would you choose?** *( The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D3-1

Start of Block: Design D3-2

Q152

**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and services, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q153

**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**

- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q154

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *( The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**

- **I'll buy Plan C.**
- **I opt-out.**

Q155

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**

- **I opt-out.**

End of Block: Design D3-2
Start of Block: Design D3-3

Q156
Your Customized Mobility Package:  Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes WeGo Public Bus, E-Scooter, and Uber services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
Scenario 1 of 4:
For the price and service, which plan would you choose?

WeGo public transit service  WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

Shared E-Scooter  Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an “unlocking fee.” But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

Uber/Taxi  Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and

destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q157
Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose? (The customized package includes WeGo Public Bus, E-Scooter, and Uber services. You may click on the names above for the detailed service description.)

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the

bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q158

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the

bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q159
**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the

bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D3-3
Start of Block: Design D3-4

Q160
**Your Customized Mobility Package:** Based on the information about your driving license and ability to ride a bicycle, we have worked out some hypothetical mobility packages. The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. Please click on the names above for the detailed service description. The total cost for the package is estimated based on the bundle discount on the current pricing for individual services.
Plan A, Plan B, and Plan C are customized plans, but you can also opt out by choosing Plan D.
**Hypothetical Scenario [1 of 4]**
**For the price and service, which plan would you choose?**
*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.
Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q161
**Hypothetical Scenario [2 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.
Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.
Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q162

**Hypothetical Scenario [3 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included in the bundle. The table below presents different alternatives for e- scooter rides included in the bundle presented below.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

Q163

**Hypothetical Scenario [4 of 4] We have changed the volume of service; which one would you choose?** *(The customized package includes **WeGo Public Bus**, **E-Scooter**, and **Uber** services. You may click on the names above for the detailed service description.)*

*WeGo public transit service* WeGo is the public bus system operated in Nashville. The unlimited ride pass for the transit services can be purchased for days ranging from 3 to 28 days a month. The table below presents alternatives for unlimited public transit day pass included in the bundles.

Close

*Shared E-Scooter* Bird and Lime are some of the shared e-scooters operated in Nashville. These rental scooters are dockless and can be rented quickly based on availability. On an individual e-scooter ride, you must pay an "unlocking fee." But buying this service as a bundle can avoid the unlocking fee for the total service included. The table below presents different alternatives for e-scooter rides included in the bundle presented below.

Close

*Uber/Taxi* Uber/ Taxi is the service that picks you up and drops you off at the location of your choice. By buying this service as a bundle, you can avoid paying the base fee on all rides available in the bundle. Total service is calculated as the distance traveled between the origin and destination. The table below presents the list of different Uber service alternatives included in the bundle.

Close

- **I'll buy Plan A.**
- **I'll buy Plan B.**
- **I'll buy Plan C.**
- **I opt-out.**

End of Block: Design D3-4

## APPENDIX 2: EXPLORATORY ATTRIBUTE-LEVEL MODELLING OF MAAS BUNDLES (ABANDONED DUE TO SAMPLE LIMITATIONS)

### *A.2.1 Modelling Motivation and Analytical Framework*

To evaluate stated preferences for subscription-based mobility bundles, we designed and tested a mixed multinomial logit (MMNL) modeling framework. This approach was chosen because it allows for individual-level heterogeneity in how respondents trade off service features (e.g., transit access, micromobility availability, ride-hailing mileage) and monthly price.

The MMNL structure is widely used in stated choice modeling, particularly when respondents are asked to evaluate multiple hypothetical alternatives. In our experiment, each respondent reviewed up to four MaaS bundle options, each characterized by varying service levels and monthly cost. The model aimed to estimate marginal utilities for each attribute and to capture random taste variation using normally distributed parameters.

However, as discussed in subsequent sections, this approach faced several practical and statistical challenges. Specifically, high collinearity between price and service levels hindered model identification and produced theoretically inconsistent results. This appendix documents the full modeling process, including:

- The original MMNL model specification (Section A.2)
- The consolidation of attribute levels to simplify estimation (Section A.3)
- Results from the collapsed model (Section A.4)
- Stepwise diagnostic models (Section A.5)
- And the rationale for transitioning to a binary logistic model (Section A.6)

### *A.2.2 Full MMNL Model Estimation and Justification for Binary Logit Approach*

As an initial analytical approach, we estimated a mixed multinomial logit (MMNL) model to evaluate how service attributes and monthly price influenced respondents' choices among hypothetical MaaS bundles. The full MMNL model included detailed variables for transit service days, micromobility duration, Uber mileage, car rental days, car share hours, and monthly cost. This specification allowed for random taste variation by estimating standard deviation parameters for several attributes.

Table A 1. Full MMNL Model Results (Disaggregated Specification)

| | Estimate | Std. Error | z-value | Pr(>\|z\|) |
|---|---|---|---|---|
| Intercepts | | | | |
| Bundle option 1 (Cheap) | 12.38 | 8.18 | 1.51 | 0.13 |
| Bundle option 2 (Mid-range) | 19.69* | 8.10 | 2.43 | 0.02 |
| Bundle option 3 (Expensive) | -14.66* | 7.25 | -2.02 | 0.04 |
| Opt-out option | Base Category | | | |
| Bundle price | -0.96*** | 0.13 | -7.19 | 0.00 |
| Transit services levels | | | | |
| Transit 3 days | Base Category | | | |
| Transit 7 days | -43.22* | 18.73 | -2.31 | 0.02 |
| Transit 14 days | 11.46 | 13.12 | 0.87 | 0.38 |
| Transit 21 days | 14.58 | 18.46 | 0.79 | 0.43 |
| Transit 28 days | 28.75 | 16.48 | 1.74 | 0.08 |
| Shared bicycle service levels | | | | |
| Shared bicycle 3 hours | Base Category | | | |
| Shared bicycle 5 hours | -22.37** | 7.37 | -3.04 | 0.00 |
| Shared bicycle 7 hours | -26.55* | 11.11 | -2.39 | 0.02 |
| Shared bicycle maximum ride /trip levels | | | | |
| 30 minutes max | Base Category | | | |
| 60 minutes max | 3.55 | 9.62 | 0.37 | 0.71 |
| 120 minutes max | -0.24 | 7.93 | -0.03 | 0.98 |
| Shared e-scooter service levels | | | | |
| E-scooter 120 minutes | 5.62 | 11.48 | 0.49 | 0.62 |
| E-Scooter 240 minutes | -6.63 | 11.75 | -0.56 | 0.57 |
| E-scooter 360 minutes | -4.27 | 10.04 | -0.43 | 0.67 |
| E-scooter 480 minutes | Base Category | | | |

Table A.1. Continued

| | | | | |
|---|---|---|---|---|
| Uber/ Taxi services | | | | |
| *Uber 30 miles* | Base Category | | | |
| *Uber 20 miles* | -9.95 | 10.77 | -0.92 | 0.36 |
| *Uber 40 miles* | -30.45* | 15.28 | -1.99 | 0.05 |
| Car rental services | | | | |
| *Car rental 2 days* | Base Category | | | |
| *Car rental 3 days* | 23.53 | 13.00 | 1.81 | 0.07 |
| *Car rental 4 days* | -67.18*** | 17.02 | -3.95 | 0.00 |
| Car sharing services | | | | |
| *Car share 3 hours* | Base Category | | | |
| *Car share 5 hours* | -9.03 | 18.41 | -0.49 | 0.62 |
| *Car share 7 hours* | -10.63 | 13.84 | -0.77 | 0.44 |
| *Car share 9 hours* | -47.52** | 16.08 | -2.96 | 0.00 |
| Car share mode | | | | |
| *Round trip car share* | Base Category | | | |
| *One-way car share* | -0.39 | 11.16 | -0.04 | 0.97 |
| Credit rollover | | | | |
| *Absence of credit rollover* | Base category | | | |
| *Presence of credit rollover* | 9.96 | 8.36 | 1.19 | 0.23 |
| sd. Bundle Price | 1.26*** | 0.06 | 20.33 | 0.00 |
| Transit services (Standard Deviation) | | | | |
| *Sd. Transit 3 days* | Base Category | | | |
| *Sd. Transit 7 days* | 56.33*** | 15.82 | 3.56 | 0.00 |
| *Sd. Transit 14 days* | 38.91*** | 6.47 | 6.01 | 0.00 |
| *Sd. Transit 21 days* | 31.92* | 15.86 | 2.01 | 0.04 |
| *Sd. Transit 28 days* | 55.83*** | 12.53 | 4.45 | 0.00 |

Table A.1. Continued

| | | | | |
|---|---|---|---|---|
| Shared bicycle services (Standard Deviation) | | | | |
| *Sd. Shared bicycle 3 hours* | Base Category | | | |
| *Sd. Shared bicycle 5 hours* | -7.43*** | 2.15 | -3.46 | 0.00 |
| *Sd. Shared bicycle 7 hours* | -4.34 | 4.52 | -0.96 | 0.34 |
| Shared bicycle maximum ride /trip(Standard Deviation) | | | | |
| *Sd. 30 minutes max* | Base Category | | | |
| *Sd. 60 minutes max* | -13.35 | 7.94 | -1.68 | 0.09 |
| *Sd. 120 minutes max* | -22.73** | 7.68 | -2.96 | 0.00 |
| Shared e-scooter service levels(Standard Deviation) | | | | |
| *Sd. E-scooter 120 minutes* | -26.59* | 12.61 | -2.11 | 0.04 |
| *Sd. E-Scooter 240 minutes* | 13.1 | 7.26 | 1.80 | 0.07 |
| *Sd. E-scooter 360 minutes* | 1.66 | 7.71 | 0.22 | 0.82 |
| *Sd. E-scooter 480 minutes* | Base Category | | | |
| Uber/ Taxi services (Standard Deviation) | | | | |
| *Sd. Uber 30 miles* | Base Category | | | |
| *Sd. Uber 20 miles* | -31.61** | 11.1 | -2.8 | 0.00 |
| *Sd. Uber 40 miles* | -60.94*** | 11.67 | -5.22 | 0.00 |
| Car rental services (Standard Deviation) | | | | |
| *Sd. Car rental 2 days* | Base Category | | | |
| *Sd. Car rental 3 days* | 24.85* | 12.60 | 1.97 | 0.05 |
| *Sd. Car rental 4 days* | 81.5*** | 21.51 | 3.79 | 0.00 |
| Car-sharing services (Standard Deviation) | | | | |
| *Sd. Char share 3 hours* | Base Category | | | |
| *Sd. Car share 5 hours* | 2.19 | 20.93 | 0.1 | 0.92 |
| *Sd. Car share 7 hours* | 25.2 | 16.66 | 1.51 | 0.13 |
| *Sd. Car share 9 hours* | 28.91 | 21.46 | 1.35 | 0.18 |

Table A-1 Continued

| | | | | |
|---|---|---|---|---|
| Car share mode (Standard Deviation) | | | | |
| Sd. round trip car share | Base Category | | | |
| Sd. one-way car share | -22.6 | 14.14 | -1.6 | 0.11 |
| Credit rollover (Standard Deviation) | | | | |
| Sd. Absence of credit rollover | Base Category | | | |
| Sd. Presence of credit rollover | -15.55** | 5.09 | -3.06 | 0.00 |
| Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 | | | | |
| Log-Likelihood: -294.51 | | | | |
| McFadden R^2: 0.29931 | | | | |
| Likelihood ratio test : chisq = 251.66 (p.value = < 2.22 e-16) | | | | |

While the model showed reasonable overall fit (log-likelihood = –294.51; McFadden $R^2$ = 0.299), it exhibited serious estimation problems when examined at the attribute level. Specifically, many service attributes—despite representing "more" service—had negative or statistically insignificant coefficients. For example, bundles offering 7 days of transit service returned a significant negative coefficient ($\beta = -43.22$, $p = 0.02$), and both 5-hour and 7-hour shared bicycle options were negatively associated with utility. This pattern was observed across multiple categories, including car share hours, Uber mileage, and car rental length, suggesting a violation of basic rational utility assumptions.

To diagnose the issue, we examined post-estimation diagnostics and found severe multicollinearity between service features and bundle price. The variance inflation factor (VIF) for cost exceeded 20, far beyond acceptable thresholds, confirming that the model was statistically unable to separate the independent effects of price from those of service quantity. While the cost coefficient was negative and significant ($\beta = -0.96$, $p < 0.001$), this result must be interpreted with caution: the high VIF implies that cost may be soaking up explanatory power that actually belongs to service attributes, or vice versa.

In short, although the model produced several significant estimates and captured heterogeneity

through random parameters, the directionality and instability of core service variables—driven by collinearity—undermined the credibility of its behavioral implications.

### *A.2.3: Attributes Consolidation Strategy*

To address instability in the full MMNL specification, we consolidated several service attributes into broader categories. This approach reduced the total number of estimated parameters, improved level balance across choice tasks, and aimed to mitigate multicollinearity without sacrificing key behavioral variation. Attribute levels were grouped based on both conceptual similarity (e.g., “short” vs. “long” access windows) and empirical overlap in usage.

This transformation reduced the number of service attribute levels from over 20 to 13. Despite this simplification, the collapsed MMNL model remained poorly identified and failed to meaningfully improve model fit. Results from this specification are shown in Figure A2.

### *A.2.4: Collapsed MMNL Model Results*

Following the attribute consolidation strategy, we estimated a collapsed MMNL model using the grouped service variables. This specification included 13 parameters, substantially reducing the complexity of the full model. The aim was to enhance estimation stability while retaining key policy-relevant service features.

Despite the simplified structure, the model continued to exhibit poor performance. The log-likelihood improved only slightly (from –453.77 to –453.74), and the likelihood ratio test statistic was negligible (0.07), indicating the model added little explanatory power beyond a null specification. The pseudo $R^2$ remained effectively zero, and several service coefficients retained unexpected signs. For instance, the coefficient for short transit access remained negative, and the price coefficient (B_Cost) was statistically insignificant ($p = 0.64$). These results further validated the concern that the underlying design structure prevented independent estimation of service and cost effects.

### *A.2.5: Stepwise Diagnostics Specifications*

To fully assess the extent of structural limitations in the MMNL framework, we implemented a series of stepwise model variants. These specifications aimed to isolate and diagnose the influence of individual features on model behavior. The following four models were tested:

- A cost-only model, to assess whether price alone could explain bundle selection;
- A no-cost model, to determine if service variables performed better in the absence of price;
- Incremental models that added or removed specific services to evaluate coefficient stability;
- Log-transformed and standardized cost specifications, to mitigate multicollinearity.

As summarized in Table A3, none of these specifications significantly improved model performance. While the cost-only model showed a slight increase in explanatory power, the cost coefficient remained statistically insignificant ($p = 0.70$). In the standardized model, despite VIF reductions to below 2.0, cost was again insignificant ($p = 0.98$). These outcomes suggest that the MMNL structure was unable to reliably recover marginal effects under the experimental design.

### *A.2.6: Justification For Binary Logit Model*

Given the persistent instability, counterintuitive signs, and unresolved collinearity issues across all MMNL variants, we ultimately pivoted to a binary logistic regression framework. This approach collapses the choice task into a single decision: whether the respondent opted into any MaaS bundle at least once, or consistently opted out.

While this model structure does not permit attribute-level utility estimation, it offers significant gains in estimation clarity and behavioral interpretability. The binary logit model avoids the multicollinearity inherent in the MMNL setup by sidestepping the need to estimate joint effects of price and service in fixed bundles. It also allows us to focus on individual-level predictors of overall subscription interest, such as income, payment method, and prior travel behavior.

In summary, the binary logit model was selected not as a theoretical compromise, but as an empirical necessity. The results presented in Sections A.2 through A.5 document a rigorous, iterative modeling process and justify the final analytical pivot made in the main chapter.

## APPENDIX 3. CORRELATION HEAT MAP OF THE VARIABLE USED IN THE BINARY LOGIT MODEL FOR THE MAAS SURVEY.

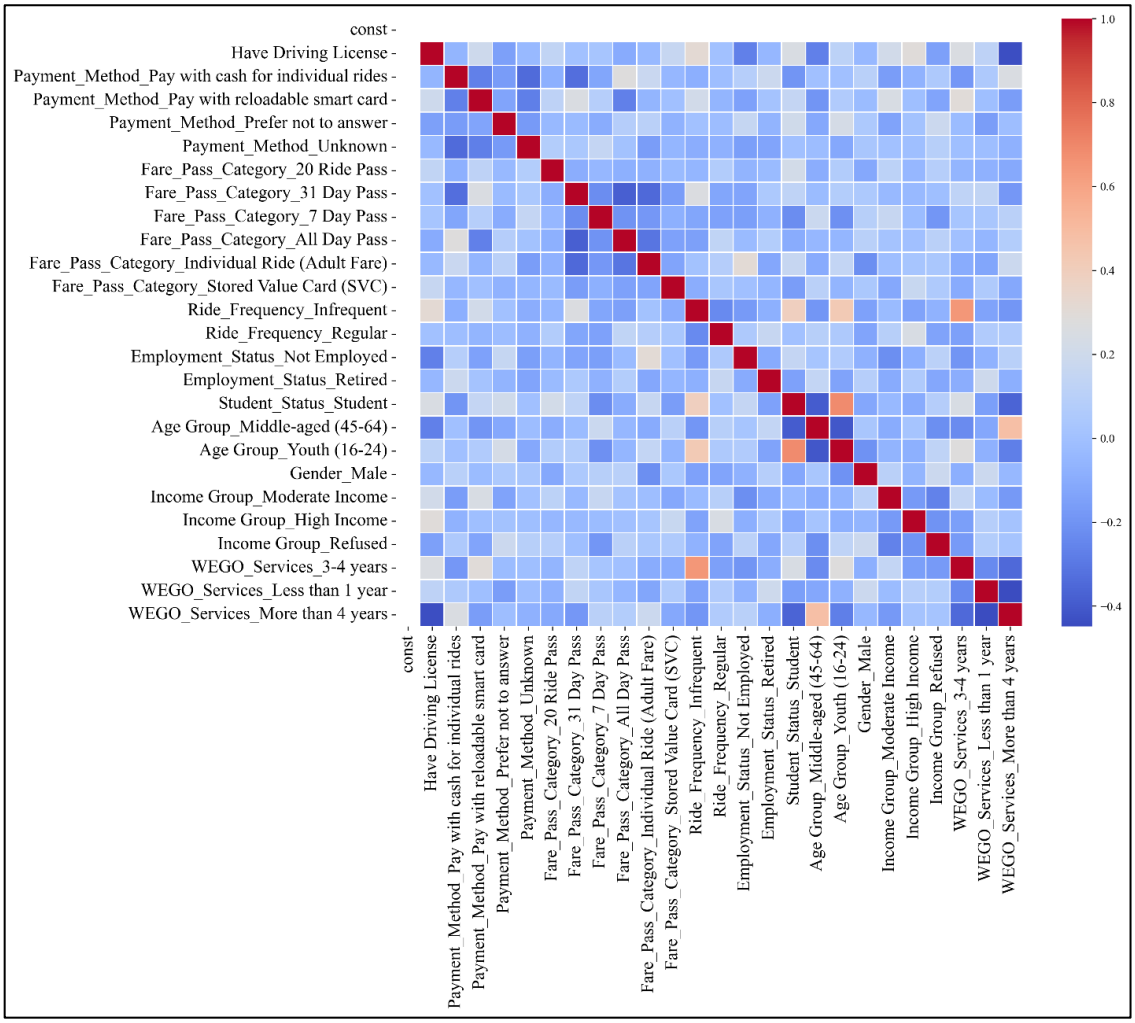



Figure A 1. Correlation heat map of the variable used in the binary logit model for the MaaS survey.

## APPENDIX 4. E-BIKE OWNER SURVEY QUESTIONER FROM 2017.

Electric Bike Survey: Understanding Purchasing and Use

Thank you for taking our survey!

The Transportation Research and Education Center at Portland State University is conducting a study of e-bike riders in the United States and Canada. We want to hear about your experiences purchasing and using your e-bike. In the last decade, electric bicycles (e-bikes) have become common in parts of Asia and Europe. In North America, e-bikes have not yet become a mainstream form of transportation. We would like to ask you some questions to learn more about the role e-bikes can play in our urban transportation systems.

The survey should take 15-20 minutes.

Thank you for taking the time to participate. Your responses are valuable and will help us understand more about how people use e-bikes.

At the end of the survey, you can enter a drawing for one of 10 $50 Visa Gift Cards. Statement of Informed Consent

Participants will share their e-bike experiences. Your participation is voluntary. You may opt out of the

survey at any time. There are no expected physical or psychological impacts from taking part in the study. Your individual survey responses are anonymous and confidential. We will store the survey data on secured servers at Portland State University. It will not be possible to tell who said what in any reports.

We do not anticipate any risk to you in answering the survey. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. Individuals from the Institutional Review Board may inspect these records. If the data is published, no individual information will be disclosed.

Portland State University does not release information about how any individual answers the survey and will not sell or give away the lists of respondents who participate in our research.

Any questions?

The Portland State University Institutional Review Board has reviewed this project. If you have any concerns about your rights in this study, please contact the PSU Office of Research Integrity at (503) 725- 2227 or email hsrrc@pdx.edu. If you have questions about the study itself, please contact John MacArthur by telephone at (503) 725-2866, by e-mail at macarthur@pdx.edu, or by mail at Transportation Research and Education Center (TREC), P.O. Box 751, Portland State University, Portland, OR 97207-0751.
Our research can only be successful with the generous help of people like you. We hope you will enjoy answering our questions. Thank you for taking part in our e-bike survey!

Do you agree to participate in this survey? By clicking "Accept", you are consenting to participate in this survey. If you do not consent, please click "Decline" to navigate away from the survey.

- Accept (1)
- Decline (2)

Q146 In what country do you currently reside?

○ United States (1)
○ Canada (2)
○ Other (Please Specify) (3)

Q142 In which state do you currently reside? Q132 Please enter your current 5-digit ZIP code.
Q147 In which province do you currently reside?
Q148 Please enter your postal code.
Q119 Section One: Your Electric Bicycle (E-bike) Questions in this section are about the e-bike you own or use regularly. If you have more than one e-bike, answer questions in this section about the e- bike you use most often.
Q3 I own and/or often use an e-bike.

○ Yes (1)
○ No (2)

Q4 Did you purchase an e-bike or did you convert a standard bicycle?

○ I purchased an e-bike (1)

○ I converted a standard bicycle (2)

Q5 Did you convert an existing bicycle you owned or did you buy a new bicycle for the conversion?

○ I used an existing bicycle (1)

○ I bought a new bicycle (2)

Q7 Where did you purchase your e-bike or e-bike conversion kit?

○ Standard bicycle shop that has some e-bikes (1)

○ Specialty e-bike shop (2)

○ Specialty electric vehicle shop (e.g. also sells scooters without pedals & other bicycles) (3)

○ Big Box Store, Superstore, General Merchandise/Outdoor Retailers (4)

○ Online (5)

○ Other (Please specify) (6)

Q8 In what year did you purchase your e-bike or e-bike conversion kit?

Q9 Approximately much did your e-bike or e-bike conversion kit cost to purchase (enter a dollar value)?

Q15 What make/brand is your e-bike?

Q16 What model is your e-bike? If you do not know the model please briefly describe your e-bike's characteristics or features.

Q145 Which of these pictures most closely resembles your e-bike?

o Image: Longtail (1)

o Image: Hybrid2 (2)

o Image: Step thru (3)

o Image: E-bike mountain (4)

o Image: E-cargo1 (5)

o Image: E-scooter pedals (6)

o Image: E-scooter (7)

o My e-bike looks different than the other options (please briefly describe what your e-bike type or what it looks like): (8)

Q127 What is the top assisted speed of your e-bike?

○ 15.5 mph or 25 km/hour (1)

○ 18 mph or 28 km/hour (5)

○ 20 mph or 32 km/hour (2)

○ 28 mph or 45 km/hour (3)

○ Greater than 28 mph or 45 km/hour (6)

○ I do not know (4)

Q153 What percent of the time do you operate your e-bike on (Total needs to sum to 100%)...

The maximum power setting : (1)

The medium power setting : (2)

The lowest power setting : (3)

With the power disengaged : (4)

Total :

Q59 How satisfied are you with your e-bike?

o Very satisfied (2)

o Satisfied (3)

o Neutral (4)

o Unsatisfied (5)

o Very unsatisfied (6)

Q165

You answered that you are unsatisfied with your e-bike.

What would you want if you decided to purchase a new e-bike?

Q19 Section Two: Purchasing your E-Bike Questions in this section relate to your decision to purchase your e-bike or convert a standard bicycle. For the purpose of this survey, a standard bicycle has no assist and is only propelled by the rider.

Q20 What were the top three reasons why you bought an e-bike or converted a standard bicycle? (Please select three)

- ○ To replace car trips (1)
- ○ Health - a medical condition reduced my ability to ride a standard bicycle (2)
- ○ Health - to increase fitness (3)
- ○ Because I live or work in a hilly area (4)
- ○ To ride with less effort (5)
- ○ To be able to keep up when riding with friends/family (6)
- ○ To carry cargo or kids (14)
- ○ Other (7)
- ○ It's a cost effective form of transportation (8)
- ○ To start cycling or to cycle more often (11)
- ○ To ride longer distances to places I need to go (12)
- ○ To avoid traffic in my car (20)
- ○ To avoid parking hassles in my car (21)
- ○ For environmental reasons (22)
- ○ For recreation purposes (9)

Q129 Please rank your top-three reasons for buying an e-bike.

To replace car trips (1)

Health - a medical condition reduced my ability to ride a standard bicycle (2)

Health - to increase fitness (3)

Because I live or work in a hilly area (4)

To ride with less effort (5)

To be able to keep up when riding with friends/family (6)

To carry cargo or kids (7)

Other (8)

It's a cost effective form of transportation (9)

To start cycling or to cycle more often (10)

To ride longer distances to places I need to go (11)

To avoid traffic in my car (12)

To avoid parking hassles in my car (13)

For environmental reasons (14)

For recreation purposes (15)

Q22 Before purchasing your e-bike, what were the top-three factors (if any) that kept you from biking more often, either for commuting or for daily errands and trips (Please select three)?

- ○ Not physically able (1)
- ○ Distances to places I wanted to go were too far (2)
- ○ Hills made cycling difficult (3)
- ○ I couldn't carry the things I needed (cargo or kids) (4)
- ○ Other people relied on me to take my car (children, coworkers, etc.) (5)
- ○ Difficulty storing or securing bicycles (6)
- ○ Concern for my safety (7)
- ○ I didn't like to arrive sweaty to my destination (8)
- ○ Biking was too slow (9)
- ○ Weather conditions (10)
- ○ None - I biked enough already (11)
- ○ Other (Please specify) (12)

Q130 Please rank the top-three factors that kept you from biking more often, either for commuting or for daily errands or trips.

Not physically able (1)

Distances to places I wanted to go were too far (2)

Hills made cycling difficult (3)

I couldn't carry the things I needed (cargo or kids) (4)

Other people relied on me to take my car (children, coworkers, etc.) (5)

Difficulty storing or securing bicycles (6)

Concern for my safety (7)

I didn't like to arrive sweaty to my destination (8)

Biking was too slow (9)

Weather conditions (10)

None - I biked enough already (11)

Other (Please specify) (12)

Q24 How familiar were you with e-bikes before you purchased yours?

- ○ Very familiar (1)
- ○ Somewhat familiar (2)
- ○ Somewhat unfamiliar (3)
- ○ Very unfamiliar (4)

Q121 Section Three: Travel

This section is about your transportation habits and choices.

Q156

Think back on the last three times you used an e-bike...

How did you use it? How far did you go? If you had not taken your e-bike, how would you have traveled to your destination?

| | Purpose of Trip | Distance | If you had not taken your e-bike, how would you have traveled to your destination? |
|---|---|---|---|
| | | (Approximate Miles) (1) | |
| Ride 1 (1) | ▼ Commute (work or school) (1) ... Other (6) | | ▼ Walk (1) ... I would not have taken this trip (10) |

| | | | |
|---|---|---|---|
| Ride 2 (2) | ▼ Commute (work or school) (1) ... Other (6) | | ▼ Walk (1) ... I would not have taken this trip (10) |
| Ride 3 (3) | ▼ Commute (work or school) (1) ... Other (6) | | ▼ Walk (1) ... I would not have taken this trip (10) |

Q161 You indicated that your first ride was something other than what was listed. Briefly describe the purpose of that trip.
Q163 You indicated that the purpose of your second ride was something other than what was listed. Briefly, describe the purpose of that trip.

Q164 You indicated that the purpose of your third ride was something other than what was listed. Briefly, describe the purpose of that trip.
Q149 Which mode do you primarily take to each of the listed activities?
Q92 In a given week, what percentage of your trips are by...
Car : (1)
E-bike : (2)
Standard bicycle : (3)
Public transportation : (4)
Walk : (6)
Other (please specify) : (5)
Total :

Q39 About how far is your current daily commute (enter the approximate miles in one direction. Enter 0 if you don't have a daily commute to work or school)?

Q40 How long does your door-to-door commute to work or school take (Enter the number of minutes it takes you to get to work/school from your household. Enter 0 if you don't have a daily commute to work or school)?

Q41 How often do you use your e-bike for the following activities?

Q135 Do you agree with the following statements?

An e-bike's speed and acceleration is exciting. (1)

My e-bike allows me to go farther than a standard bicycle. (2)

My e-bike allows me to keep up with friends or family on bicycle rides. (6)

To ride the same trip by a standard bicycle, I would need to shower at my destination. (8)

I consciously conserve battery power when riding my e-bike. (9)

I enjoy my overall riding experience on my e-bike (11)

I ride my e-bike more than a standard bicycle because it is fun to ride (12)

I would rather cycle than drive a car (7)

It is important to reduce the amount of car trips I take or fuel I use (13)

Q62 What are the main benefits to you of riding an e-bike?

Q63 What disadvantages or issues have you experienced related to riding an e-bike?

Q122 Section Four: Safety

This section is about safety on your e-bike.

Q137 Do you agree with the following statements?

I feel safe riding an e- bike. (1)

I feel safe riding a standard bicycle. (2)

On my e-bike, other road users misjudge my speed. (5)

On my e-bike, I feel like I go faster than other cyclists (6)

On average, I ride faster than I would on a standard bicycle. (7)

Q67 How often do you feel in conflict with the following traffic types?

Pedestrians (1)

Bicycles (2)

Cars (3)
Bus or large vehicles (4)

Q68 Have you experienced any crashes while riding your e-bike in the last two years?

- ○ Yes - I've experienced one or more crashes. (1)
- ○ No (3)

Q125 What other road users or objects in the road were involved in your crashes? (please select all that apply)

- ○ Motor vehicle (1)
- ○ Another cyclist (2)
- ○ Pedestrian (3)
- ○ A roadside object (tree/pole/parked car/etc.) (4)
- ○ A pothole or other object in road (5)
- ○ Loose gravel/sand or other debris (6)
- ○ Nothing - I lost control/fell over (7)
- ○ Other (8)

Q71 How many times have you had a crash involving the following road users or objects in the road?

Motor vehicle (x1)
Another cyclist (x2)
Pedestrian (x3)
A roadside object (tree/pole/parked car/etc.) (x4)
A pothole or other object in road (x5)
Loose gravel/sand or other debris (x6)
Nothing - I lost control/fell over (x7)
Other (x8)

Q126 Think about the worst crash... Who or what was involved?

Q150 What was the severity of the crash?

- ○ No injury (1)
- ○ Mild (scrapes, bruises) (2)
- ○ Moderate (cuts, bleeding) (3)
- ○ Severe (trip to hospital) (4)
- ○ Property damage (5)

Q72 Do you think the e-bike significantly contributed to your crash or near miss?

- ○ Yes (please explain) (1)
- ○ No (2)
- ○ I don't know (99)

Q76 Do you think your e-bike has helped you avoid crashes?

- ○ Yes (please explain) (1)
- ○ No (2)
- ○ I don't know (99)

Q123 Section Five: Previous cycling experience

This section is about your experiences with standard bicycles. For the purpose of this survey, a standard bicycle has no assist and is only propelled by the rider.

Q80 Before owning an e-bike, did you as an adult ride a standard bicycle?

- ○ Yes (1)
- ○ No (2)

Q81 Before you owned an e-bike, how often did you ride a standard bicycle?

- ○ Never (1)
- ○ Once a year or less (2)
- ○ A few times a year (3)
- ○ Monthly (4)
- ○ Weekly (5)
- ○ Daily (6)

Q83 How often do you ride a standard bicycle now?

- ○ Never (1)
- ○ Once a year or less (2)
- ○ A few times a year (3)
- ○ Monthly (4)
- ○ Weekly (5)
- ○ Daily (6)

Q85 Do you ride for different purposes or to different destinations or take different routes on your e-bike than you would on a standard bicycle?

- ○ Yes (1)
- ○ No (2)

Q86 If yes, please describe the reasons why you ride an e-bike for different purposes or to different destinations or take different routes than you would on a standard bicycle.
Q90 Please describe any other differences you have experienced in the way you ride your e-bike compared to a standard bicycle.

Q155 Section Six: Final Thoughts

Q93 Do you have any positive experiences using your e-bike that you would like to share with us? Q94 Do you have any negative experiences using your e-bike that you would like to share with us?
Q95 Do you have any unique or interesting experiences regarding your e-bike that you would like to share with us?
Q97 Section Seven: Demographics
Thank you for participating in our survey! You are almost done. Please answer a few demographic questions so we can learn a bit more about you.

Q99 Do you consider yourself (check all that apply)...

- American Indian or Alaska Native (1)
- Asian (2)
- Black or African American (3)
- Other (4)
- White or Caucasian (5)
- Hispanic or Latino/Latina (6)
- Prefer not to say (7)

Q101 What is your age?

Q103 Are you...

- Male (1)
- Female (2)
- Other (3)
- I prefer not to answer (99)

Q105 What is the highest level of education you have completed?

- High school or less (1)
- Associates degree (3)
- Graduate/Professional degree (5)
- Some college, no degree (2)
- Bachelor's degree (4)
- I prefer not to answer (6)

Q109 Are you currently employed?

- Yes (1)
- No (2)
- I prefer not to answer (3)

Q113 Are you married or living with a partner?

- Yes (1)
- No (2)

Q115 Including yourself, how many people are in your household?

- o Adults (1)
- o Children (2)

Q119 What is your household's annual income?

- ○ Less than $15,000 (1)
- ○ $25,000 - $34,999 (3)
- ○ $50,000 - $74,999 (5)
- ○ $100,000 - $149,999 (7)
- ○ I prefer not to answer (99)
- ○ $15,000 - $24,999 (2)
- ○ $35,000 - $49,999 (4)
- ○ $75,000 - $99,999 (6)
- ○ $150,000+ (8)

Q124 How would you describe your general state of health?

- ○ Excellent (1)
- ○ Very good (2)
- ○ Good (3)
- ○ Fair (4)
- ○ Poor (5)
- ○ I prefer not to answer (6)

Q154 How many days per week do you get at least 30 minutes of moderate and vigorous physical activity? Moderate physical activity is activities or exercise like walking, low-impact cycling, general yard work, dancing or e-biking. Vigorous physical activity is activities or exercise like intense cycling, running, sports, or calisthenics.

Moderate (days per week) (1)

Vigorous (days per week) (2)

Q126 Do you have any physical limitations that make riding a standard bicycle difficult for you?

- ○ Yes (1)
- ○ No (2)
- ○ I prefer not to answer (3)

Q127 If yes, would you please share with us the type of limitations?

Q128 How many working motor vehicles are currently in your household? (please do not include RVs, motor homes, or off-road vehicles)

- ○ 0 (1)
- ○ 1 (2)
- ○ 2 (3)
- ○ 3 (4)
- ○ 4 (5)
- ○ 5 or more (6)

Q129 How many functional adult bicycles (standard and electric bicycles) do you have in your household that you could use?

- ○ 0 (1)
- ○ 1 (2)
- ○ 2 (3)
- ○ 3 (4)
- ○ 4 (5)
- ○ 5 or more (6)

Q130 Do you have a driver's license?

- ○ Yes (1)
- ○ No (2)

Q168 How did you hear about this survey? (Select all that apply)

- ○ An e-mail from an e-bike store (1)
- ○ A post from an e-bike manufacturer's social media account (2)

○ A friend told me about the survey (3)
○ An e-mail from an e-bike manufacturer (6)
○ A post from an e-bike store's social media account (5)
○ Other (4)

Q159 Thank you for taking the time to respond to our survey! You are almost done.

We have tried to limit the initial survey but we do have a couple more questions. Would you like to answer a few additional questions about your experiences with e-bikes? You'll help us out a lot. You responses will allow us to learn more about how people choose and use their e-bikes.

If you select "No", you will be sent to the end of the survey.
o Yes (1)
o No (4)

Q160 Thanks for sticking with the survey. Here are few additional questions.

Additional Section

Q77 Would you be comfortable riding a bike (standard or e-bike) in the following places?
A path or trail separate from the street (1)
A quiet residential side street (2)
A quiet residential side street that also has bicycle route markings, wide speed humps, and other things to discourage and slow down car traffic (3)
A busy street or avenue WITHOUT a striped bike lane (5)
A busy street or avenue WITH a striped bike lane (4)
A protected bike lane on a busy street (6)

Q55 When riding an e-bike, how often do you...
Completely stop and wait at red traffic lights (1)
Completely stop at stop signs (2)

Q21 Before purchase, where did you get information about the types of e-bikes/conversion options available? (Please select all that apply)

- Magazines (1)
- Internet/Websites/Blogs (2)
- Visited retailers (3)
- Family/friend/colleague who had an e-bike (4)
- Test ride event (5)
- Other (Please specify) (6)

Q23 At the time of purchase, did you consider...
Different motor technologies (e.g. hub motor, crank motor) (1)
Battery range (3)
Bike type/style (5)
Type of assist (pedal-assist or throttle) (6)
Price (7)
Brand (8)

Q33 How often have you had your e-bike serviced because of an issue related to the battery, motor or electronic system?

Q34 Why did you need to have your e-bike serviced other than normal bicycle related tune-ups or fixes?
- Repairs to the electronics/display (1)
- Repairs to motor (2)
- Replace battery (3)
- Other (Please specify) (4)

Q36 Have you had any specific problems with how your e-bike functions? If so, please describe.

Q53 Have you ever had any reactions - positive or negative - from other road users? Please briefly explain your experiences.

Q158 Have these things happened to you?

Has the battery ever run out of power on a ride? (1)

Have you ever had your e-bike stolen? (2)

Yes (1)  No (2)

Has the weight of the e-bike ever prohibited you from using it for certain activities? (3)

Q157 What would you tell or share with someone/friend who is considering purchasing an e-bike?

Q167 Thank you for completing the survey! If you have any questions about the study, please contact us at macarthur@pdx.edu or 503-725-2866. Click on the blue forward arrow to be redirected to a page where you can enter our drawing for one of 10 $50 Visa Gift

## APPENDIX 5. E-BIKE OWNER SURVEY QUESTIONER FROM 2023.

Start of Block: Intro/Consent

Q1 **E-Bike Owner Survey**

Thank you for taking our survey! The Transportation Research and Education Center at Portland State University is conducting a nationwide survey of e-bike riders. We want to hear about your experiences purchasing and using your e-bike. In the last decade, electric bicycles (e-bikes) have become common in parts of Asia and Europe. In the United States, e-bikes have not yet become a mainstream form of transportation. We would like to ask you some questions to learn more about the role e-bikes can play in our transportation system. The survey should take around **15-20 minutes**. Thank you for taking the time to participate. Your responses are valuable and will help us understand more about how people use e-bikes. **At the end of the survey, you can enter a drawing for one of 50 $20 Visa Gift Cards and three Topo Designs Backpacks (value $100) provided by PeopleForBikes.** **Statement of Informed Consent** Participants will share their e-bike experiences. Your participation is voluntary. You may opt out of the survey at any time. There are no expected physical or psychological impacts from taking part in the study. Your individual survey responses are anonymous and confidential. We will store the survey data on secured servers at Portland State University. It will not be possible to tell who said what in any reports. We do not anticipate any risk to you in answering the survey. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. Individuals from the Institutional Review Board may inspect these records. If the data is published, no individual information will be disclosed. Portland State University does not release information about how any individual answers the survey and will not sell or give away the lists of respondents who participate in our research. **Any questions?** The Portland State University Institutional Review Board has reviewed this project. If you have any concerns about your rights in this study, please contact the PSU Office of Research Integrity at (503) 725-2227 or email hsrrc@pdx.edu. If you have questions about the study itself, please contact John MacArthur by telephone at (503) 725-2866, by e-mail at macarthur@pdx.edu, or by mail at Transportation Research and Education Center (TREC), P.O. Box 751, Portland State University, Portland, OR 97207-0751. Our research can only be successful with the generous help of people like you. We hope you will enjoy answering our questions. Thank you for taking part in our e-bike survey! Do you agree to participate in this survey? By clicking “Accept”, you are consenting to participate in this survey. If you do not consent, please click “Decline” to navigate away from the survey.

- ○ Agree (1)
- ○ Decline (2)

*Skip To: End of Survey If E-Bike Owner Survey Thank you for taking our survey! The Transportation Research and Education... = Decline*

Q2 In what country do you currently reside?

- United States (1)
- Canada (2)
- Other (3)

*Skip To: End of Survey If In what country do you currently reside? = Other*

*Display This Question:*
*If In what country do you currently reside? = United States*

Q3 Please enter your current 5-digit ZIP code.

- ZIP Code (1) _____

*Display This Question:*
*If In what country do you currently reside? = Canada*

Q4 Please enter your current postal code.

- Postal Code (1) _____

**End of Block: Intro/Consent**

**Start of Block: Section 1: E-Bike Information**

Q5 **Questions in this section are about the e-bike you own or use regularly.**
For the e-bike that you ride most often, did you purchase an e-bike or did you convert a non-electric bicycle?

- I purchased a new e-bike (1)
- I purchased a used e-bike (2)
- I converted a non-electric bicycle to an e-bike (3)
- I do not own or regularly ride an e-bike (4)

*Skip To: End of Survey If Questions in this section are about the e-bike you own or use regularly. For the e-bike that you... = I do not own or regularly ride an e-bike*

*Display This Question:*

*If Questions in this section are about the e-bike you own or use regularly. For the e-bike that you... = I converted a non-electric bicycle to an e-bike*

Q6 What make/brand and model is your e-bike conversion kit?

_____

*Display This Question:*

*If Questions in this section are about the e-bike you own or use regularly. For the e-bike that you... = I purchased a new e-bike*

*Or Questions in this section are about the e-bike you own or use regularly. For the e-bike that you... = I purchased a used e-bike*

Q7 What make/brand and model is your e-bike?

- Make/Brand (1) _____
- Model (2) _____

Q8 What class is your e-bike?

- Class 1 (1)
- Class 2 (2)
- Class 3 (3)
- I don't know (4)

Page Break

Q9 Which of these most closely resembles your e-bike?

- ○ Long-tail cargo: (1)
- ○ Front-loading cargo: (2)
- ○ City/hybrid/commuter: (3)
- ○ Step-thru/beach cruiser: (4)
- ○ Mountain: (5)
- ○ Folding: (6)
- ○ Drop-bar road/gravel: (7)
- ○ Sport/moto-style cruiser: (8)
- ○ Fat tire: (9)
- ○ Moped: (10)
- ○ Other (please describe): (11) _____

Q10 What is the top *assisted* speed of your e-bike?

- ○ 20 mph (32 km/hour) or less (1)
- ○ 28 mph (45 km/hour) (2)
- ○ Greater than 28 mph (45 km/hour) (3)
- ○ I do not know (4)

Q11 Does your e-bike have a throttle or button that engages the motor without pedaling?

- Yes (1)
- No (2)

*Display This Question:*

*If Does your e-bike have a throttle or button that engages the motor without pedaling? = Yes*

Q12 What proportion of the time you are riding do you use the throttle without pedaling? (Select all that apply)

- None (1)
- Less than half (2)
- More than half (3)
- Just for startup (4)
- Just for hills (5)

Q13 Is your e-bike's battery easily removable or removable without using tools?

- Yes (1)
- No (2)

**End of Block: Section 1: E-Bike Information**

**Start of Block: Section 2: Purchasing your E-Bike**

Q14 **Questions in this section relate to your decision to purchase your e-bike or convert a non-electric bicycle. For the purpose of this survey, a non-electric bicycle has no assist and is only**

**propelled by the rider.**

Where did you purchase your e-bike or conversion kit?

- ○ A bicycle shop that has some e-bikes (1)
- ○ Specialty e-bike shop (2)
- ○ Big Box Store, Superstore, General Merchandise/Outdoor Retailers (e.g. Walmart, Costco, REI, etc.) (3)
- ○ Online from the bike manufacturer's website (4)
- ○ Online from somewhere else (please specify) (5) _____
- ○ Specialty electric vehicle shop (e.g. also sells scooters without pedals & other e-bikes) (6)
- ○ Used goods marketplace (facebook marketplace, craigslist, ebay, pro's closet, etc.) (7)
- ○ Other (Please specify) (8) _____

Q15 In what year did you purchase your e-bike or conversion kit?

▼ 2023 (1) ... 2005 or before (19)

Q16 Approximately how much did your e-bike or conversion kit cost to purchase after any incentives, discounts, sales, or taxes (enter a dollar value)? Do not include any other purchases (such as lights, helmet, or lock) made at the same time in your estimate.

- ○ $ (1) _____

Q17 Some local governments, power providers, and nonprofits offer incentives for purchasing an e-bike. Did you (or do you expect to) receive a purchase incentive, cash rebate, or tax rebate when you purchased your e-bike?

- ○ Yes (1)
- ○ No (2)

*Display This Question:*

*If Some local governments, power providers, and nonprofits offer incentives for purchasing an e-bike... = Yes*

Q18 What organization or entity provided the incentive or rebate that you received?

_____

*Display This Question:*

*If Some local governments, power providers, and nonprofits offer incentives for purchasing an e-bike... = Yes*

*

Q19 What was the dollar amount of the incentive or rebate that you received?

_____

*Display This Question:*

*If Some local governments, power providers, and nonprofits offer incentives for purchasing an e-bike... = Yes*

Q20 How was the incentive or rebate delivered to you?

- ○ Post-purchase rebate (1)
- ○ Point-of-purchase discount (2)
- ○ Tax rebate (3)
- ○ Rebate/discount from the manufacturer (4)
- ○ Other (please describe) (5) _____

*Display This Question:*

*If Some local governments, power providers, and nonprofits offer incentives for purchasing an e-bike... = Yes*

Q21 Would you have purchased your e-bike without the incentive or rebate?

- ○ Yes (1)
- ○ No (2)
- ○ I would have purchased a different model of e-bike (3)

Page Break

Q22 What were the **top three** reasons why you bought an e-bike or converted a non-electric bicycle? (Please select three)

- [ ] Health – a medical condition reduced my ability to ride a non-electric bicycle (1)
- [ ] Health – to increase fitness (2)
- [ ] Because I live or work in a hilly area (3)
- [ ] To ride with less effort or arrive less sweaty (4)
- [ ] To be able to keep up when riding with friends/family (5)
- [ ] To carry cargo or kids (6)
- [ ] To start cycling or to cycle more often (7)
- [ ] To ride longer distances to places I need to go (8)
- [ ] It's a cost effective form of transportation (9)
- [ ] To replace the hassle of car trips (traffic, parking, etc.) (10)
- [ ] For environmental reasons (13)
- [ ] For recreation purposes (14)
- [ ] For accessing recreational activities (park, gym, etc.) (15)
- [ ] I enjoy riding an e-bike more than a non-electric bicycle (16)
- [ ] Other (17) _____

*Display This Question:*

*If If What were the top three reasons why you bought an e-bike or converted a non-electric bicycle? (Pl... q://QID23/SelectedChoicesCount Is Greater Than 1*

*Carry Forward Selected Choices - Entered Text from "What were the top three reasons why you bought an e-bike or converted a non-electric bicycle? (Please select three)"*

Q23 Please rank your top reasons for buying an e-bike (drag and drop to re-arrange).

_____ Health – a medical condition reduced my ability to ride a non-electric bicycle (1)
_____ Health – to increase fitness (2)
_____ Because I live or work in a hilly area (3)
_____ To ride with less effort or arrive less sweaty (4)
_____ To be able to keep up when riding with friends/family (5)
_____ To carry cargo or kids (6)
_____ To start cycling or to cycle more often (7)
_____ To ride longer distances to places I need to go (8)
_____ It's a cost effective form of transportation (9)
_____ To replace the hassle of car trips (traffic, parking, etc.) (10)
_____ For environmental reasons (11)
_____ For recreation purposes (12)
_____ For accessing recreational activities (park, gym, etc.) (13)
_____ I enjoy riding an e-bike more than a non-electric bicycle (14)
_____ Other (15)

**End of Block: Section 2: Purchasing your E-Bike**

**Start of Block: Section 3: Travel**

Q24 **Questions in this section are about your recent travel patterns, specifically, after you bought your e-bike.**

Think back on the last three times you used an e-bike **leaving home and returning again** with any number of stops along the way. How did you use it? How far did you go? When was the trip (date in MM/DD/YYYY format)? If you had not taken your e-bike, how would you have traveled?

| | Purpose of Trip | Distance | If you had not taken your e-bike, how would you have traveled to your destination? | When was the trip? |
|---|---|---|---|---|
| | | (Approximate Miles) (1) | | MM/DD/YYYY (1) |

| | | | | |
|---|---|---|---|---|
| Ride 1 (1) | ▼ Commute (work or school) (1 ... Other (6) | | ▼ Walk (1 ... I would not have taken this trip (10) | |
| Ride 2 (2) | ▼ Commute (work or school) (1 ... Other (6) | | ▼ Walk (1 ... I would not have taken this trip (10) | |
| Ride 3 (3) | ▼ Commute (work or school) (1 ... Other (6) | | ▼ Walk (1 ... I would not have taken this trip (10) | |

*Display This Question:*

*If Questions in this section are about your recent travel patterns, specifically, after you bought y... : Purpose of Trip = Ride 1 [ Other ]*

Q25 You indicated that the purpose of your first trip was something other than what was listed. Briefly describe the purpose of that trip.

_____

*Display This Question:*

*If Questions in this section are about your recent travel patterns, specifically, after you bought y... : Purpose of Trip = Ride 2 [ Other ]*

Q26 You indicated that the purpose of your second trip was something other than what was listed. Briefly describe the purpose of that trip.

_____

*Display This Question:*

*If Questions in this section are about your recent travel patterns, specifically, after you bought y... : Purpose of Trip = Ride 3 [ Other ]*

Q27 You indicated that the purpose of your third trip was something other than what was listed. Briefly describe the purpose of that trip.

_____

Q28 What percentage of your previous weekly private vehicle (car, truck, or van) travel distance have you replaced *with y*our e-bike?
(If you traveled 100 miles on average per week by car, what % of that distance have you replaced traveling by e-bike)

| | 0 10 20 30 40 50 60 70 80 90 100 |
|---|---|
| % () | |



Q29 Which mode of travel do you **primarily** take to each of the listed activities?

| | |
|---|---|
| Commuting (e.g. work, school) (1) | ▼ I do not partake in this activity (1) ... Other (11) |
| Personal errands (e.g. groceries, appointments) (2) | ▼ I do not partake in this activity (1) ... Other (11) |
| Visiting family or friends (3) | ▼ I do not partake in this activity (1) ... Other (11) |
| Entertainment, dining out, or socializing (4) | ▼ I do not partake in this activity (1) ... Other (11) |
| Exercise or recreation (5) | ▼ I do not partake in this activity (1) ... Other (11) |
| To access recreational activities (e.g. park, gym) (6) | ▼ I do not partake in this activity (1) ... Other (11) |

Q30 How many days per week do you normally commute to work or school?

▼ I work from home. (8) ... 7 (7)

*Display This Question:*

*If How many days per week do you normally commute to work or school? != I work from home.*

*And How many days per week do you normally commute to work or school? != I am not currently employed or enrolled in school.*

Q31 About how far is your current daily commute (enter the approximate **miles in one direction**)? Enter 0 if you don't have a daily commute to work or school. Enter 100 if your commute is 100 miles or more.

0 10 20 30 40 50 60 70 80 90 100

Miles ()



Q32 How often do you use your e-bike for the following activities?

| | Daily (1) | Weekly (2) | Monthly (3) | A few times a year (4) | Once a year or less (5) | Never (6) |
|---|---|---|---|---|---|---|
| Commuting (e.g. work, school) (1) | ○ | ○ | ○ | ○ | ○ | ○ |
| Personal errands (e.g. groceries, appointments) (2) | ○ | ○ | ○ | ○ | ○ | ○ |
| Visiting family or friends (3) | ○ | ○ | ○ | ○ | ○ | ○ |
| Entertainment, dining out, or socializing (4) | ○ | ○ | ○ | ○ | ○ | ○ |
| Exercise or recreation (5) | ○ | ○ | ○ | ○ | ○ | ○ |
| To access recreational activities (e.g. park, gym) (6) | ○ | ○ | ○ | ○ | ○ | ○ |

Q33 Do you agree with the following statements?

| | Strongly Disagree (1) | Disagree (2) | Neutral (3) | Agree (4) | Strongly agree (5) |
|---|---|---|---|---|---|
| My e-bike allows me to keep up with friends or family on bicycle rides. (1) | ○ | ○ | ○ | ○ | ○ |
| To ride the same trip by a non-electric bicycle, I would need to shower at my destination. (2) | ○ | ○ | ○ | ○ | ○ |
| I enjoy my overall riding experience on my e-bike. (3) | ○ | ○ | ○ | ○ | ○ |
| I ride my e-bike more frequently than a non-electric bicycle. (4) | ○ | ○ | ○ | ○ | ○ |
| I would rather cycle than drive a car. (5) | ○ | ○ | ○ | ○ | ○ |
| I would ride more if I had more bike infrastructure to reach places I need to go. (6) | ○ | ○ | ○ | ○ | ○ |
| I ride farther now that I have an e-bike vs. if I had a non-electric bicycle. (7) | ○ | ○ | ○ | ○ | ○ |

Q34 Do you agree with the following statements?

| | Strongly Disagree (1) | Disagree (2) | Neutral (3) | Agree (4) | Strongly agree (5) |
|---|---|---|---|---|---|
| Riding my e-bike is a convenient way to get from one place to another. (1) | ○ | ○ | ○ | ○ | ○ |
| I worry about being hit by a motor vehicle when riding my e-bike in my area. (2) | ○ | ○ | ○ | ○ | ○ |
| I would like to ride my e-bike more often. (3) | ○ | ○ | ○ | ○ | ○ |
| I would be more likely to ride my e-bike if cars and bicycles were physically separated by a barrier. (4) | ○ | ○ | ○ | ○ | ○ |
| I worry about my personal safety when riding my e-bike in my area (e.g., being mugged, etc.). (5) | ○ | ○ | ○ | ○ | ○ |
| I typically wear a helmet when I ride my e-bike. (6) | ○ | ○ | ○ | ○ | ○ |
| I am satisfied with the number and condition of the bike lanes, paths and trails in my area. (7) | ○ | ○ | ○ | ○ | ○ |

Q35 What are the reasons that keep you from riding your e-bike more often? (check all that apply)

- ⊗None - I ride as much as I want to ride (1)
- Not enough safe places to cycle, or lack of bike infrastructure (2)
- Distances to places I want to go are too far, biking is too slow (3)
- I only use my e-bike for recreational purposes (5)
- No safe bike storage at destinations, or concerns about theft (6)
- Do not have access to charging my e-bike at work or school (7)
- Difficult to carry the things I need to (cargo, kids, or pets) (8)
- Weather (9)
- Concern for my safety (11)
- No or not enough nearby paths or trails (12)
- Weight of the e-bike prohibits me from using it for certain activities (13)
- Maintenance or mechanical issues with my bike (14)
- Not physically able (due to health, age, weight, etc.) (15)
- Heavy traffic with too many cars (16)
- Hills make cycling difficult (17)
- I don't like to arrive sweaty to my destination (18)

☐ Other (19) _____

End of Block: Section 3: Travel

Start of Block: Section 4: Safety

Q36 **This section is about safety on your e-bike.**
Do you agree with the following statements?

| | Strongly Disagree (1) | Disagree (2) | Neutral (3) | Agree (4) | Strongly agree (5) |
|---|---|---|---|---|---|
| I feel safe riding an e-bike. (1) | ○ | ○ | ○ | ○ | ○ |
| I feel safe riding a standard bicycle. (2) | ○ | ○ | ○ | ○ | ○ |
| On my e-bike, other road users misjudge my speed. (3) | ○ | ○ | ○ | ○ | ○ |
| On my e-bike, I feel like I go faster than other cyclists. (4) | ○ | ○ | ○ | ○ | ○ |
| On average, I ride faster than I would on a standard bicycle. (5) | ○ | ○ | ○ | ○ | ○ |

Q37 Have you experienced any crashes while riding your e-bike in the last two years?

○ Yes – How many? (1) _____

○ No (2)

*Display This Question:*

*If Have you experienced any crashes while riding your e-bike in the last two years? = Yes – How many?*

Q38 Think about the most recent crash... Who or what was involved?

- Motor vehicle (1)
- Another cyclist (2)
- Pedestrian (3)
- A roadside object (tree/pole/parked car/ etc.) (4)
- A pothole or other road object (5)
- Loose gravel/sand/debris in the road (6)
- Nothing – I lost control/Fell over (7)

*Display This Question:*

*If Have you experienced any crashes while riding your e-bike in the last two years? = Yes – How many?*

Q39 What was the severity of the crash?

- No injury (1)
- Mild (scrapes, bruises) (2)
- Moderate (cuts, bleeding) (3)
- Severe (trip to hospital, broken bone, inability to continue cycling, etc.) (4)
- Property damage (5)

*Display This Question:*

*If Have you experienced any crashes while riding your e-bike in the last two years? = Yes – How many?*

Q40 Following the crash, did you…

| | Yes (1) | No (2) |
|---|---|---|
| File a police report (1) | ○ | ○ |
| Seek medical care (2) | ○ | ○ |

End of Block: Section 4: Safety

Start of Block: Section 5: Previous cycling experience

Q41 **Questions in this section are about your experiences with riding non-electric bicycles.**
Before you owned an e-bike, how often did you ride a non-electric bicycle?

- ○ Never (7)
- ○ Once a year or less (2)
- ○ A few times a year (3)
- ○ Monthly (4)
- ○ Weekly (5)
- ○ Daily (6)

*Display This Question:*

*If Questions in this section are about your experiences with riding non-electric bicycles. Before y... != Never*

Q42 Before you owned an e-bike, how often did you use your non-electric bike for the following activities?

| | Daily (1) | Weekly (2) | Monthly (3) | A few times a year (4) | Once a year or less (5) | Never (6) |
|---|---|---|---|---|---|---|
| Commuting (e.g. work, school) (1) | ○ | ○ | ○ | ○ | ○ | ○ |
| Personal errands (e.g. groceries, appointments) (2) | ○ | ○ | ○ | ○ | ○ | ○ |
| Visiting family or friends (3) | ○ | ○ | ○ | ○ | ○ | ○ |
| Entertainment, dining out, or socializing (4) | ○ | ○ | ○ | ○ | ○ | ○ |
| Exercise or recreation (5) | ○ | ○ | ○ | ○ | ○ | ○ |
| To access recreational activities (e.g. park, gym) (6) | ○ | ○ | ○ | ○ | ○ | ○ |

Q43 How often do you ride a non-electric bicycle now?

- ○ Never (1)
- ○ Once a year or less (2)
- ○ A few times a year (3)
- ○ Monthly (4)
- ○ Weekly (5)
- ○ Daily (6)

Q44 Do you ride for different purposes or to different destinations or take different routes on your e-bike than you would on a non-electric bicycle?

- Yes (1)
- No (2)

*Display This Question:*

*If Do you ride for different purposes or to different destinations or take different routes on your... = Yes*

Q45 Please describe the reasons why you ride an e-bike for different purposes or to different destinations or take different routes than you would on a non-electric bicycle.

_____

_____

_____

_____

_____

**End of Block: Section 5: Previous cycling experience**

**Start of Block: Section 6: Final Thoughts**

Q46 Do you have any comments about your e-bike that you would like to share with us?

_____

_____

_____

_____

_____

**End of Block: Section 6: Final Thoughts**

**Start of Block: Section 7.1: Demographics**

Q47 **Thank you for participating in our survey! You are almost done. Please answer a few demographic questions so we can learn a bit more about you.**
What categories describe you? (check all that apply)...

- ☐ White or Caucasian (1)
- ☐ Hispanic, Latinx/Latino/Latina, or Spanish origin (2)
- ☐ Black or African American (3)
- ☐ Asian (4)
- ☐ Middle Eastern or North African (5)
- ☐ American Indian or Alaska Native (6)
- ☐ Native Hawaiian or Pacific Islander (7)
- ☐ Other (8) _____
- ☐ ⊗Prefer not to say (9)

Q48 What is your age in years?

_____

Q49 How do you currently describe your gender identity?

- [ ] Male (1)
- [ ] Female (2)
- [ ] Non-binary (3)
- [ ] Not listed (type response in box) (4) _____
- [ ] ⊗I prefer not to answer (5)

Q50 What is the highest level of education you have completed?

- ○ High school or less (1)
- ○ Some college, no degree (2)
- ○ Associates degree (3)
- ○ Bachelor's degree (4)
- ○ Graduate or Professional degree (5)
- ○ I prefer not to answer (6)

Q51 Are you currently employed?

- ○ Yes (1)
- ○ No (2)
- ○ I prefer not to answer (3)

Q52 Are you married or living with a partner?

- Yes (1)
- No (2)
- I prefer not to answer (3)

Q53 Including yourself, how many people are in your household?

| | 0 (0) | 1 (1) | 2 (2) | 3 (3) | 4 (4) | 5 (5) | 6 (6) | 7 (7) | 8 or more (8) |
|---|---|---|---|---|---|---|---|---|---|
| Adults (anyone over 16 years old) (1) | | | | | | | | | |
| Children 10-15 years old (2) | | | | | | | | | |
| Children younger than 10 year old (3) | | | | | | | | | |

*Display This Question:*

*If Including yourself, how many people are in your household? [ Children 10-15 years old ] (Recode) >= 1*

*Or Including yourself, how many people are in your household? [ Children younger than 10 year old ] (Recode) >= 1*

Q54 Do any of the children in your home spend time operating an electric bicycle (not as passengers)?

- Yes (1)
- No (2)

End of Block: Section 7.1: Demographics

Start of Block: Section 7.2 Demographics Income and Rest

*Display This Question:*
*If Household size <= 1*

Q55 What is your household's annual income?

- Less than $15,000 (1)
- $15,000 to $29,000 (2)
- $29,000 to $44,000 (3)
- $44,000 to $58,000 (4)
- More than $58,000 (5)

*Display This Question:*
*If Household size = 2*

Q56 What is your household's annual income?

- Less than $20,000 (1)
- $20,000 to $39,000 (2)
- $39,000 to $59,000 (3)
- $59,000 to $79,000 (4)
- More than $79,000 (5)

*Display This Question:*

*If Household size = 3*

Q57 What is your household's annual income?

- Less than $25,000 (1)
- $25,000 to $50,000 (2)
- $50,000 to $75,000 (3)
- $75,000 to $99,000 (4)
- More than $99,000 (5)

*Display This Question:*

*If Household size = 4*

Q58 What is your household's annual income?

- Less than $30,000 (1)
- $30,000 to $60,000 (2)
- $60,000 to $90,000 (3)
- $90,000 to $120,000 (4)
- More than $120,000 (5)

*Display This Question:*

*If Household size = 5*

Q59 What is your household's annual income?

- Less than $35,000 (1)
- $35,000 to $70,000 (2)
- $70,000 to $105,000 (3)
- $105,000 to $141,000 (4)
- More than $141,000 (5)

*Display This Question:*
*If Household size = 6*

Q60 What is your household's annual income?

- Less than $40,000 (1)
- $40,000 to $81,000 (2)
- $81,000 to $121,000 (3)
- $121,000 to $161,000 (4)
- More than $161,000 (5)

*Display This Question:*
*If Household size = 7*

Q61 What is your household's annual income?

- Less than $45,000 (1)
- $45,000 to $91,000 (2)
- $91,000 to $136,000 (3)
- $136,000 to $182,000 (4)
- More than $182,000 (5)

*Display This Question:*

*If Household size = 8*

Q62 What is your household's annual income?

- Less than $51,000 (1)
- $51,000 to $101,000 (2)
- $101,000 to $152,000 (3)
- $152,000 to $202,000 (4)
- More than $202,000 (5)

*Display This Question:*

*If Household size = 9*

Q63 What is your household's annual income?

- Less than $56,000 (1)
- $56,000 to $111,000 (2)
- $111,000 to $167,000 (3)
- $167,000 to $223,000 (4)
- More than $223,000 (5)

*Display This Question:*

*If Household size = 10*

Q64 What is your household's annual income?

- Less than $61,000 (1)
- $61,000 to $122,000 (2)
- $122,000 to $183,000 (3)
- $183,000 to $243,000 (4)
- More than $243,000 (5)

*Display This Question:*

*If Household size = 11*

Q65 What is your household's annual income?

- Less than $66,000 (1)
- $66,000 to $132,000 (2)
- $132,000 to $198,000 (3)
- $198,000 to $264,000 (4)
- More than $264,000 (5)

*Display This Question:*

*If Household size = 12*

Q66 What is your household's annual income?

- Less than $71,000 (1)
- $71,000 to $142,000 (2)
- $142,000 to $213,000 (3)
- $213,000 to $284,000 (4)
- More than $284,000 (5)

*Display This Question:*

*If Household size = 13*

Q67 What is your household's annual income?

- Less than $76,000 (1)
- $76,000 to $153,000 (2)
- $153,000 to $229,000 (3)
- $229,000 to $305,000 (4)
- More than $305,000 (5)

*Display This Question:*

*If Household size >= 14*

Q68 What is your household's annual income?

- Less than $81,000 (1)
- $81,000 to $163,000 (2)
- $163,000 to $244,000 (3)
- $244,000 to $326,000 (4)
- More than $326,000 (5)

Q69 How would you describe your general state of health?

- Excellent (1)
- Very good (2)
- Good (3)
- Fair (4)
- Poor (5)
- I prefer not to answer (6)

Q70 Which of the following statements best fits you?

- I am physically able to ride a bicycle. (1)
- I have physical limitations that make riding a non-electric bicycle difficult. (2)
- I am physically unable to ride a non-electric bicycle. (3)

*Display This Question:*

*If Which of the following statements best fits you? = I have physical limitations that make riding a non-electric bicycle difficult.*

*Or Which of the following statements best fits you? = I am physically unable to ride a non-electric bicycle.*

Q71 Is this a temporary condition (like a sprained ankle) or is it a permanent condition that makes it difficult or impossible to ride a non-electric bicycle?

- Temporary condition (1)
- Permanent condition (2)

Q72 How many of each of the following working/functioning vehicles are currently in your household?

| | 0 (0) | 1 (1) | 2 (2) | 3 (3) | 4 (4) | 5 (5) | 6 or more (6) |
|---|---|---|---|---|---|---|---|
| Registered automobiles, vans, trucks, or motorcycles (please do not include RVs, motor homes, or off-road vehicles) (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Adult non-electric bicycles (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| E-bikes (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Children's bicycles (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Q73 Do you have a driver's license?

- ○ Yes (1)
- ○ No (2)

**End of Block: Section 7.2 Demographics Income and Rest**

**Start of Block: Section 8.1: Optional Questions_Opt-In**

Q74 **Thank you for taking the time to provide us with your response!**
If you have five more minutes, we would love to ask for your feedback on a few more questions. You'll help us out a lot. Your responses will allow us to learn more about how people choose and use their e-bikes. Otherwise, we appreciate your time.

Your willingness to answer additional questions will not affect your chances of winning the drawing for one of 50 $20 Visa Gift Cards.

- ○ Complete survey – I'm done! (1)
- ○ Continue to optional questions (2)

End of Block: Section 8.1: Optional Questions_Opt-In

Start of Block: Section 8.2: Optional Questions

Q75 **Thanks for sticking with the survey. Here are a few additional questions.**
Is your e-bike yours alone, or shared with someone else in your household? Mine alone

- ○ Mine alone (1)
- ○ Shared with someone else (2)

Q76 At the time of purchase, did you consider...

| | Did not consider (1) | Some consideration (2) | Serious consideration (3) |
|---|---|---|---|
| Different motor technologies (e.g. hub motor, mid-drive motor) (1) | ○ | ○ | ○ |
| Battery range (2) | ○ | ○ | ○ |
| Bike type/style (3) | ○ | ○ | ○ |
| Brand (4) | ○ | ○ | ○ |
| Safety certifications (for the battery or motor) (5) | ○ | ○ | ○ |
| Top assisted speed (6) | ○ | ○ | ○ |
| Type of assist (pedal-assist or throttle) (7) | ○ | ○ | ○ |
| Price (8) | ○ | ○ | ○ |
| Available incentives (9) | ○ | ○ | ○ |

Q77 What, if any, was the most important factor in choosing the e-bike you purchased?

_____

Q78 How many times have you had your e-bike serviced because of an issue related to the battery, motor or electronic system?

- ○ No service needed to date (1)
- ○ 1 (2)
- ○ 2 (3)
- ○ 3 (4)
- ○ 4 (5)
- ○ 5 or more times (6)

*Display This Question:*

*If How many times have you had your e-bike serviced because of an issue related to the battery, moto... != No service needed to date*

Q79 Why did you need to have your e-bike serviced? (Select all that apply)

- ☐ Normal bicycle-related tune-ups or fixes (5)
- ☐ Repairs to the electronics/display (1)
- ☐ Repairs to motor (2)
- ☐ Repair or replace battery (3)
- ☐ Other (Please specify) (4) _____

*Display This Question:*

*If Why did you need to have your e-bike serviced? (Select all that apply) = Repair or replace battery*

Q80 What did you do with the failed battery?

- I threw it away in my residential trash (1)
- I still have it stored at my home (2)
- I sent it back to the manufacturer (3)
- My local bike shop took it (4)
- I delivered it to a recycling center or battery drop box (5)
- I sold my e-bike and battery together (6)
- I threw away my e-bike and battery together (7)
- Other (please specify) (8) _____

*Display This Question:*

*If Why did you need to have your e-bike serviced? (Select all that apply) != Repair or replace battery*

Q81 What would you do if a battery failed or stopped working?

- Throw it away in my residential trash (1)
- Keep it stored at my home (2)
- Send it back to the manufacturer (3)
- Take it to my local bike shop for disposal or recycling (4)
- Deliver it to a recycling center or battery drop box (5)
- Sell my e-bike and battery together (6)
- Throw away my e-bike and battery together (7)
- Other (please specify) (8) _____

Q82 If your current battery ages and loses enough range to meet your travel needs, what do you plan to do with the battery or with the bike?

_____

_____

_____

_____

_____

Q83 Have you had any specific problems with how your e-bike functions? If so, please describe.

_____

_____

_____

_____

_____

End of Block: Section 8.2: Optional Questions

Start of Block: Drawing Entry Info

Q84 **Thank you for completing the survey!**
If you have any questions about the study, please contact us at macarthur@pdx.edu or 503-725-2866.

Click here or paste the link below in your browser to be redirected to a page where you can enter our drawing for one of 50 $20 Visa Gift Cards and three Topo Designs Backpacks (value $100) provided by PeopleForBikes.

https://portlandstate.qualtrics.com/jfe/form/SV_1AL8nSEXvUI6rJA

End of Block: Drawing Entry Info

## APPENDIX 6. POOLED MIXED MULTINOMIAL LOGIT MODEL RESULT FOR E-BIKE OWNER SURVEY FROM 2017 AND 2023.

Table A.2. Full MMNL Model Results for Pooled Sample

| Alternate Mode = Personal car use | | | | |
|---|---|---|---|---|
| | **Coef.** | **std err** | **z** | **P>\|z\|** |
| **Constant** | 0.17 | 0.54 | 0.32 | 0.75 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.89 | 0.10 | 8.69 | 0.00 |
| Monthly | 2.02 | 0.17 | 11.82 | 0.00 |
| Once a year or less | 3.94 | 0.48 | 8.23 | 0.00 |
| Few times a year | 2.48 | 0.21 | 11.75 | 0.00 |
| Never | 2.03 | 0.54 | 3.78 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.37 | 0.11 | -3.35 | 0.00 |
| Monthly | -0.69 | 0.21 | -3.36 | 0.00 |
| Once a year or less | 0.17 | 0.33 | 0.52 | 0.60 |
| Few times a year | -0.17 | 0.32 | -0.52 | 0.61 |
| Never | 0.12 | 0.42 | 0.30 | 0.77 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | -0.17 | 0.35 | -0.48 | 0.63 |
| **Reason for purchasing e-bike** | | | | |
| Practicality | -0.34 | 0.19 | -1.82 | 0.07 |
| Recreational and other | -0.51 | 0.18 | -2.82 | 0.01 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | 0.64 | 0.20 | 3.21 | 0.00 |
| Other | -0.40 | 0.12 | -3.26 | 0.00 |
| Recreational | -3.29 | 0.25 | -13.03 | 0.00 |
| **Modes used for commuting before purchasing e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | 0.81 | 0.34 | 2.38 | 0.02 |
| Bike based | -0.02 | 0.33 | -0.05 | 0.96 |
| Shared car | -0.38 | 0.44 | -0.87 | 0.39 |
| Public transit | 0.37 | 0.42 | 0.88 | 0.38 |
| Other modes | -0.18 | 0.58 | -0.30 | 0.76 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Do not per take in activity | 0.49 | 0.34 | 1.45 | 0.15 |
| **Modes used for personal errands before purchasing e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | 0.75 | 0.22 | 3.47 | 0.00 |
| Bike based | 0.21 | 0.21 | 0.99 | 0.32 |
| Shared car | 0.12 | 0.27 | 0.45 | 0.65 |
| Public transit | -0.58 | 0.46 | -1.25 | 0.21 |
| Other modes | -0.50 | 0.69 | -0.73 | 0.47 |
| Do not per take in activity | 0.25 | 0.56 | 0.44 | 0.66 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| Less than 100% FPG | -0.53 | 0.34 | -1.55 | 0.12 |
| 200 to 300% FGP | 0.25 | 0.21 | 1.23 | 0.22 |
| 300 to 400% FPG | 0.18 | 0.19 | 0.96 | 0.34 |
| More than 400% FPG | 0.23 | 0.16 | 1.42 | 0.16 |
| **Interaction terms** | | | | |
| **Purpose of last e-bike trip and year of purchase** | | | | |
| Purpose Errands : Year 2023 | -0.31 | 0.22 | -1.38 | 0.17 |
| Purpose Recreation : Year 2023 | 0.57 | 0.28 | 2.07 | 0.04 |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | 0.46 | 0.22 | 2.14 | 0.03 |
| Recreation and other : Year 2023 | -0.03 | 0.21 | -0.15 | 0.88 |
| **Alternate Mode = Shared car use** | | | | |
| | **Coef.** | **std err** | **z** | **P>\|z\|** |
| **Constant** | -0.92 | 0.70 | -1.33 | 0.19 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.57 | 0.14 | 4.06 | 0.00 |
| Monthly | 1.75 | 0.21 | 8.32 | 0.00 |
| Once a year or less | 3.66 | 0.53 | 6.85 | 0.00 |
| Few times a year | 2.32 | 0.25 | 9.38 | 0.00 |
| Never | 2.21 | 0.55 | 4.01 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.45 | 0.15 | -3.02 | 0.00 |
| Monthly | -0.42 | 0.26 | -1.63 | 0.10 |
| Once a year or less | 0.29 | 0.48 | 0.61 | 0.54 |

| | | | | |
|---|---|---|---|---|
| Few times a year | -0.18 | 0.47 | -0.39 | 0.70 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Never | 0.90 | 0.55 | 1.65 | 0.10 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | 0.23 | 0.53 | 0.44 | 0.66 |
| **Reason for purchasing e-bike** | | | | |
| Practicality | -0.07 | 0.25 | -0.27 | 0.79 |
| Recreational and other | -0.10 | 0.24 | -0.40 | 0.69 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | 0.59 | 0.28 | 2.14 | 0.03 |
| Other | 1.02 | 0.15 | 6.74 | 0.00 |
| Recreational | -1.78 | 0.30 | -5.99 | 0.00 |
| **Modes used for commuting before purchasing e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | -0.08 | 0.41 | -0.20 | 0.84 |
| Bike based | -0.10 | 0.38 | -0.26 | 0.79 |
| Shared car | 0.85 | 0.45 | 1.90 | 0.06 |
| Public transit | 0.78 | 0.48 | 1.63 | 0.10 |
| Other modes | -0.06 | 0.64 | -0.10 | 0.92 |
| Do not per take in activity | -0.06 | 0.39 | -0.15 | 0.89 |
| **Modes used for personal errands before purchasing e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | -0.13 | 0.26 | -0.49 | 0.62 |
| Bike based | -0.19 | 0.25 | -0.77 | 0.44 |
| Shared car | 0.66 | 0.30 | 2.23 | 0.03 |
| Public transit | 0.33 | 0.43 | 0.78 | 0.44 |
| Other modes | -45.79 | 0.55 | -83.76 | 0.00 |
| Do not per take in activity | 1.13 | 0.50 | 2.26 | 0.02 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| Less than 100% FPG | -0.17 | 0.37 | -0.46 | 0.65 |
| 200 to 300% FGP | -0.15 | 0.24 | -0.62 | 0.53 |
| 300 to 400% FPG | -0.29 | 0.22 | -1.30 | 0.19 |
| More than 400% FPG | -0.40 | 0.18 | -2.19 | 0.03 |
| **Interaction terms** | | | | |
| **Purpose of last e-bike trip and year of purchase** | | | | |

| | | | | |
|---|---|---|---|---|
| Purpose Errands : Year 2023 | -0.41 | 0.31 | -1.33 | 0.18 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Purpose Recreation : Year 2023 | 0.24 | 0.33 | 0.73 | 0.47 |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | 0.34 | 0.29 | 1.20 | 0.23 |
| Recreation and other : Year 2023 | -0.5719 | 0.289 | -1.976 | 0.048 |
| **Alternate Mode = Transit** | | | | |
| | **Coef.** | **std err** | **z** | **P>\|z\|** |
| **Constant** | 1.30 | 0.63 | 2.05 | 0.04 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.76 | 0.14 | 5.56 | 0.00 |
| Monthly | 1.80 | 0.22 | 8.11 | 0.00 |
| Once a year or less | 3.86 | 0.52 | 7.38 | 0.00 |
| Few times a year | 2.00 | 0.26 | 7.81 | 0.00 |
| Never | 1.85 | 0.60 | 3.09 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.58 | 0.15 | -3.94 | 0.00 |
| Monthly | -0.83 | 0.29 | -2.87 | 0.00 |
| Once a year or less | -0.85 | 0.46 | -1.83 | 0.07 |
| Few times a year | -1.18 | 0.44 | -2.71 | 0.01 |
| Never | -0.39 | 0.53 | -0.73 | 0.47 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | -0.11 | 0.46 | -0.25 | 0.81 |
| **Reason for purchasing e-bike** | | | | |
| Practicality | 0.71 | 0.26 | 2.71 | 0.01 |
| Recreational and other | 0.00 | 0.26 | 0.02 | 0.99 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | -0.27 | 0.27 | -0.98 | 0.33 |
| Other | -0.23 | 0.14 | -1.62 | 0.11 |
| Recreational | -3.04 | 0.46 | -6.61 | 0.00 |
| **Modes used for commuting before purchasing e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | -1.20 | 0.40 | -2.97 | 0.00 |
| Bike based | -0.43 | 0.36 | -1.21 | 0.23 |
| Shared car | -0.63 | 0.51 | -1.23 | 0.22 |

| | | | | |
|---|---|---|---|---|
| Public transit | 1.21 | 0.44 | 2.78 | 0.01 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Other modes | -0.90 | 0.69 | -1.30 | 0.20 |
| Do not per take in activity | -0.62 | 0.38 | -1.63 | 0.10 |
| **Modes used for personal errands before purchasing e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | -0.86 | 0.24 | -3.68 | 0.00 |
| Bike based | -0.68 | 0.22 | -3.03 | 0.00 |
| Shared car | -1.03 | 0.32 | -3.29 | 0.00 |
| Public transit | 0.06 | 0.42 | 0.16 | 0.88 |
| Other modes | -1.87 | 1.18 | -1.58 | 0.11 |
| Do not per take in activity | -0.81 | 0.60 | -1.34 | 0.18 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| Less than 100% FPG | 0.38 | 0.38 | 1.00 | 0.32 |
| 200 to 300% FGP | 0.22 | 0.24 | 0.94 | 0.35 |
| 300 to 400% FPG | -0.17 | 0.22 | -0.78 | 0.44 |
| More than 400% FPG | -0.38 | 0.19 | -2.02 | 0.04 |
| **Interaction terms** | | | | |
| **Purpose of last e-bike trip and year of purchase** | | | | |
| Purpose Errands : Year 2023 | -0.38 | 0.31 | -1.25 | 0.21 |
| Purpose Recreation : Year 2023 | 0.22 | 0.50 | 0.44 | 0.66 |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | -0.66 | 0.30 | -2.23 | 0.03 |
| Recreation and other : Year 2023 | -0.44 | 0.31 | -1.41 | 0.16 |
| **Alternate Mode = Walking** | | | | |
| | **Coef.** | **std err** | **z** | **P>\|z\|** |
| **Constant** | 0.28 | 0.70 | 0.40 | 0.69 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.54 | 0.14 | 3.78 | 0.00 |
| Monthly | 1.78 | 0.21 | 8.37 | 0.00 |
| Once a year or less | 3.18 | 0.54 | 5.92 | 0.00 |
| Few times a year | 2.27 | 0.25 | 8.92 | 0.00 |
| Never | 2.31 | 0.58 | 4.02 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.35 | 0.15 | -2.35 | 0.02 |
| Monthly | -0.64 | 0.28 | -2.32 | 0.02 |

| | | | | |
|---|---|---|---|---|
| Once a year or less | -0.16 | 0.52 | -0.32 | 0.75 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Few times a year | -0.27 | 0.42 | -0.65 | 0.51 |
| Never | -0.87 | 0.59 | -1.47 | 0.14 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | 0.04 | 0.53 | 0.08 | 0.94 |
| **Reason for purchasing e-bike** | | | | |
| Practicality | -0.18 | 0.26 | -0.67 | 0.50 |
| Recreational and other | 0.16 | 0.26 | 0.63 | 0.53 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | 1.23 | 0.29 | 4.29 | 0.00 |
| Other | 0.62 | 0.18 | 3.44 | 0.00 |
| Recreational | -0.44 | 0.29 | -1.52 | 0.13 |
| **Modes used for commuting before purchasing e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | -0.71 | 0.38 | -1.87 | 0.06 |
| Bike based | -1.11 | 0.38 | -2.95 | 0.00 |
| Shared car | -1.23 | 0.48 | -2.55 | 0.01 |
| Public transit | 0.02 | 0.45 | 0.05 | 0.96 |
| Other modes | -1.16 | 0.71 | -1.64 | 0.10 |
| Do not per take in activity | -0.93 | 0.37 | -2.51 | 0.01 |
| **Modes used for personal errands before purchasing e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | -0.79 | 0.24 | -3.26 | 0.00 |
| Bike based | -0.76 | 0.23 | -3.25 | 0.00 |
| Shared car | -0.50 | 0.30 | -1.68 | 0.09 |
| Public transit | -1.01 | 0.49 | -2.07 | 0.04 |
| Other modes | -1.95 | 0.71 | -2.75 | 0.01 |
| Do not per take in activity | -0.94 | 0.63 | -1.50 | 0.13 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| Less than 100% FPG | 0.42 | 0.37 | 1.14 | 0.26 |
| 200 to 300% FGP | -0.09 | 0.25 | -0.36 | 0.72 |
| 300 to 400% FPG | -0.31 | 0.23 | -1.33 | 0.19 |
| More than 400% FPG | -0.31 | 0.19 | -1.63 | 0.10 |
| **Interaction terms** | | | | |
| **Purpose of last e-bike trip and year of purchase** | | | | |

| | | | | |
|---|---|---|---|---|
| Purpose Errands : Year 2023 | -0.47 | 0.31 | -1.50 | 0.13 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Purpose Recreation : Year 2023 | 0.08 | 0.32 | 0.25 | 0.80 |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | 0.42 | 0.30 | 1.40 | 0.16 |
| Recreation and other : Year 2023 | -0.44 | 0.30 | -1.49 | 0.14 |
| **Alternate Mode = No Trip** | | | | |
| | **Coef.** | **std err** | **z** | **P>\|z\|** |
| **Constant** | -2.90 | 0.59 | -4.91 | 0.00 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.79 | 0.12 | 6.40 | 0.00 |
| Monthly | 2.02 | 0.19 | 10.39 | 0.00 |
| Once a year or less | 3.86 | 0.48 | 8.09 | 0.00 |
| Few times a year | 2.71 | 0.22 | 12.18 | 0.00 |
| Never | 2.48 | 0.50 | 4.95 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.32 | 0.13 | -2.48 | 0.01 |
| Monthly | -0.54 | 0.21 | -2.56 | 0.01 |
| Once a year or less | 0.06 | 0.37 | 0.16 | 0.87 |
| Few times a year | -0.12 | 0.34 | -0.34 | 0.73 |
| Never | 0.34 | 0.44 | 0.78 | 0.43 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | -0.42 | 0.42 | -1.00 | 0.32 |
| **Reason for purchasing e-bike** | | | | |
| Practicality | 0.28 | 0.21 | 1.33 | 0.18 |
| Recreational and other | -0.27 | 0.20 | -1.33 | 0.18 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | 1.42 | 0.37 | 3.88 | 0.00 |
| Other | 2.21 | 0.25 | 8.78 | 0.00 |
| Recreational | 2.72 | 0.29 | 9.49 | 0.00 |
| **Modes used for commuting before purchasing e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | -0.01 | 0.34 | -0.04 | 0.97 |
| Bike based | -0.29 | 0.34 | -0.86 | 0.39 |

| | | | | |
|---|---|---|---|---|
| Shared car | -0.38 | 0.44 | -0.87 | 0.39 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Public transit | 0.13 | 0.43 | 0.31 | 0.76 |
| Other modes | 0.36 | 0.48 | 0.76 | 0.45 |
| Do not per take in activity | 0.37 | 0.33 | 1.10 | 0.27 |
| **Modes used for personal errands before purchasing e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | 0.08 | 0.24 | 0.33 | 0.74 |
| Bike based | -0.29 | 0.24 | -1.19 | 0.24 |
| Shared car | -0.22 | 0.28 | -0.77 | 0.44 |
| Public transit | -1.19 | 0.56 | -2.12 | 0.03 |
| Other modes | -0.33 | 0.55 | -0.60 | 0.55 |
| Do not per take in activity | -0.03 | 0.46 | -0.06 | 0.96 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| Less than 100% FPG | 0.22 | 0.36 | 0.63 | 0.53 |
| 200 to 300% FPG | 0.26 | 0.22 | 1.18 | 0.24 |
| 300 to 400% FPG | -0.13 | 0.20 | -0.66 | 0.51 |
| More than 400% FPG | 0.14 | 0.17 | 0.82 | 0.41 |
| **Interaction terms** | | | | |
| **Purpose of last e-bike trip and year of purchase** | | | | |
| Purpose Errands : Year 2023 | 0.25 | 0.37 | 0.66 | 0.51 |
| Purpose Recreation : Year 2023 | 0.52 | 0.27 | 1.92 | 0.06 |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | -0.14 | 0.24 | -0.58 | 0.56 |
| Recreation and other : Year 2023 | 0.08 | 0.24 | 0.34 | 0.73 |
| **Alternate Mode = Other modes** | | | | |
| | **Coef.** | **std err** | **z** | **P>\|z\|** |
| **Constant** | -3.23 | 0.77 | -4.20 | 0.00 |
| **Biking frequency prior to e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | 0.73 | 0.13 | 5.76 | 0.00 |
| Monthly | 1.72 | 0.21 | 8.32 | 0.00 |
| Once a year or less | 3.63 | 0.51 | 7.06 | 0.00 |
| Few times a year | 2.19 | 0.24 | 9.13 | 0.00 |
| Never | 2.52 | 0.54 | 4.68 | 0.00 |
| **E-bike riding frequency after e-bike purchase** | | | | |
| Daily | Base Category | | | |
| Weekly | -0.50 | 0.13 | -3.87 | 0.00 |

| | | | | |
|---|---|---|---|---|
| Monthly | -0.60 | 0.22 | -2.69 | 0.01 |

Table A.2. Continued

| | | | | |
|---|---|---|---|---|
| Once a year or less | -0.09 | 0.49 | -0.19 | 0.85 |
| Few times a year | -0.05 | 0.38 | -0.13 | 0.90 |
| Never | 0.91 | 0.58 | 1.57 | 0.12 |
| **E-bike purchase year** | | | | |
| 2017 | Base Category | | | |
| 2023 | 2.61 | 0.60 | 4.32 | 0.00 |
| **Reason for purchasing e-bike** | | | | |
| Practicality | 0.20 | 0.46 | 0.44 | 0.66 |
| Recreational and other | -0.11 | 0.43 | -0.26 | 0.80 |
| **Recent e-bike trip purpose (After purchase)** | | | | |
| Commute | Base category | | | |
| Errands | -0.27 | 0.64 | -0.43 | 0.67 |
| Other | 0.51 | 0.15 | 3.44 | 0.00 |
| Recreational | -0.56 | 0.46 | -1.21 | 0.23 |
| **Modes used for commuting before purchasing e-bike** | | | | |
| Walk | Base category | | | |
| Drive alone | 0.55 | 0.42 | 1.32 | 0.19 |
| Bike based | -0.02 | 0.41 | -0.06 | 0.96 |
| Shared car | 0.21 | 0.51 | 0.42 | 0.68 |
| Public transit | 0.72 | 0.50 | 1.42 | 0.16 |
| Other modes | 0.85 | 0.58 | 1.46 | 0.15 |
| Do not per take in activity | 0.37 | 0.41 | 0.90 | 0.37 |
| **Modes used for personal errands before purchasing e-bike** | | | | |
| Walk | Base Category | | | |
| Drive alone | 0.17 | 0.26 | 0.64 | 0.52 |
| Bike based | 0.10 | 0.26 | 0.40 | 0.69 |
| Shared car | -0.36 | 0.33 | -1.09 | 0.28 |
| Public transit | -0.95 | 0.66 | -1.44 | 0.15 |
| Other modes | 0.41 | 0.51 | 0.82 | 0.41 |
| Do not per take in activity | 0.54 | 0.50 | 1.09 | 0.28 |
| **Income class based on federal poverty guidelines** | | | | |
| 100 to 200% FPG | Base Category | | | |
| Less than 100% FPG | 0.47 | 0.38 | 1.25 | 0.21 |
| 200 to 300% FGP | 0.06 | 0.24 | 0.25 | 0.80 |
| 300 to 400% FPG | -0.14 | 0.22 | -0.64 | 0.52 |
| More than 400% FPG | 0.12 | 0.18 | 0.67 | 0.51 |
| **Interaction terms** | | | | |

| **Purpose of last e-bike trip and year of purchase** | | | | |
|---|---|---|---|---|
| Table A.2. Continued | | | | |
| Purpose Errands : Year 2023 | 0.68 | 0.64 | 1.05 | 0.29 |
| Purpose Recreation : Year 2023 | 0.41 | 0.47 | 0.88 | 0.38 |
| **Reason per purchase and year of purchase** | | | | |
| Practicality : Year 2023 | -0.20 | 0.48 | -0.42 | 0.67 |
| Recreation and other : Year 2023 | -0.18 | 0.45 | -0.41 | 0.69 |

## VITA

Sameer Aryal is a Ph.D. candidate and Graduate Research Assistant at the University of Tennessee, Knoxville, specializing in sustainable transportation systems. His research focuses on micromobility policy, travel behavior modeling, and the cost-effectiveness of e-bike incentives for reducing transportation-related emissions. Sameer has led data-driven projects integrating choice experiments, emissions simulations, and machine learning models to inform micromobility safety and regulatory policy. He is also contributing to national-level stakeholder engagement efforts and the development of interactive policy maps. His work is grounded in interdisciplinary methods that bridge transportation engineering, data science, and public policy.