An Electric-Vehicle Consumer Segmentation Roadmap: Strategically Amplifying Participation in the New York Drive Clean Rebate Program

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Strategically Amplifying Participation in the New York Drive Clean Rebate Program

Final Report

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Abstract

To reach New York State's goal for all new light-duty vehicle sales to be electric vehicles (EVs) by 2035, EV adoption must be reinforced and aggressively expanded. How should New York State Energy Research and Development Authority (NYSERDA) and other stakeholders best target supportive resources to promote rapid, widespread, and responsible EV commercialization? The New York State Drive Clean Rebate Program (NY DCRP) offers up to $2,000 as a point-of-sale rebate for the purchase or lease of a new EV. Program data can be used to understand participants and target specific consumer segments with tailored strategies that not only reinforce adoption but amplify participation in ways that support a variety of goals, such as market acceleration, cost-effectiveness, helping EVs move further into the mainstream, and increasing equitable access to EVs.

This project consisted of five examinations of rebated adopters aimed at supporting each of these goals through strategic segmentation. Stand-alone task reports were prepared to describe each examination in detail. This final report describes the examinations sequenced and integrated into a roadmap that provides a series of consumer-segment steppingstones which point the way, demographically and otherwise, toward mainstream EV adoption and beyond.

The project utilized program data, including 5,474 survey responses statistically weighted to represent 21,843 NY DCRP participants rebated for EV purchases or leases from March 2017 through the end of 2019. Weighted descriptive statistics were used to summarize the data, characterize participants, test for significant differences across vehicle categories and consumer segments, and compare groups to metrics characterizing new-vehicle buyers in New York State. Latent-class analysis (LCA) was used to cluster the participant population into data-determined "classes" based on demographic and household characteristics. Logistic regression and dominance analyses were used to identify and rank order factors that significantly distinguish strategic segments of predetermined interest (*Rebate Essentials, EV Converts,* and DAC participants). In the task reports, selected, high-ranking characteristics were further examined, and summarizing segment "profiles" presented. Herein, the overlap between, and progression represented by, strategic segments was quantified. A summary of the research, findings, caveats, and concluding thoughts are provided.

On balance, it is hoped that this multipronged but integrated analysis will help inform a multipronged but concerted approach to market support. Although complex and ambitious, such efforts are likely needed to achieve the scale and quality of EV commercialization that will provide widespread and equitable access to the benefits of transformative transportation electrification.

Keywords

Electric vehicle; consumer segmentation; EV adopters; cost-effectiveness; market expansion; disadvantaged communities; EV equity; strategic roadmap

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Finally, CSE thanks Adam Ruder and David McCabe of NYSERDA for not just their oversight of, and engagement with, this project, but for the tremendous flexibility and vision that were required during the adaptation of this contract to its current form. We are thankful for the exciting opportunity to explore and learn from data generated by the Drive Clean Rebate Program.

However, any opinions expressed or mistakes remaining herein are the responsibility of the author.

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Acronyms and Abbreviations

AIC	Akaike information criterion
BEV	battery electric vehicle
C	correlation
Comb.	combined with
CSE	Center for Sustainable Energy
CVRP	California Clean Vehicle Rebate Project
DAC	Disadvantaged Community, as defined by the State
DCRP	Drive Clean Rebate Program
DV	dependent variable
EV	electric vehicle, including battery and plug-in hybrid EVs
In	included in the model
In-NS	included but not found significant
LCA	latent-class analysis
MC	multicollinearity
MSRP	manufacturer's suggested retail price
NA or N.A.	not applicable
NC	not considered
n.d.	no date
NHTS	National Household Travel Survey
NY DCRP	New York Drive Clean Rebate Program
NYSERDA	New York State Energy Research and Development Authority
OR	odds ratio
PHEV	plug-in hybrid electric vehicle
PM	pre-modeling decision
Q	question
VIF	variance inflation factor

Summary

S.1 Background

The New York State Drive Clean Rebate Program (NY DCRP) offers up to $2,000 as a point-of-sale rebate for the purchase or lease of a new battery or plug-in hybrid electric vehicle (EV) (NYSERDA n.d.). Program data can be used to better understand participants and target specific consumer segments with tailored strategies that not only reinforce adoption but amplify participation in ways that support a variety of goals, such as market acceleration, cost-effectiveness, helping EVs move further into the mainstream, and increasing equitable access to EVs. This project consisted of five examinations of rebated adopters aimed at supporting each of those goals through strategic segmentation. Task reports were prepared to describe each examination and are listed in appendix C. This final report describes the examinations sequenced and integrated into a roadmap that provides a series of consumer-segment steppingstones that point the way, demographically and otherwise, toward mainstream EV adoption and beyond.

1. **The starting-point population**: All rebated EV adopters were characterized as a whole, by vehicle category (Cain et al. 2021), and clustered into "classes" based on demographic and housing characteristics (Anderson and Tamerius 2021). Examining the starting point informs strategies to scale what is already working, supporting aggressive goals to accelerate the number of EVs on the road.
2. **The first strategic segment: "*Rebate Essentials*"** (B. D. H. Williams and Anderson 2021b) are those EV consumers that would not have purchased/leased their EV without the rebate (Johnson and Williams 2017; B. D. Williams and Anderson 2018; B. D. H. Williams and Anderson 2021b; B. D. Williams and Johnson 2017; 2016). Examining this segment promotes a focus on program cost-effectiveness and reduction of free ridership.
3. **The next step: "*EV Converts*"** (B. D. H. Williams and Anderson 2021c) are those consumers that had no or low initial interest in EVs at the beginning of their new-car search, but whom nevertheless did go on to adopt (B. D. Williams and Johnson 2016; 2017; B. D. H. Williams and Anderson 2021a; 2021c). *EV Converts* even more closely resemble new-car buyers than *Rebate Essentials* do. Examining this segment promotes expansion of the margin that exists between current EV adoption and mainstream car markets.
4. **Going beyond the mainstream: Disadvantaged Communities** (DACs) (B. D. H. Williams and Anderson 2021d) are communities designated by the State using income, environmental justice, and opportunity-zone criteria (NYSERDA n.d.). Examining this segment promotes equitable access to the benefits of transportation electrification.

S.2 Data and Approach

The project analyzes NY DCRP program data characterizing 21,843 participants rebated for EV purchases or leases from March 2017 through the end of 2019, including 5,474 survey responses (Table 1). Registration data (IHS Markit 2021) and National Household Travel Survey (FHWA 2017) data were also used to provide context and baseline metrics.

Following data cleaning, weighted descriptive statistics were used to summarize the data, characterize participants, test for significant differences across vehicle categories and consumer segments, and compare groups to metrics characterizing new-vehicle buyers in New York State. Latent-class analysis (LCA) was used to cluster the participant population into data-determined "classes" based on demographic and household characteristics. Logistic regression and dominance analysis were used to identify and rank order factors that significantly distinguish strategic segments of predetermined interest (*Rebate Essentials, EV Converts,* and DAC participants). In the task reports, select, high-ranking characteristics were further examined, and summarizing segment "profiles" presented. Herein, the overlap between, and progression represented by, strategic segments was also quantified. A summary of the research, findings, caveats, and concluding thoughts are provided.

S.3 Caveats

This work is centered on consumers who overcame their barriers to adoption, purchased/leased an EV, and participated in the DCRP. Extrapolating these findings should be done with caution. Additional research is required to understand consumers who have not overcome their barriers to acquiring an EV.

S.4 Select Findings and Recommendations

The descriptive characteristics analyzed—such as those in Tables 2, 3, and 7 and Appendices A-1 and A-2—help us better understand rebated EV adopters and the segments examined. Table 5, in turn, helps us rank order significant predictors of segment status, telling us where to focus first. Select findings and recommendations include the following.

S.4.1 To help scale current adoption:

- **Consider consumers of different product categories separately when possible.** For nearly every survey question tested, plug-in hybrid EV (PHEV) consumers and battery EV (BEV) consumers differ significantly in their responses. Further observations are provided highlighting the differences between Tesla and non-Tesla BEVs.

- Data clustering identified **six types of past participants**, three of which comprised nearly 70% of participants and resembled more extreme versions of typical EV adopter characteristics. Two were more distinct.
    - Despite demographic and housing differences, all classes tend to rate motivations for, and enablers of, adoption similarly, suggesting **several marketing messages might be applicable across the groups:** environmental impacts, the State rebate, and saving money on fuel were all particularly important factors.
    - However, messaging aimed at the practical benefits of EVs may resonate strongly with a small but fast-growing subset of consumers (class 4). Free away-from-home charging may be important to unleashing demand in dense urban areas among renters (class 6).
- As the market expands, additional subgroups may emerge. Reevaluating EV adopter classes over time will recalibrate expectations and strategies.

S.4.2 To increase program cost-effectiveness:

- Descriptively, *Rebate Essentials* trend relatively younger and lower-income and rent housing somewhat more frequently than non-*Rebate Essentials* (Table 3). PHEV *Rebate Essentials* specifically identify less frequently as white (B. D. H. Williams and Anderson 2021b). Predictively, *Rebate Essentials* are most-highly distinguished by having initial interest in EVs at the start of the new-car search and by consumer and dealer awareness of the rebate before their first dealership visit (Table 5). Additional details, broken down by vehicle category, are available in the task report.
    - **No evidence was found to support limiting the number of rebates** per individual.
- **Support consumer awareness of the rebate during the pre-dealership-visit information gathering phase** (especially for potential consumers of PHEV products).
    - However, dealer awareness is also a (lower-ranked) significant predictor. **Support rebate awareness among dealers**, who may act as a "backstop" and either reinforce consumer awareness or use the incentive to convert non-aware consumers into EV adopters.
    - **Support or advertise other incentive programs** (e.g., free charging, toll discounts, EV charging rates) **that reinforce the influence of the rebate** on "true additions" to the market.
- **Cost-effectiveness both overlaps with, and has trade-offs with, the goal of expanding EV markets more toward the mainstream**. A disproportionate amount of *Rebate Essentials* are also *EV Converts* (Table 6)—particularly those with "some" initial interest in EVs (76% of *EV Converts* and 28% of *Rebate Essentials*, versus 23% of the program overall) rather than those very interested (by definition not EV Converts) or having no initial interest (less likely to be *Rebate Essential*). An even larger percentage of *EV Converts* are also *Rebate Essentials*: 61% (versus 51% for the program overall, Table 6). Notably distinguishing *Rebate Essentials* from *EV Converts* are gender (*Rebate Essentials* trend

more frequently male versus *EV Converts* relatively more frequently female), education(higher attainment versus lower attainment, respectively), household fleet size (larger versus smaller) and consumer and dealer awareness (higher versus lower). *EV Converts*also lack income as a distinguishing factor and give lower importance to motivations that might have pre-converted them to *Rebate Essentiality*, such as saving money and energy independence.

S.4.3 To expand the program further beyond enthusiastic early adopters:

- Descriptively, *EV Converts* even more closely resemble new-car buyers than *Rebate Essentials* do (Table 3). Relative to their non-*Convert* counterparts, *EV Converts* trend younger and toward relatively lower educational attainment, income, and/or home ownership, but relatively more frequently are female and/or have larger households. Like for *Rebate Essentials*, PHEV *Converts* specifically identify less frequently as solely white (B. D. H. Williams and Anderson 2021c). Predictively, *EV Converts* are further distinguished by placing relatively lower importance on energy independence and environmental impacts and relatively less frequently having no plans to install solar (all potential pre-converters), as well as having lower consumer and dealer awareness of the rebate before their first dealership visit (Tables 4 and 5). Additional and vehicle-category-specific details are available in the task report.
- **Tailor messaging and support:**
    - *EV Converts* relatively less frequently have plans to install solar at their homes, are relatively less frequently environmentally or socially motivated, and are relatively more frequently female.
    - *EV Converts* appear to value free away-from-home charging (PHEV *Converts*), special electricity rates and toll discounts (Tesla *Converts*), and saving money overall and vehicle styling and comfort (non-Tesla *BEV Converts*).
- On the other hand, **increase pre-conversion** through:
    - Awareness of environmental, energy-independence, and solar-energy issues; access to home charging; and pre-dealership awareness of rebates
- **Continue converting consumers with ongoing access to compelling rebates:**
    - Evidence indicates the rebate is a necessary element, even though *EV Converts* may or may not have known about the rebate before visiting a dealer.
- **Support dealer efforts** to reinforce consumer awareness and convert consumers with the rebate.
- *EV Converts* highlight the tension between the desirability to (1) target "typical" past EV adopters and *Rebate Essentials*, who may be the easiest to encourage, and (2) **aim slightly off target (but not too far away)**, in order to encourage adoption by those that are neither "pre-converted" nor not yet quite as dependent on the rebate.

S.4.4 To reinforce participation by Disadvantaged Communities:

- Descriptively, DAC participants are similar to their non-DAC counterparts only in terms of their household size and the frequency at which they identify as male. Indeed**, even compared to new-vehicle buyers in New York State,** they trend younger and less frequently: identify as white, have four-year degrees, own homes, and have two or more cars. The frequency of household incomes over $100,000 per year is comparable to new-vehicle buyers and considerably lower (50%) than even EV Converts (62%) (Table 3). The notable exceptions include DAC participants' relatively smaller household size, higher educational attainment, and, in particular, more frequent identification as male compared to new-vehicle buyers (Table 7).
    - The average **characteristics shared by new-car buyers**—who tend to have higher incomes to start with, for example—**should moderate any expectations of extreme diversification in EV markets**. Further research is needed.
- Predictively, **multi-unit housing type** and **renting** (rather than owning) **ranked highly**. The odds were also increased if the EV was the first-ever vehicle or an addition to the household rather than a replacement. **Notably, race/ethnicity was not a distinguishing characteristic.** Additional details are available in the task report.
- Although DACs exist throughout the state, **concentrating efforts in NYC counties may have some efficiencies in the near term,** albeit advantages that must be balanced with other considerations such as geographic equity.
- To reinforce similar adoption, **messaging should reflect** the high importance placed on reducing environmental impacts and the convenience of charging and low importance placed on energy independence.
- Findings here and in research by others indicate that DAC EV adoption is associated with relatively more **purchasing** (versus leasing).
- No evidence was found that DAC participants suffered from disproportionate lack of charging access, had lower awareness, or were more dissatisfied with DCRP promotion compared to non-DAC adopters.
    - Over time, this may change. Similarly, charging access is likely to become an increasingly important constraint, due to the high incidence of renters and multi-unit dwellers.
- Further, DACs were not distinguished by the presence or absence of solar.
- **Nor did the importance of a variety of financial incentives help distinguish DACs**, which may speak to the consistency of their importance in a given income group (or other cohort defined by controlling factors).
- Nevertheless, **lower household income, as expected, is a distinguishing factor.** Digging deeper, **signs of two types of DAC adoption** in the household income distribution are evident: one that overlaps with adopters overall and one that is happening at significantly lower income levels.

- It is conceivable that two types of adoption are going on in DACs: adoption by distinct DAC consumers and adoption by DAC consumers with some overlap with adoption overall.
    - If true, this may reinforce the need for two types of supportive measures: (1) reinforcement and amplification that "meets DAC adoption where it is" and (2) barrier busting that transforms DAC adoption.

S.4.5 Significance of Factors Across Segments and by Group

- The significance of **demographic** factors, controlling for other factors, was sparse.
- **Household** factors distinguished DAC participants the most and *Rebate Essentials* the least. Residential solar did not distinguish DACs but is a likely "pre-converter" to EV interest.
- **Charging access** surprisingly was only found significant in one specific circumstance. Even DAC-participant access to charging at home is relatively high.
- **Motivators** like the importance of environmental impacts, energy independence, the desire for new tech, and carpool-lane access are likely "pre-converters" to EV interest.
- The significance of financial and practical considerations was not uniform for *Rebate Essentials* and, surprisingly, financial and practical motivations were not found to distinguish DAC participants.
- In the case of **enablers**, *EV Converts* and *Rebate Essentials* share many distinguishing characteristics. No enabler that made it into the modeling of DAC participants was found to be a distinguisher.
- Few factors related to the **dealer experience** tested so far have been found significant.
- In terms of **transactional and vehicle** characteristics, vehicles with long electric range may be doing some of the work of the rebate as well as pre-converting consumers to EV interest and adoption.

S.5 Concluding Thoughts

This project as a whole has strived to develop insight to inform a multipronged approach to supporting EV adoption in New York State. This report has focused on presenting the individual prongs explored in the task reports sequenced and framed into the form of roadmap that progresses from where EV markets are today and toward where they need to be. However, trade-offs also exist between the overlapping-but-distinct goals explored here: market multiplication, cost-effectiveness, mainstreaming, and equity. As such, individual task reports and the segments they dive into represent à la carte items to pick and choose from depending on a stakeholder's priorities and preferences.

On balance, it is hoped that this multipronged but integrated analysis will help inform a multipronged but concerted approach to market support. Although complex and ambitious, such efforts are likely needed to achieve the scale and quality of EV commercialization that will provide widespread and equitable access to the benefits of transformative transportation electrification.

1 Introduction

1.1 Project Background and Research Aims

The New York State Drive Clean Rebate Program (NY DCRP) currently offers up to $2,000 as a point-of-sale rebate for the purchase or lease of a new battery or plug-in hybrid electric vehicle (EV) (NYSERDA n.d.). The program is administered on behalf of the New York State Energy Research and Development Authority (NYSERDA) by the Center for Sustainable Energy (CSE). As part of program administration, CSE surveys rebate recipients to learn more about their demographics and housing characteristics, purchase/lease motivations and enablers, dealer experience, charging and driving behavior, and other topics. Additional data characterizing rebated vehicles and transaction details are collected as part of the point-of-sale rebate application by the dealer on behalf of the consumer.

Survey and application data can be used to better understand participants and to identify strategies to reinforce adoption through program design and programmatic support, such as outreach messaging to increase EV purchase likelihoods. Further, targeting specific consumer segments with tailored strategies not only effectively reinforces adoption overall, but it also amplifies participation in ways that support goals in addition to market acceleration, such as cost-effectiveness, helping EVs move further into the mainstream, and increasing equitable access to EVs and their benefits.

This project consisted of five examinations of rebated adopters aimed at supporting each of those goals through strategic segmentation. Task reports were prepared to describe each examination and are listed in appendix C. This final report sequences and integrates them into a roadmap that provides a series of consumer-segment steppingstones that point the way, demographically and otherwise, toward mainstream EV adoption and beyond.

1. **Starting Population: All Rebated EV Adopters.** Using the most recently available data, all participants from program inception in March 2017 that received rebates for EVs purchased or leased through the end of 2019 were characterized in a survey summary document (Cain et al. 2021). This group represents the population of adopters overall that was subsequently segmented to support a variety of strategic goals. It represents the "starting point" in a consumer-segmentation roadmap of sorts that begins with the average characteristics of early adopters. Further, greater understanding of existing adoption informs strategies to scale what is already working to help meet aggressive State goals for rapid market acceleration and increased numbers of vehicles on the road.

2. **Rebated EV Adopter Clusters/"Classes."** Statistical techniques were used to break down the program participant population, clustering them into groups called "classes" with similar demographics and household characteristics (Anderson and Tamerius 2021). The classes were examined to make sense out of what they are, what they say about the various types of rebated EV adoption that have happened in New York State, and how adoption by each class might be reinforced with tailored support. Building off the first examination, this examination might be considered an investigation of the various types of past participants.
3. **"*Rebate Essential*" EV Consumers** (B. D. H. Williams and Anderson 2021b)**.** *Rebate Essentials* are those consumers that would not have purchased/leased their EV without the rebate (Johnson and Williams 2017; B. D. Williams and Anderson 2018; B. D. H. Williams and Anderson 2021b; B. D. Williams and Johnson 2017; 2016). Examining this segment promotes a focus on rebate cost-effectiveness and reduction of free ridership (i.e., reducing attention and support given to consumers who would have purchased an EV without the rebate). The analysis utilized descriptive statistics, logistic regressions, and dominance analysis to characterize *Rebate Essentials* and to identify and rank order characteristics statistically associated with being a consumer most highly influenced by rebates to adopt an EV. These characteristics inform the cost-effective targeting of rebate design and other supportive resources such as outreach at similar consumers who need them most and represent "true additions" to the EV market in the state. Demographically, differences from the population of EV adopters as a whole begin to emerge that, if amplified, represent the first step toward mainstream markets and beyond.
4. **"*EV Convert*" Consumers** (B. D. H. Williams and Anderson 2021c)**.** The next step, building on the techniques developed to examine *Rebate Essentials*, was characterization of "*EV Convert"* consumers. *EV Converts* are consumers that had no or low initial interest in EVs at the beginning of their new-car search, but whom nevertheless did go on to adopt (B. D. Williams and Johnson 2016; 2017; B. D. H. Williams and Anderson 2021a; 2021c). *EV Converts* overlap with *Rebate Essentials* somewhat, but even more closely resemble new-car buyers than *Rebate Essentials* do. As such, identifying and prioritizing the characteristics of this market segment informs the targeting and expansion of the margin that exists between current adoption and mainstream car markets.
5. **Priority Population: Disadvantaged Community Participants** (B. D. H. Williams and Anderson 2021d)**.** The final segment in the series, adopters in State-designated Disadvantaged Communities (DACs), is examined to help EV commercialization "go beyond" mainstream new-car markets, demographically and otherwise, to promote equitable access to the benefits of transportation electrification. The same descriptive, logistic-regression, and dominance-analysis techniques were applied to increase understanding of DAC adoption and identify (controlling for other factors) what does, and what does not, statistically help distinguish DAC from non-DAC adopters.

1.1.1 Bringing It All Together

It is hoped that the individual examinations summarized here and detailed in the task reports, in their own way, provide data and results that shine additional light on rebated EV adoption in New York State, provide a unique lens through which to view adoption and improve understanding, and inform strategies for meeting individual goals (e.g., cost-effectiveness). Collectively, the examinations not only provide a menu of options for reinforcing adoption from which various stakeholders can pick and choose as circumstances and priorities dictate, they help clarify and contradistinctively describe each goal. With greater clarity about an individual goal, what it might take to achieve it, and where it overlaps or differs from other goals, the pitfalls of unconsciously designing programs to "do it all" can be avoided. Instead, multiple initiatives (or sub-initiatives within a single program) may be designed to effectively make progress tailored to, or at least cognizant of, the unique qualities of each goal.

Finally, it is hoped that sequencing the examinations into a sort of "roadmap" framework will facilitate (a) additional comparison, (b) development of a sense of advancement, demographically and otherwise, that amplifies what each segment in turn might represent, and (c) integration into a culminating look at expanding the EV market in New York State.

1.2 Background and Previous Related Work

Select observations from research literature pertinent to each of the examinations of *Rebate Essentials*, *EV Converts*, and Disadvantaged Communities are provided in their respective task reports (Williams and Anderson, 2021b; 2021c; 2021d). Additionally, discussion of the broader literature about EV adoption, with an emphasis on research using data characterizing actual adopters of EVs, is in the task 1 annotated bibliography and literature review deliverables. No examples of the examination of consumer segments of predetermined interest in New York State were found in the literature, nor were any examples of creating roadmaps or other assemblages from multiple consumer-segmentation analyses.

1.2.1 Methodological Precursors: Previous Consumer-Segmentation Analysis by the Authors

Use of logistic regressions and dominance analysis to identify and prioritize characteristics associated with being a member of a consumer segment of predetermined interest was initiated for analysis of California rebate recipients. Previous California analyses included those for *Rebate*

Essentials (B. D. Williams and Johnson 2016; Johnson and Williams 2017; B. D. Williams and Johnson 2017; B. D. Williams and Anderson 2018) and *EV Converts* (B. D. Williams and Johnson 2016; 2017; B. D. H. Williams and Anderson 2021a). The methods evolved over time and were substantially improved for analysis of NY DCRP participants, as described in the respective task reports (B. D. H. Williams and Anderson 2021b; 2021c; 2021d).

1.3 Overview of Contributions and Uniqueness

This project's examination of segments of predetermined interest (*Rebate Essentials*, *EV Converts*, and DAC adopters) each further develops, improves, and deepens the initial methodology used to characterize consumer segments in California. Further, the project includes the following firsts.

- Application of those methods to consumers outside of California.
- Examination of those segments specifically in populations other than California.
- Application of the methods to a priority population (DAC participants) in any state.
- Application of latent-class clustering analysis to EV adopters in New York State.
- Integration of multiple consumer segments of any kind into a roadmap or similar assemblage.

Additionally, the Drive Clean Rebate Program not only operates in a New York State market and cold weather climate context, it also is a fully point-of-sale rebate program in contrast to California's post-purchase rebate (one that allowed consumers to apply for the rebate up to 18 months after purchase/lease for most of its decade-long history). Finally, the consumers examined herein purchased/leased their plug-in vehicles in 2017–2019 and represent a considerably newer era in EV market development than previous examinations of adoption that took place between 2013 and 2017.

2 Data and Representativeness

DCRP invites participants to a voluntary survey approximately two weeks, on average, after dealer reimbursement for their point-of-sale rebate is approved. These survey responses are summarized in the document, "Summary of the Drive Clean Rebate Program's Consumer Adoption Survey: 2017–2019 Purchases/Leases" (Cain et al. 2021). The research summarized herein relies on complete responses to the DCRP Consumer Adoption Survey, supplemented by DCRP application data. Respondents were disqualified from the survey if they indicated: (1) they drive their rebated vehicle for commercial purposes, (2) they are not the primary driver of their rebated vehicle, or (3) there was a mismatch between their rebated vehicle and the survey invitation.

Table 1. New York Drive Clean Rebate Program Consumer Data Utilized

Purchase/Lease Dates	23 March 2017 – 31 December 2019
Program Participants	N = 21,843 PHEV: 13,296 BEV: 8,547 Tesla: 5,308 Non-Tesla BEV: 3,239
Survey Response Dates	8 August 2017 – 30 July 2020
Respondents in Data Set (unweighted)	*n* = 5,474 PHEV: 2,926 BEV: 2,548 Tesla: 1,507 Non-Tesla BEV: 1,041
Weighting Method	Iterative Proportional Fitting (aka raking)
Representative Dimensions	Vehicle technology type (PHEV versus BEV), model, purchase versus lease, residence county
Program as a % of the EV Market	~56%*

* Based on 39,029 EV sales from April 2017 through December 2019, per the Alliance for Automotive Innovation's Electric Vehicle Sales Dashboard [15].

The survey responses are weighted using iterative proportional fitting to make the data better represent the program population by vehicle technology type (PHEV versus BEV), model, purchase versus lease, and county of residence. These weights are used in the survey summary document and in descriptive statistics summarized in the following sections but are not used in the logistic regression to increase efficiency, reduce bias, and avoid inflating standard errors (Solon, Haider, and Wooldridge 2015).

More than 60% of the DCRP rebates studied are for plug-in hybrid electric vehicles (PHEVs). The high proportion of PHEVs draws a sharp contrast to other markets like California where battery electric

vehicles (BEVs) make up the majority of EV sales and incentives issued. From 24 March 2017 through 31 December 2019, only 32% of applications received and approved for rebates by California's Clean Vehicle Rebate Project (CVRP) were for PHEVs (CSE 2021). Figures 1 and 2 summarize DCRP incentivized vehicles by major vehicle model. It also provides a comparison of rebated vehicles by vehicle technology type between DCRP and California's CVRP (CSE 2021).

Figure 1. Rebates by Vehicle Model

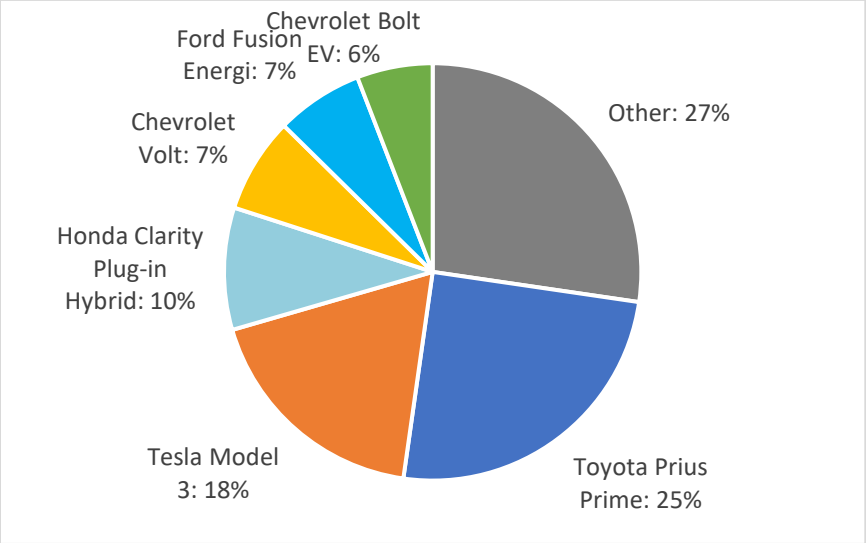
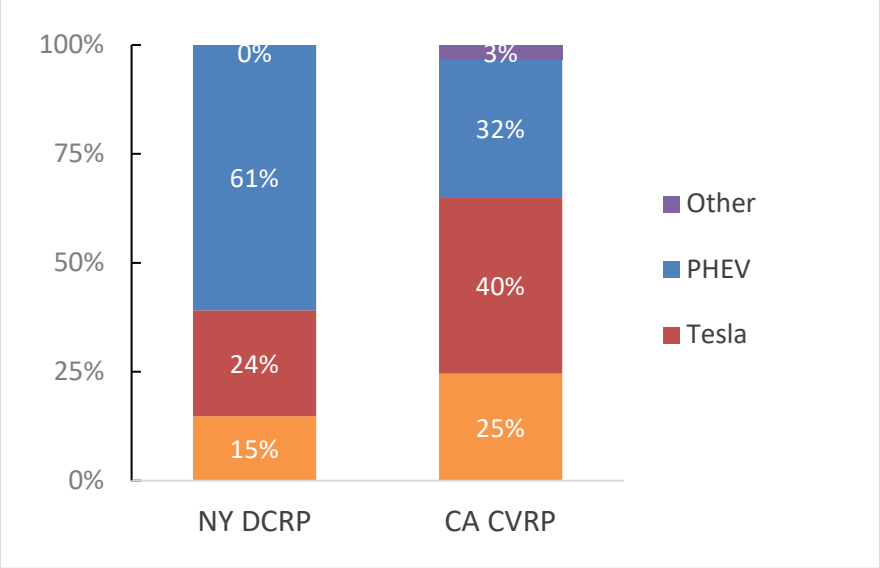


Figure 2. Rebates by Vehicle Category



3 Methodological Overview

The following briefly summarizes and presents an integrated picture of the methods employed for: the summary of all responses to the NY DCRP Adoption Survey, the latent-class clustering of all participants, and the descriptive and logistic analysis of segments of predetermined interest (*Rebate Essentials, EV Converts,* and Disadvantaged Communities). Detailed descriptions of the methods employed for each analysis can be found in their respective task reports (B. D. H. Williams and Anderson 2021b; 2021c; 2021d; Anderson and Tamerius 2021; Cain et al. 2021).

3.1 Summary of Responses to the New York Drive Clean Rebate Program Adoption Survey

Adoption survey data were cleaned, weighted, and enhanced before being segmented into vehicle categories (PHEV, Tesla, and non-Tesla BEVs) and summarized in frequency tables for all survey questions included in the survey. The frequencies were tested for meaningful differences between PHEVs and BEVs using statistical tests. For more information, please see Cain, Anderson, Williams, and Fullenkamp.

3.2 Segmentation

The segment examinations grouped participants in one of two ways, data-determined classes and segments of predetermined interest:

1. Using statistical techniques to cluster similar consumers into "classes," and then making sense out of what the classes are and how adoption by each of them might be reinforced with tailored support.
2. Picking a group of interest that represents a desirable aspect of adoption to amplify (e.g., participants residing in disadvantaged communities), and then using techniques to identify their statistically significant distinguishing characteristics and prioritize effective ways to amplify similar adoption.

3.2.1 Latent Class Analysis of All Participants

The first segmentation method utilized latent-class analysis to cluster rebated EV adopters into similar classes using demographic and housing characteristics:

- Own versus rent residence
- Residence type
- Solar ownership
- Household size
- Licensed drivers in household
- Age
- Gender identity
- Educational attainment
- Household income
- Racial/ethnic identity

The six resulting classes were then compared and contrasted with new-car buyer characteristics and each other along factors related to other household characteristics, motivations for purchase, the importance of supportive policies and incentives, and transaction details. For additional detail, please see (Anderson and Tamerius 2021).

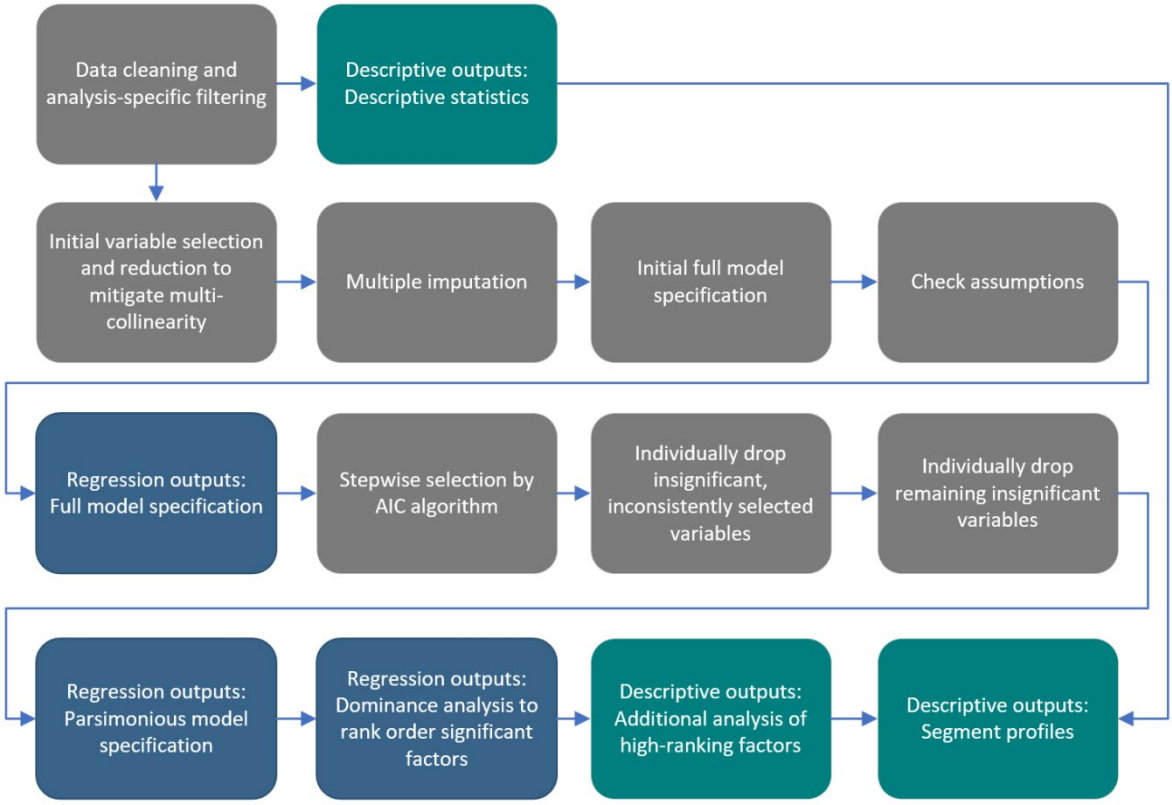
3.2.2 Descriptive, Logistic, and Dominance Analysis of Segments of Predetermined Interest

The second segmentation method was used to analyze segments of predetermined interest (*Rebate Essentials*, *EV Converts*, and DAC participants). It used descriptive statistics to characterize members of the strategic segment and compare them to nonmembers, participants as a whole, and all new-car buyers in New York State as an appropriate baseline. It then used logistic regression to identify factors that significantly increased the odds of be a segment member, controlling for all other factors. Dominance analysis was used to rank order the significant predictors of segment membership for prioritization of supportive efforts.

For all segments, results were presented and discussed, segment profiles created, conclusions drawn, and caveats and ideas for future work provided.

Figure 3 summarizes the approach taken to the analysis of the strategic segments of predetermined interest, including analytical steps, the descriptive outputs, and the (logistic) regression outputs.

Figure 3. Analysis Flowchart



3.2.2.1 Vehicle Categories

Analysis of *Rebate Essentials* and *EV Converts* was done separately for each of PHEV, Tesla, and non-Tesla BEV consumers, to account for their unique qualities and the differences between them along almost all dimensions examined, as described in the task reports (B. D. H. Williams and Anderson 2021c; 2021b) and survey-summary document (Cain et al. 2021). Insufficient sample size required analysis of DAC participants using a single model, but vehicle category was included as an independent variable.

3.2.2.2 Strategic Segments Definitions: Dependent Variables

Building on prior work for California(Williams and Johnson 2016; Johnson and Williams 2017; Williams and Johnson 2017; Williams and Anderson 2018; Williams and Anderson 2021a), membership status for the first two strategic segments—*Rebate Essentials* (B. D. H. Williams and Anderson 2021b) and *EV Converts* (B. D. H. Williams and Anderson 2021c)—was defined using responses to analogous questions in the NY DCRP Adoption Survey. Membership in the third segment, DAC participants, was determined by NYSERDA based on geographic coding to match the latest (but interim) definition of Disadvantaged Communities established by New York State.

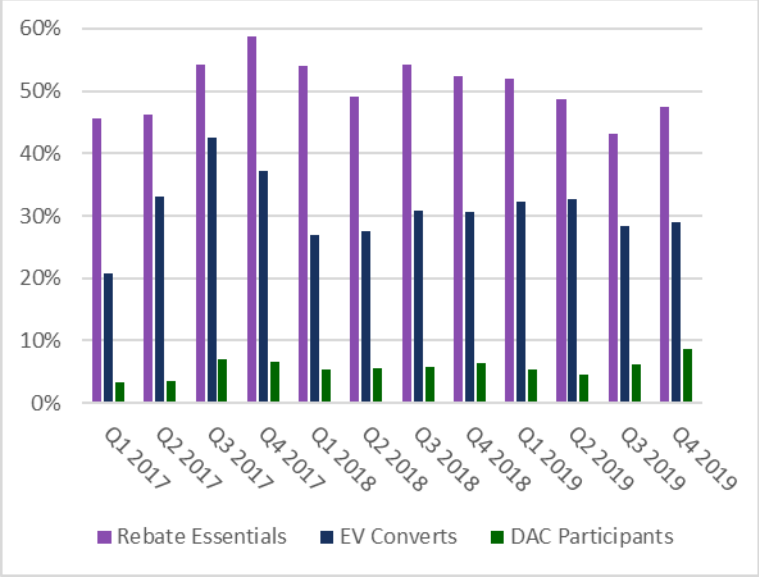
Rebate Essentials answered, "no" to the survey question, "Would you have purchased/leased your electric car without the State car rebate (Drive Clean Rebate)?"

EV Converts answered, "I did not know electric cars existed," "I knew electric cars existed, but had no interest in one," or "I had some interest in an electric car" to the question, "Which of the following statements best describes your interest in acquiring an electric car when you started your search for a new car?" Those who responded, "I was very interested in an electric car," "I was only interested in an EV, but considered multiple EV makes/models," or "I was only interested in the specific EV make/model I acquired" were categorized as not being an *EV Convert*.

DAC participants were geocoded by NYSERDA as living in census block groups that are designated by New York State using interim income, environmental justice, and opportunity-zone criteria. To qualify, these communities must either be: (1) "Located within census block groups that meet the HUD 50% AMI threshold" and also within Department of Environmental Conservation Potential Environmental Justice Areas or (2) located within New York State Opportunity Zones (NYSERDA n.d.). DACs vary widely in New York State. According to data provided by NYSERDA, these communities include parts of highly urban cities, such as New York City, areas of smaller cities, such as Ithaca, and more suburban and rural areas upstate.

The portion of the program falling into each of these segments is shown in Figure 4 and appendix A-2.

Figure 4. Segment Share of Program Over Time



3.2.2.3 Predictors: Independent Variable Preparation

Survey questions and DCRP application data fields were reviewed for theoretical relevance to the dependent variable and for anticipated "actionability" of the results. Relevant and actionable variables were selected for inclusion in the initial full model. Available independent variables and their response frequencies are summarized and broken down by vehicle category and by segment in Appendices A-1 and A-2. Percentages for the predetermined segments in A-2 are based on the analytical data sets produced for each task (making them directly applicable to the segment-specific logistic-regression analysis but potentially slightly different than percentages using the overall data sets, as did the characterizations of the whole program and the latent-classes within it). Appendix A-3 compares the independent variables included in each of the examinations of *Rebate Essentials* (B. D. H. Williams and Anderson 2021b), *EV Converts* (B. D. H. Williams and Anderson 2021c), and DAC residents (B. D. H. Williams and Anderson 2021d). For example, seven variables not considered in *Rebate Essential* modeling were included, and eight variables included in *Rebate Essential* modeling were not included, in analysis of DACs (typically for sample size reasons and because other similar variables remained in the modeling).

Several included variables were transformed to combine bins with less than 50 responses and/or to reduce complexity in interpreting results. Logical consistency was maintained when variable bins were combined (e.g., for ordinal variables adjacent bins were combined, for nominal variables conceptually similar bins were combined). The variables transformed (including re-binning) for the logistic regression model were race/ethnicity, household income, the availability of charging at home and at or near work, residence county, residence type, and initial interest in an EV.

3.2.2.4 Descriptive Statistics

Descriptive statistics were produced to supplement and provide context for the logistic regression results. These descriptive statistics were produced using the analytical data sets prepared as described above for the logistic regressions (before multiple imputation but notably after listwise deletion), in order to contrast the participant segment of interest against its compliment (the rest of the participants) and against the new-vehicle market as a whole. To establish more appropriate baselines of comparison than census population data (B. D. Williams and Anderson 2016; B. D. Williams and Jones 2018; B. D. H. Williams 2019), "market majority" characteristics were created for New York new-vehicle buyers using data from the 2017 National Household Travel Survey (NHTS) (FHWA 2017). New-vehicle buyers were identified based on a within-100-mile match between their vehicle's odometer reading and their estimated number of miles driven while owning their vehicle. It should be noted that NHTS 2017 is weighted to represent its population, not the new-vehicle subset.

For each select demographic or housing characteristic (e.g., age or residential ownership/rental status) a bin was created that captures at least 50% of New York new-vehicle buyers in the 2017 NHTS data (e.g., "40 or more years old," which captures 69% of New York new-vehicle buyers, or "own home," which captures 73%). Corresponding percentages for the participant segment and its compliment were produced for comparison. These not only help contrast the segment from other participants, but also help the reader gauge how close the EV consumer segments are to mainstream consumers.

Two-sample tests for equality of proportions with continuity correction were performed to check for significant differences between the percentages for segment respondents and non-segment participants. Table 3 displays those weighted valid percentages, noting those where differences were significant.

3.2.2.5 Correlation Assessment

Correlation can point to the potential of problematic multicollinearity in logistic regression modeling. Some variables were removed pre-emptively due to high Pearson's *r* values when analyzed with other variables (appendix B). Multicollinearity was further addressed using variance inflation factors (VIF) before finalizing the full models (described below).

3.2.2.6 Missing Data

Only a subset of questions in the survey—primarily questions about household characteristics and demographics—are required to complete the survey, and respondents are given the option to respond with "prefer not to answer." "Prefer not to answer" responses are treated as missing data along with nonresponse to other questions.

Case-wise deletion was applied for missing data, so long as the sum of removed cases was less than 5% of the vehicle category's total sample size. For example, in order to keep total losses to less than 5%, case-wise deletion ended up being applied to variables missing less than 0.8% of their data for the DAC analysis.

Remaining missing responses were imputed using multiple imputation via the mice package for R (van Buuren and Groothuis-Oudshoorn 2011). Twenty data sets with 20 iterations were created.

3.2.2.7 Final Data Set Preparation for Logistic Regression

Following variable selection, re-binning, pre-emptive correlation reduction, and multiple imputation, dummy variables were created, and reference categories established for categorical and ordinal variables.

3.2.2.8 Full Model Specification

Full models were fit using all of the remaining selected variables to examine the significance of factors in the presence of a full array of controlling factors. Variance inflation factors were used to identify additional variables that needed to be dropped to reduce concerns about multicollinearity. Final full models were specified once these variables were removed (appendix B).

Each model was also examined for problematic outliers. Outlier cases (standardized residual values greater than three in most imputed data sets) with high leverage (Cook's Distance greater than three or greater than four divided by the sample size) were examined to determine if including cases could lead to changes in the final parsimonious models. Finally, the sole interval-level variable, number of licensed drivers in the household, was assessed for a nonlinear relationship with the logit. No clear evidence of a nonlinear relationship was observed.

3.2.2.9 Parsimonious Model Specification

Following examination of the full models for each vehicle category, each model was reduced to a parsimonious model by the following:

1. Running a backward stepwise selection by Akaike information criterion (AIC) algorithm for each model (stepAIC from the MASS library in R (Ripley 2021)), retaining variables where at least one variable value was retained by the selection algorithm at least once across the 20 imputed data sets.
2. Removing insignificant variables where variables were selected inconsistently across the imputed data sets (i.e., in less than all 20 imputed data sets), one at a time, checking for changes in significance for remaining variables. When removing a variable caused another variable to change from insignificant to significant ($p < 0.1$), the newly significant, inconsistently selected variable was retained.
3. Removing the remaining insignificant variables, one at a time, checking for changes in significance for remaining variables at each step. As in step 3, variables that became significant when another variable was removed were retained.

These selection steps are summarized in in appendix B.

Categorical variables were evaluated for joint significance. Variables with significant values where the variable as a whole is not jointly significant are not displayed as significant in the logistic regression results.

The final parsimonious models are summarized in Table 4 in section 4.

3.2.2.10 Dominance Analysis Ranking

Once each parsimonious model was finalized, a dominance analysis was performed to rank order factors (Azen and Traxel 2009; Soares 2020). Average contributions were computed for each of the imputed data sets, and the average contributions were averaged across imputed data sets, then rank ordered. The dominance analysis results are displayed in Table 5 in section 4.2.

3.2.2.11 Further Exploration of High-Ranking Factors

Select factors highly ranked by the dominance analysis were further explored by examining the response distributions of segment participants specifically in each relevant vehicle category along those high-ranking dimensions. This combines the benefits of (1) having the logistic regressions pick the *significant* predictors and express them in terms that increase the odds of being a segment participant relative to non-segment participants, (2) having the dominance analysis *prioritize* the significant predictors, but (3) returning to an absolute picture of what segment participants looked like along those high-ranked, prioritized dimensions to give a sense of what to target.

Further details on all of the above topics are provided in the task reports (B. D. H. Williams and Anderson 2021b; 2021c; 2021d).

3.2.2.12 Segment Overlap and Progression

Finally, the relationship between the strategic segments was explored. The overlap between segments was quantified (Table 6 in section 4.2). Progression was assessed building on the demographic and housing-characteristic metrics in Table 3 by evaluating the percentage-point differences in the metrics between each of the segments and new-vehicle buyers.

4 Results and Discussion

Results from the various project tasks are presented sequenced into a roadmap that provides a series of consumer-segment steppingstones that point the way, demographically and otherwise, toward mainstream EV adoption and beyond. First, results are presented that characterize the "starting-point," the population of all past participants (section 4.1). This includes results from both the survey summary document (4.1.1) and the latent class analysis (4.1.2). Next, results from the three analyses of strategic segments of predetermined interest are presented as an integrated, sequenced series (section 4.2), *Rebate Essentials*, *EV Converts*, and DAC participants.

4.1 All Participants: Reinforcing What Works

4.1.1 Summary of the Responses to the NY DCRP Adoption Survey

The descriptive results in the document summarizing the Drive Clean Rebate Program's Adoption Survey (Cain et al. 2021) characterize the program population that is segmented herein. This population of past program participants (combining segment and non-segment consumers) is the early adopter "starting point" of the path forward for the EV market as a whole on its way toward mainstream consumers and beyond to more fully embrace priority populations. It is by understanding and reinforcing the growth of strategic segments of this population that this research aims to help New York State accelerate the progress of its EV markets down that path.

Understanding the starting point is also valuable in and of itself. As consumers that may be relatively "pre-adapted" (B. D. Williams and Kurani 2006) to EV adoption, and/or have successfully navigated past barriers to adoption, they represent "what is already working" in the EV market. As such, targeting consumers like them may be the most effective near-term strategy for rapidly scaling EV adoption to meet aggressive goals related to increasing the number of vehicles on the road.

To understand the "starting point," as well as to provide context for relative comparisons in discussion of the strategic segments (e.g., if segment participants are found to be "younger," younger than what?), the reader is referred to appendix A-2 and the survey summary document (Cain et al. 2021). Additionally, select findings in the survey summary document are described next.

4.1.1.1 Summary of Differences Between Vehicle Categories

Select observations based on findings in the survey summary document follow to compare and contrast consumers of different vehicle categories. These observations both (1) reinforce the desirability of treating consumers of different vehicle types separately as unique groups and (2) provide context for analysis that does so. (Herein, *Rebate Essentials* and *EV Converts* were broken into vehicle-category groups; sample size was insufficient to do so for DAC participants, but vehicle category was included as an explanatory variable in the DAC logistic-regression model.)

Differences between PHEVs and all BEVs are tested for significance in the survey summary document; differences between Tesla and non-Tesla BEVs are not tested in the document, but the distribution of responses is shown separately for each.

For nearly every survey question tested in the survey summary document, PHEV consumers and BEV consumers differ significantly in their responses. PHEV and BEV consumers significantly differ in their vehicle replacement; replaced-vehicle age and technology type; household vehicle fleet composition and use; initial interest in EVs; previous EV ownership; the importance of a variety of factors in their decision to acquire an EV (fuel cost and overall savings, reducing environmental impact, carpool-lane access, convenience of charging, vehicle performance, vehicle style and comfort, and desire for the newest technology); the importance of factors in making it possible to acquire an EV (State rebate, federal tax credit, Green Pass/toll discounts, manufacturer incentives, electricity rates, free charging away from home); *Rebate Essentiality*; counterfactual behavior in absence of the rebate; awareness of the rebate before visiting a dealership; satisfaction with program promotion, website, dealer familiarity, and rebate amount; the number of EVs seen on their dealer's lot; dealer knowledge of the rebate on their first visit; dealer knowledge of EVs, total cost of ownership, government and other incentives, vehicle performance, environmental benefits, electricity rates, and home and away-from-home charging; consumer charging access at or near home and at or near work; home ownership; residence type; solar at home; household size; age; gender; educational attainment; household income; and racial/ethnic identity.

Testing failed to confirm the differences between PHEV and BEV consumers for only a few factors: the number of licensed drivers in the household, the importance of parking incentives, and the importance of energy independence. (Additional factors were not tested, for example multiple-response questions.)

In some cases, Tesla characteristics (response distributions) fell between those of PHEV and non-Tesla BEV. For example, vehicle replacement was highest for PHEVs (87% of rebated vehicles replace another household car), lowest for non-Tesla BEVs (75%), and in-between for Tesla consumers (81%)—potentially speaking to the less-compromised range or other performance characteristics of Tesla products. The percentage of consumers rating environmental impacts as extremely important to their decision was high overall, but highest for non-Tesla BEV consumers (65%), lowest for PHEV consumers (58%), and in-between for Tesla consumers (63%). Similarly, consumer awareness of the rebate before visiting a dealership was highest among non-Tesla BEV consumers and lowest among PHEV consumers, as was the presence of solar at home (though Tesla consumers more frequently were *considering* installing solar). The extreme importance of carpool-lane access and the Green Pass or similar toll discounts show the reverse trend (more frequently extremely important to PHEV consumers).

In several other aspects, PHEV and non-Tesla BEV consumers were similar, and Tesla consumers unique. For example: Teslas were somewhat more frequently the first electric car purchased/leased by their consumers, Tesla consumers somewhat less frequently own their residence (which is more frequently an apartment), Tesla consumers much more frequently have annual gross household incomes greater than $200,000, and they were considerably more diverse racially/ethnically.

Tesla consumers were also very frequently male (83%), though non-Tesla BEV consumers were too, to a lesser degree (74%). PHEV consumers were somewhat closer to the even split found in the car markets, at least in comparison (66%).

4.1.2 New York Drive Clean Rebate Program Participant Consumer Groups: Latent Classes

In addition to breaking down the starting-point population by vehicle category, further characterization of past adopters was done using latent class analysis. In contrast to strategically determined segmentation (described in section 4.2), latent class analysis produces data-determined groups, or "classes," based on the grouping variables selected. In this case, demographic and housing characteristics were used as grouping variables (section 3.2.1) and six classes resulted. It might be useful to think of these six classes as the types of low-hanging fruit that constitute the whole basket of past EV adopters. Understanding each provides greater insight into how best to tailor targeting of similar consumers and reinforce in a more class-specific way than what is currently done in the market.

Table 2 provides summary metrics for each of the classes produced using the grouping variables (with one exception, solar ownership is not shown in Table 2).

Table 2. Weighted Descriptive Statistics Summary: NY DCRP Participants and Latent Classes

Characteristic	All DCRP (100%)	Class 1 (28%)	Class 2 (20%)	Class 3 (20%)	Class 4 (14%)	Class 5 (10%)	Class 6 (8%)
Selected Solely White	82%	97%	97%	97%	0%	88%	62%
≥ 40 Years Old	76%	93%	64%	85%	66%	83%	35%
≥ Bachelor's Degree	77%	75%	86%	75%	79%	78%	68%
Own Home	89%	~100%	98%	97%	96%	88%	4%
≥ $100k HH Income	67%	60%	86%	78%	75%	32%	46%
Selected Male	72%	69%	77%	71%	77%	58%	74%
Household Size ≤ 3	66%	~100%	43%	39%	38%	~100%	81%
≤ 2 Household Drivers	74%	~100%	100%	0%	69%	~100%	90%
≤ 2 Household Cars	68%	74%	80%	27%	66%	93%	92%

In summary:

1. Class 1 tends to be older, have smaller households, high levels of education and moderate income. The majority of class 1 acquired PHEVs, and the most common vehicle brand acquired was Toyota. Compared to other classes, class 1 has a relatively large number of members in Monroe and Suffolk counties. Class 1 appears to contain many enthusiastic EV adopters, who are highly motivated by environmental factors and less so by practical considerations.
2. Class 2 tends to be in their 30s and 40s, with larger households, high income, and high education levels. A slight majority of class 2 acquired BEVs, and the most acquired vehicle brand was Tesla. Class 2 tends to have relatively high numbers in Suffolk County. Motivationally speaking, this group is rather typical of the adopters more broadly, with high levels of importance placed on factors like reducing environmental impacts, energy independence, the convenience of charging, and vehicle performance, with low levels placed on HOV lane access.
3. Class 3 tends to be in their 50s, have moderate education levels, high income, and large households. A slight majority acquired PHEVs, but the most often acquired vehicle brand was Tesla. A large portion of this class is in Suffolk County. Like class 2, class 3 was fairly average with respect to motivation for EV acquisition, though it did report being *Rebate Essential* (that participants would not have acquired their vehicle without the rebate (B. D. H. Williams and Anderson 2021b)), slightly more often.
4. Class 4, one of the fastest growing classes, tends to be moderate age, high income, with large households and identifying as non-white. The majority acquired BEVs, with Tesla the most acquired brand. A large portion of class 4 is in Nassau County. Class 4 valued incentives and supportive policies relatively more highly than other groups, especially EV-specific electricity rates, parking incentives, Green Pass/EZpass/toll-related discounts, and HOV lane access.

5. Class 5 tends to be older, lower income, moderately educated, and living in single-person households. This group had the highest percentage of members who identify as female. The majority of class 5 acquired PHEVs; Toyota was the most acquired brand. A substantial portion of this class is in Suffolk and Monroe counties. Motivationally, class 5 was fairly average.
6. Class 6, another of the fast-growing classes, is mostly composed of young renters and has a high proportion of members in Queens, Kings, and Albany counties. A large portion of class 6 did not have access to charging at home and values free away-from-home charging relatively highly. The majority of class 6 acquired BEVs, and most commonly Tesla vehicles. This group was slightly less highly motivated by environmental factors and more motivated by practical considerations like cost savings and vehicle performance.

Class comparison indicates that classes tend to rate motivations for adoption and the importance of facilitating incentives and supportive policies similarly, suggesting several marketing messages might be applicable across the groups. Messaging aimed at the practical benefits of EVs may resonate particularly strongly with a fast-growing subset of consumers. Free away-from-home charging may be important to unleashing demand in dense urban areas among renters.

4.2 Segments of Predetermined Interest: *Rebate Essentials, EV Converts*, and DAC Participants

With a greater understanding of the overall population of adopters and what the data say about their constitution and constituent parts, results are presented next for segments of predetermined interest. These segments were selected for their ability, if amplified, to strategically advance adoption in desirable ways—both individually and collectively in terms of progressing EV markets toward the mainstream and beyond. For example, amplification of the *Rebate Essential* segment both would increase program cost-effectiveness (a desirable goal in its own right) and would represent a steppingstone shift in participant demographics closer to those of mainstream car buyers.

4.2.1 Descriptive Comparisons

Building on the survey summary document and Table A-2, the additional metrics provided in Table 3 descriptively characterize each of the strategic segments of predetermined interest.[1] They also illustrate the potential progression of those metrics from the starting point of past EV adopters across segments toward those of the majority of new-vehicle buyers in New York State and beyond.

[1] Table 3 is based on the analytical data sets processed as described for the logistic regressions rather than the more "raw" data used in the survey summary document and latent class analysis.

By and large, each progressive segment more closely resembles new-vehicle buyers than typical EV adopters do. Indeed, some metrics for *EV Converts* in specific vehicle classes go "beyond the mainstream" (B. D. H. Williams and Anderson 2021c), as do most metrics for DAC participants (Table 3).

Further, the asterisks in Table 3 highlight a number of notable differences between a strategic segment (e.g., DAC participants) and its compliment (non-DAC participants). For example, compared to their non-DAC counterparts, DAC participants less frequently: identify solely as white, are greater than 40 years old, have four-year college degrees, own their homes, have household incomes greater than $100,000 per year, etc. Interestingly, not all of these differences will prove to be significant odds-increasing predictors of segment status in the logistic regressions described (section 4.2.2). For example, controlling for other factors, race/ethnicity was not found to be a significant predictor of being a DAC participant (as described next and shown in Table 4).

Table 3. Weighted Descriptive Statistics Summary: Strategic Segment Roadmap

New-Vehicle Buyer Majority Characteristic	All DCRP (100%)	*Rebate Essentials* (51%)	*EV Converts* (31%)	NY New-Vehicle Buyers†	DAC (6%)
Selected Solely White	82%	81%	81%	75%	71%**
≥ 40 Years Old	76%	73%**	73%**	70%	59%**
≥ Bachelor's Degree	77%	77%	73%**	65%	69%**
Own Home	89%	88%**	87%**	75%‡	66%**
≥ $100k HH Income	67%	65%**	62%**	51%‡	50%**
Selected Male	72%	74%**	67%**	51%	71%
Household Size ≤ 3	66%	64%**	63%**	62%‡	69%
≥ 2 Household Drivers	88%	88%	88%	78%‡	77%**
≥ 2 Household Cars	81%	82%**	80%	72%‡	64%**

† New York State responses to the 2017 National Household Travel Survey (NHTS). NHTS is weighted to represent its population, not the new-vehicle subset. New-vehicle buyers were identified by the authors based on a within-100-mile match between odometer and miles driven while owned. This report uses an improved method to identify the within-100-mile threshold compared to individual task reports.

‡ Based on household-level NHTS data in this report.

** $p < 0.05$: two-sample test (with continuity correction) for equality of proportions between segment (e.g., DAC) and non-segment (e.g., non-DAC) participants. Significant differences were tested by vehicle category for *Rebate Essentials* and *EV Converts* and are available in their respective task reports (B. D. H. Williams and Anderson 2021b; 2021c).

4.2.2 Logistic Regression Modeling Results and Discussion

4.2.2.1 Logistic Regression Results

Table 4 displays the odds ratios for the parsimonious versions of the logistic regression model. The odds ratios can be interpreted as the multiplicative change in odds of being a segment participant, holding other variables constant. A value greater than one indicates an increased likelihood of segment status for a given factor, a value less than one indicates a decreased likelihood. Odds-increasing results are shaded green and odds-decreasing results are shaded red. For example, as shown in the Household section of Table 4, renting (rather than owning) one's residence is associated with over 2.1 times greater odds of being a DAC participant, controlling for other variables.

Significant independent variables are marked with asterisks and shading to indicate the level of significance and directionality of the odds ratios. Results significant to a level of $p < 0.05$ are given two asterisks and shaded with a darker color, whereas significance to a level of $p < 0.1$ are indicated by one asterisk and lighter color.

Many values for insignificant variables have been redacted for brevity in Table 4. Where all values of a variable are insignificant, odds ratios are replaced by a line representing the variable as a whole with the label "Not sig." Full results and model comparison statistics using likelihood ratio tests are available in the task reports. These tests reassuringly indicate across tasks both (1) that the full models have explanatory value and (2) that the parsimonious models are not substantially worse than their respective full models despite their parsimony.

Table 4. Odds Ratios for Factors Associated with *Rebate Essential*, *EV Convert*, and DAC Participants

	Rebate Essentials			***EV Converts***			**DAC**
	PHEV	**Tesla**	**Non-Tesla BEV**	**PHEV**	**Tesla**	**Non-Tesla BEV**	**All**
Intercept	0.16**	0.89	0.87	1	0.14**	0.07**	0.04**
Demographic							
Gender							
Female (versus male)	0.72**	-	0.68**	1.32**	1.51**	1.70**	-
Race/ethnicity							
Other non-Latinx, non-Asian selections (individual or multiple), relative to white	-	0.66*	-	-	-	-	-
Age				-	-	-	
40–49 (versus 21–29)	1.62**	-	-	-	-	-	MC
Education							
Bachelor's degree (versus high school or other)	1.68**	-	-	0.65**	-	-	MC
Graduate degree (versus high school or other)	1.69**	-	-	0.55**	-	-	MC
Household income							
$100,000–$199,999 (versus < $100k)	1.03	-	0.67**	-	-	-	0.58**
$200,000–$299,999 (versus < $100k)	0.70**	-	-	-	-	-	0.52**
PHEV, Tesla = $300,000–$399,999, Non-Tesla BEV ≥ $300,000 (versus < $100k)	0.43**	-	0.30**	-	-	-	0.37**
≥ $400,000 (versus < $100k)	0.47**	-	NA	-	-	-	0.15**

Table 4 continued

	Rebate Essentials			*EV Converts*			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Household							
Own or rent residence							
Rent residence (versus own)	1.36*	-	-	-	-	-	2.13**
Residence type							
Attached house (versus detached)	-	-	-	-	PM	-	2.17**
Apartment/condo (versus detached)	-	-	-	-	PM	-	2.24**
Solar							
Solar: Yes (versus no, but considering installing)	-	-	-	-	-	-	-
Yes (versus no plans to install)				0.50**	0.54**	0.41**	-
No, but considering installing (versus no plans to install)				0.76**	0.77	0.77	-
Household size	-	-	-	PM	1.20**	1.26**	RM
Number of licensed drivers in household	-	-	-	-	-	1.32*	-
Replacement status							
Addition to household fleet (versus replacement)	1.56**	-	-	-	-	-	1.34*
First ever car (versus replacement)	-	-	-	-	-	-	2.59**
Number of cars in household							
2 (versus 1)	-	-	1.58**	-	-	-	PM
3 (versus 1)	-	-	1.96**	-	-	0.39**	PM
4 or more (versus 1)	-	-	2.13**	-	-	0.22**	PM
Previous EVs owned	-	-	-	DV Overlap	DV Overlap	DV Overlap	PM
NYC Metro Area							
NYC Metro (versus not)	NC	NC	NC	-	-	-	2.35**

Table 4 continued

	Rebate Essentials			*EV Converts*			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Charging Access							
Access to charging at home							
Yes (versus no, unknown, or not applicable)	-	-	-	-	-	0.41**	-
Access to charging at or near work							
	-	-	-	-	-	-	-
Motivational							
Initial interest in an EV							
Some interest (versus no knowledge or interest)	4.23**	1.86**	4.27**	DV	DV	DV	-
Very interested (versus no knowledge or interest)	2.22**	1.69**	1.81**	DV	DV	DV	-
Importance of saving money overall							
Very important (versus slightly or not at all important)	NC	NC	NC	MC	-	2.20**	-
Extremely important (versus slightly or not at all important)	NC	NC	NC	MC	-	2.28**	-
Importance of saving money on fuel							
Moderately important (versus slightly or not at all important)	-	1.53*	-	PM	PM	PM	PM, C
Very important (versus slightly or not at all important)	-	2.04**	-	PM	PM	PM	PM, C
Extremely important (versus slightly or not at all important)	-	1.79**	-	PM	PM	PM	PM, C
Importance of reducing environmental impact							
Not at all important (versus extremely important)	MC	NA	NA	MC	NA	NA	0.27**
Very important (versus extremely important)	MC	NA	NA	MC	NA	NA	0.75*
Moderately important (versus slightly or not at all important)	MC	0.45**	-	MC	-	-	NA
Very important (versus slightly or not at all important)	MC	0.54**	-	MC	0.49**	1.24	NA
Extremely important (versus slightly or not at all important)	MC	0.44**	-	MC	0.35**	0.49*	NA

Table 4 continued

	Rebate Essentials			EV Converts			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Importance of HOV lane access							
Slightly important (versus not at all important)	1.39**	-	-	-	-	-	MC
Extremely important (versus not at all important)				-	0.44**	-	MC
Importance of energy independence							
PHEV/Tesla/All: Not at all important (versus extremely important)	-	-	-	2.98**	1.35	NA	2.34**
PHEV/Tesla: Slightly important, non-Tesla BEV: Slightly or less important (versus extremely important)	-	-	-	3.68**	2.00**	3.51**	NA
Moderately important (versus extremely important)	-	-	-	3.22**	2.02**	4.86**	-
Very important (versus extremely important)	-	-	-	2.02**	1.54**	2.47**	-
Importance of the convenience of charging							
Slightly important (versus not at all important)	-	-	-	0.48**	NA	NA	NA
Moderately important (versus not at all important)	-	-	-	0.53**	-	-	NA
Very important (versus not at all important)	-	-	-	0.46**	-	-	NA
Extremely important (versus not at all important)	-	-	-	0.44**	-	-	2.70**
Very important (versus extremely important							1.33*
Importance of vehicle performance							
Very important (versus moderately, slightly, or not at all important)	MC	0.71*	-	MC	-	-	-
Extremely important (versus moderately, slightly, or not at all important)	MC	0.65**	-	MC	-	-	-
I*mportance of vehicle styling, comfort and finish*							
Very important (versus slightly or not at all important)	-	MC	-	MC	PM	1.83**	PM
Importance of desire for the newest technology							
Very important (versus not at all [PHEV/non-Tesla BEV]; versus slightly or not at all [Tesla])	-	0.62**	-	0.89	0.62*	0.37**	-
Extremely important (versus not at all [PHEV/non-Tesla BEV]; versus slightly or not at all [Tesla])	-	0.58**	-	0.65**	0.49**	0.23**	-

Table 4 continued

	Rebate Essentials			EV Converts			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Enabling Factors							
Importance of the federal tax credit	DV Overlap	DV Overlap	DV Overlap	-	-	-	-
Importance of manufacturer incentives							
Not applicable (versus not at all important)	DV Overlap	DV Overlap	DV Overlap	1.80**	NA	-	NA
Importance of Green Pass or similar toll/E-ZPass discount							
Moderately important (versus not at all important)	-	1.88**	-	-	1.58*	-	MC
Very important (versus not at all important)	-	3.13**	-	-	-	-	MC
Extremely important (versus not at all important)	-	3.13**	-	-	1.97**	-	MC
Not applicable (versus not at all important)	-	1.66**	-	-	1.58	-	MC
Importance of EV electricity rates							
Moderately important (versus not at all important)	-	-	-	-	1.74**	-	MC
Extremely important (versus not at all important)	1.85**	1.94**	-	-	-	-	MC
Not applicable (versus not at all important)	1.41**	1.58**	-	-	-	-	MC
Importance of free charging away from home							
Slightly important (versus not at all important)				1.37*	-	-	-
Moderately important (versus not at all important)				1.40**	-	-	-
Very important (versus not at all important)	1.22	-	2.08**	1.79**	-	-	-
Extremely important (versus not at all important)	1.63**	-	2.17**	1.46**	-	-	-
Not applicable (versus not at all important)	1.41*	-	NA	-	-	-	-
Importance of parking incentives	-	-	-	-	-	-	MC
Rebate Essential							
Yes (versus no)	DV	DV	DV	1.62**	1.70**	-	-

Table 4 continued

	Rebate Essentials			EV Converts			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Purchase decision absent rebate							
Would have acquired exact electric car without rebate (versus wouldn't have)	NC	NC	NC	0.51**	-	0.43**	PM
Would have acquired a less expensive version of same model (versus wouldn't have)	NC	NC	NC	0.72**	-	0.54**	PM
Consumer awareness of the rebate before first dealership visit							
Not aware (versus aware)	0.46**	0.37**	0.38**	2.53**	2.10**	3.66**	-
Satisfaction with the rebate amount							
Slightly satisfied (versus not at all satisfied)	1.68*	-	-	MC	-	-	-
Moderately satisfied (versus not at all satisfied)	1.57	-	-	MC	-	-	-
Satisfaction with NY DCRP promotion							
Slightly satisfied (versus not at all satisfied)	NC	NC	NC	-	-	2.25*	-
Extremely satisfied (versus not at all satisfied)	NC	NC	NC	-	-	2.85**	-
Dealer Experience							
Number of EVs seen at the dealership	-	NA	-	-	NA	-	NA
Dealer aware of rebate on first visit							
I don't know (versus yes)	0.80*	-	0.59**	-	-	-	-
No (versus yes)	0.75*	-	0.63**	-	1.88**	-	-
Dealer knowledge of total cost of ownership	NC	NC	NC	-	-	-	PM
Dealer knowledge of government financial incentives	NC	NC	NC	-	-	-	PM
Dealer knowledge of environmental benefits	NC	NC	NC	-	-	-	PM

Table 4 continued

	Rebate Essentials			EV Converts			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Dealer knowledge of home charging							
Don't recall or didn't discuss (versus extremely)	-	-	-	-	1.25	-	PM
Moderately knowledgeable (versus extremely)	-	-	-	-	2.17**	-	PM
Very knowledgeable (versus extremely)	0.78*	-	-	-	-	-	PM
Dealer knowledge of charging away from home							
Don't recall or didn't discuss (versus extremely knowledgeable)	NC	NC	NC	-	0.87	PM	PM
Slightly or less knowledgeable (versus extremely knowledgeable)	NC	NC	NC	-	1.42	PM	PM
Moderately knowledgeable (versus extremely knowledgeable)	NC	NC	NC	-	0.76	PM	PM
Very knowledgeable (versus extremely knowledgeable)	NC	NC	NC	-	1.4	PM	PM
Transactional							
Vehicle make							
Chevrolet (versus Toyota)	-	NA		0.62**	NA	NA	PM
Ford (versus Toyota)	-	NA	NA	1.39*	NA	NA	PM
Honda (versus Toyota)	-	NA	NA	1.29*	NA	NA	PM
Nissan (versus Chevrolet)	NA	NA	1.56**	NA	NA	1.77**	PM
Other versus Toyota (PHEV); versus Chevrolet (non-Tesla BEV)	-	NA	1.41**	-	NA	1.66**	PM
Rebated vehicle financing type							
Purchase (versus lease)	NC	NC	NC	NC	NC	NC	1.49**
Vehicle category							
Non-Tesla BEV (versus PHEV)	NA	NA	NA	NA	NA	NA	1.27†
Tesla (versus PHEV)	NA	NA	NA	NA	NA	NA	0.82†

Red coloring indicates significant odds-decreasing factors (OR<1), green indicates significant odds-increasing factors (OR>1).

* = $p < 0.10$; ** = $p < 0.05$.

† Not individually significant, but the variable is jointly significant overall.

Codes indicating variable not included in modeling, due to:

C = Correlation (pre-modeling), DV = Dependent variable, MC = Multicollinearity (VIF), NA = Not applicable, NC = Not considered, PM = Pre-modeling decision.

4.2.3 Summary of Findings of Significance and Notable Non-significance

When controlling for other factors, the logistic regression analysis may not find a given factor significant, even when significant differences have been found to exist in the descriptive statistics of a segment and its compliment (such as those marked as significant in Table 3). These instances tend to be interesting because they highlight the distinction between a difference and an important/distinguishing difference, in terms of helping predict segment membership.

For example, clear differences exist in the distributions of race/ethnicity when comparing DAC and non-DAC participants (appendix A-2). Further, the race/ethnicity metric shown in Table 3 for DAC participants was found to be significantly different than that for non-DAC participants (indicated by the two asterisks). Finally, race/ethnicity differences were found to be significant in similar descriptive analysis of California data. However, Table 4 shows that race/ethnicity was not a significant odds-effecting predictor; it did not help distinguish DAC from non-DAC participants. Indeed, it did not help distinguish any of the segments described in Table 4 from its compliment using the standard statistical threshold of $p < 0.05$. This may be less surprising when considering that other factors in the models may be playing similar explanatory roles that race/ethnicity might otherwise play in their absence. For example, it may be less surprising that race/ethnicity was not found significant when controlling for income, housing, and other related factors affecting EV adoption.

Nevertheless, that race/ethnicity was not found to be a significant distinguishing predictor of any strategic segment remains notable. A finding of non-significance can be notable for a variety of reasons hinted at above. It can be notable on its own merits, particularly when it helps inform an actionable strategy, such as outreach messaging. It can be particularly notable when it is unexpected. Expectations can be set by intuition, experience, hypotheses derived from relevant research literature or other related works, or when multiple analyses of the same factor produce seemingly conflicting results. Several notable findings of non-significance have been highlighted for each strategic segment in their respective task report.

Further, each task report summarizes findings of significance in a variety of ways, including by vehicle category (where modeling was done separately for each category), for factors that were found to be significant across categories, as part of category- or segment-specific profiles, and in the context of the rank ordering provided by the dominance analysis (described in the next section).

Here, we summarize both significance and notable non-significance at a high level through a more integrative lens, grouping observations by variable categories used throughout (e.g., as the sections in Table 4): Demographic, Household, Charging Access, Motivational, Enabling, Dealer Experience, and Transactional.

4.2.3.1 Demographic Factors

Demographic factors primarily helped distinguish PHEV *Rebate Essentials*, for whom all demographic factors modeled were significant.

Otherwise, the significance of demographic factors, controlling for other factors, was sparse. Gender helped distinguish *Rebate Essentials* (increased odds if identifying as male) and *EV Converts* (increased odds if female) and household income helped distinguish *Rebate Essentials* and DAC participants (increasing income decreased the odds for both). Tesla *Rebate Essentials* were the exception: no demographics were significant at the $p < 0.05$ level. Education helped distinguish PHEV *Converts* (with higher attainment decreasing the odds, although 70% of this group still had at least a bachelor's degree, higher than the 64% metric calculated for new-vehicle buyers overall [B. D. H. Williams and Anderson 2021c]).

The most notable non-significance was probably the example given above: the lack of significance of race/ethnicity across models, and in the DAC model in particular. In addition to differences found in the California data described in the DAC task report, New York State DAC adopters were also found to have less frequently selected solely white/Caucasian (Table 3). This makes the lack of significance of race/ethnicity even more notable and highlights the differences between descriptive statistics and methods like regression that control for other factors like income.

4.2.3.2 Household

Household factors distinguished DAC participants the most and *Rebate Essentials* the least.

All household factors that made it into the modeling had odds-increasing levels for DAC participants—for example, the expected characteristics of renting and/or living in multi-unit dwellings, as well as residence in the NYC metro-area counties and if the EV was an addition to the household (in particular, a first-ever car).

The notable exception was that the presence of, absence of, or intentions around installing residential solar power was not a significant predictor. Solar was a significant predictor of *EV Converts* status: the odds of being an *EV Convert* decreased if the consumer had solar and, in some cases, even if the consumer was considering installation. As such, solar appears to be a "pre-converter" to interest in EVs.

For non-Tesla BEV consumers, the odds of being a *Rebate Essential* went up with the number of cars in the household. The odds of being an *EV Convert* went down as the number of cars in the household went up but went up with the number of people in the household (as they did for Tesla *Converts*).

4.2.3.3 Charging Access

Charging access surprisingly was only found significant in one specific circumstance: the odds of being a non-Tesla BEV *Convert* decreased with known access to charging at home.

Charging access at home and work is relatively uniform across segments (appendix A-2). Only DAC participants have somewhat reduced access to charging at home, but still relatively high compared to expectations set by the high percentage of renters and multi-unit dwellers: 80% in DACs versus 90% outside of DACs. Further, more participants outside of DACs must pay for home charging. It is possible this is reflective of the two types of adoption that might be going on in DACs, as discussed in the DAC task report: adoption by distinct DAC consumers and adoption by DAC consumers with some overlap with adoption overall. If DAC adopters, averaged across these two types, are still pretty similar to adopters in general with respect to home charging, and if most participants in general have roughly similar access, this may be evidence indicating that charging does represent a barrier and is keeping most distinct consumers out of the rebated adopter population. If true, this may reinforce the need for two types of supportive measures in DACs in particular (also discussed in the DAC task report): (1) reinforcement and amplification support (the focus of this project across segments, because it is using adopter data) and (2) barrier busting to unlock nonparticipants who are more likely to make the participant population more fully reflect the unique qualities of the segments.

4.2.3.4 Motivational

The importance of financial and practical considerations to the decision to adopt expectedly was significant to *Rebate Essentials* in certain circumstances (e.g., saving money on fuel for Tesla *Rebate Essentials* and carpool-lane access for PHEV *Rebate Essentials*). Notably this significance was not uniform for *Rebate Essentials* and surprisingly, financial and practical motivations were not found to distinguish DAC participants (more on this in the next section on enablers).

Further, the importance of societal motivations to *Rebate Essentials* were either not found significant (energy independence) or found to decrease the odds (environmental impacts, as they did for *EV Converts*), but the importance of environmental impacts was found to distinguish DAC participants (and only DAC participants). The importance of energy independence decreased the odds of being both DAC and *EV Convert* participants. For *EV Converts*, the importance of carpool-lane access and the desire for the newest technology also decreased the odds, making factors like the importance of environmental impacts, energy independence, the desire for new tech, and carpool-lane access likely "pre-converters" to EV interest.

Unlike *EV Converts*, DAC participants were not distinguished by the level of importance given to new technology but were distinguished by a high level of importance given to the convenience of charging.

Additional details are in the task reports.

4.2.3.5 Enabling

The importance of a variety of other financial and practical factors to enabling EV adoption reinforces the picture about *Rebate Essentials* told by the motivational factors. In the case of enablers, *EV Converts* share many of these distinguishing characteristics. For example, Tesla consumers in both segments are distinguished by high importance given to toll-related discounts and at least some importance given to EV electricity rates. And PHEV *Converts* share with PHEV and non-Tesla BEV *Rebate Essentials* the significance of the importance given to free charging away from home.

Surprisingly, this was not a distinguishing factor for DAC participants, nor was any enabler that made it into the modeling (federal tax credit, *Rebate Essentiality*, satisfaction with the rebate amount, etc.).

Further, consumer awareness of the rebate before first visiting a dealership, satisfaction with NY DCRP promotion, and dealer awareness of the rebate on the first visit did not distinguish DAC participants. Put another way, this analysis fails to find evidence for deficiencies in EV/rebate outreach and education in DACs, at least according to those that have already been successful in adopting. However, the data examined do not include those that have not yet adopted, who may or may not be experiencing differences in outreach to DACs versus Non-DACs.

EV Converts were distinguished by the lower level of awareness of the rebate before visiting the dealership (providing evidence that the rebate is a pre-converter to EV interest), whereas *Rebate Essentials* were distinguished by their awareness.

Notably, high satisfaction with the rebate amount only distinguished non-Tesla BEV *Converts*. Combined with characteristic low awareness of the rebate before visiting the dealership, this may indicate the rebate represents a "pleasant surprise" to many of these consumers.

Careful attention must also be paid to interpreting results characterizing rebate amount satisfaction in the context of those who have already successfully adopted (for example, the rebate amount may have been "good enough" for them but still not be for those that have not yet adopted). However, the non-significance of this factor for DACs potentially adds to the interesting picture of non-significance of several other financial/incentive factors—all of which might reasonably have been expected to be differentially important to DACs.

4.2.3.6 Dealer Experience

Although not all candidate dealer experience variables made it into final modeling, for a variety of reasons, few factors related to the dealer experience that did make it in have yet been found significant. Consistent with the (clearer and more uniform) trends in consumer awareness, dealer awareness of the rebate increased the odds of being a non-Tesla *Rebate Essential* but decreased the odds of being a non-Tesla BEV *Convert*.

4.2.3.7 Transactional

Evidence was found that the Chevrolet Bolt, with its long electric range, is doing some of the work pre-converting consumers to EV interest and adoption. This is consistent with analysis in California that long-range Tesla products have somewhat lower frequencies of *Rebate Essentiality*. Nevertheless, a relatively large percentage of *Rebate Essentials* were Bolt consumers, and the majority of Bolt consumers were still *Rebate Essential* (appendix A-2).

Purchasing (versus Leasing) was unfortunately not incorporated into the modeling until the investigation of DACs, where it was indeed found to distinguish DAC from non-DAC participants. It has been discussed in the task report in the context of additional research literature highlighting the importance to lower-income consumers of not just shifting costs from upfront to (possibly already high) monthly costs, but rather reducing both to make EVs accessible.

4.2.4 Dominance Ranking Results and Discussion

Table 5 summarizes the results of the dominance analyses performed on the parsimonious models to determine the relative importance of each included independent variable in the model. Characteristics are rank ordered by the average of average contributions to the model (using Estrella's pseudo-R^2), as indicated in brackets in Table 5. If factors appear in more than one model, they are given a similar color to highlight commonalities across models.

Table 5. Summary of Rank-Ordered Factors that Increase the Odds of Being in a Strategic Segment

PHEV *Rebate Essential*	Tesla *Rebate Essential*	Non-Tesla BEV *RE*	PHEV *Convert*	Tesla *Convert*	Non-Tesla BEV *Convert*	DAC Participant
			"High-ranked" [> 0.01]			
1. Initial interest in an EV is some or very interested (vs. no knowl. or interest) [0.037]	1. Green Pass or similar toll/E-ZPass discounts are more important (vs. not important) [0.04]	1. Consumer aware of the rebate before visiting a dealership (vs. not aware) [0.029]	1. Energy independence is less important (vs. extremely) [0.049]	1. Reducing environmental impact is slightly to not at all important (vs. very or extremely) [0.024]	1. Energy independence is not at all important (vs. extremely important) [0.06]	1. Residence type is attached house or apartment/condo (vs. detached) [0.014]
2. Consumer aware of the rebate before visiting the dealership [0.026]	2. Consumer aware of the rebate before visiting a dealership (vs. not aware) [0.038]	2. Free charging away from home is very or extremely important (vs. not important) [0.027]	2. Consumer not aware of rebate before visiting dealership [0.036]	2. Energy independence is slightly to very important (vs. extremely important) [0.021]	2. Reducing environmental impact is not at all to slightly important (vs. extremely important) [0.043]	2. Rent home (vs. own) [0.012]
3. Age 40–49 (vs. 21–29) [0.014]	3. Special EV electricity rates are extremely important or not applicable (vs. not important) [0.023]	3. Initial interest in an EV is some interest or very interested (vs. no knowledge or no interest) [0.027]	3. Would not have purchased EV without the rebate (vs. would have purchased same or less expensive version) [0.021]	3. Consumer not aware of rebate before visiting dealership [0.016]	3. Consumer not aware of the rebate before visiting the dealership [0.036]	
4. Special EV electricity rates are extremely important or n.a. (vs. not important) [0.0119]	4. Saving money on fuel is more important (vs. not important) [0.012]	4. Lower household income (vs. higher incomes) [0.023]	4. No plans to install solar (vs. plans to install solar or have solar) [0.0175]	4. Dealer is moderately knowledgeable about home charging (vs. extremely knowl.) [0.013]	4. Desire for the newest technology is not at all important (vs. very or extremely important) [0.035]	
5. Free charging away from home is extremely important or n. a. (vs. not at all important) [0.0118]		5. Vehicle make is not Chevrolet (Nissan or other makes) [0.012]	5. *Rebate Essential* [0.0173]	5. Dealer is very knowledgeable about away from home charging (vs. moderately knowl.) [0.011]	5. Saving money overall is very or extremely important (vs. not at all to slightly important) [0.025]	
6. Slightly satisfied with the rebate amount (vs. not at all satisfied) [0.011]		6. Dealer aware of rebate on first visit (vs. not aware or don't know) [0.01]	6. Toyota (vs. Chevrolet) or Honda (vs. Toyota) or Ford (vs. Toyota) [0.013]		6. Would not have purchased absent the rebate (vs. would have purchased same or less expensive version) [0.023]	
					7. No plans to install solar (vs. have solar) [0.021]	
					8. Non-Chevrolet vehicle make (vs. Chevrolet) [0.019]	
					9. Extremely or slightly satisfied with DCRP promotion (vs. not at all satisfied) [0.013]	
					10. Larger households [0.012]	
					11. 1 car in HH (vs. 3 or 4) [0.01]	

Table 5 continued

PHEV *Rebate Essential*	Tesla RE	Non-Tesla BEV RE	PHEV Convert	Tesla Convert	Non-Tesla BEV Convert	DAC
			"Medium-ranked" [> 0.005]			
7. Lower household income (vs. higher income) [0.008]	5 (tied). Race/ethnicity is white/Caucasian, relative to non-Latinx, non-Asian other selections (individ. or multiple) [0.009]	7 (tied). Male (vs. female) [0.006]	7. Convenience of charging is not at all important (vs. more important) [0.009]	6. Special EV electricity rates are moderately important (vs. not at all important) [0.0091]	12. No access to charging at home or unknown or not applicable (vs. access) [0.007]	3. Household income is less than $100,000 (vs. higher income) [0.010]
8. Dealer is extremely knowledgeable about home charging (vs. very knowledgeable) [0.006]	5 (tied). Initial interest in an EV is some or very interested (vs. no knowl. or interest) [0.009]	7 (tied). Number of cars in household - multiple cars (vs. 1 car) [0.006]	8. Desire for the newest technology is not at all important (vs. extremely important) [0.00732]	7. *Rebate Essential* [0.0085]	13. Vehicle styling, finish, comfort is very important (vs. not at all to slightly important) [0.0062]	4. Live in New York City counties (vs. live outside) [0.008]
9. EV is an additional vehicle (vs. replacement) [0.005]	7. Reducing environ. impact is slightly or not important (vs. more important) [0.006]		9. Manufacturer incentives are not applicable (vs. not at all important) [0.00728]	8. Desire for the newest technology is not at all important (vs. very or extremely) [0.008]	14. More licensed drivers in household [0.0056]	5. EV is first-ever or additional vehicle (vs. replaces a vehicle) [0.005]
	8. Access to the latest technology is slightly or not important (vs. very or extremely) [0.005]		10. Highest household education is high school or other (vs. bachelor's or graduate degree) [0.0072]	9. No plans to install solar (vs. have solar) [0.0076]	15. Female (vs. male) [0.005]	
			11. Free charging away from home is important (vs. not at all) [0.005]	11. Larger households [0.007]		
				12. Access to HOV/carpool lanes is not at all important (vs. extremely) [0.006]		
			"Low-ranked" [< 0.005]			
10. Dealer aware of rebate on first visit (vs. not aware or don't know) [0.0048]	9. Vehicle performance is moderately, slightly or not important (vs. very or extremely important) [0.003]		12. Female (vs. male) [0.004]	13. Dealer not aware of the rebate on first visit [0.004]		6. Convenience of charging is extremely important (vs. not at all) or very important (vs. extremely) [0.002]
11. Male (vs. female) [0.0044]				14. Female (vs. male) [0.003]		7. Reducing environmental impact is extremely important (vs. not at all or very) [0.0014]
12. HOV lane access is slightly important (vs. not at all) [0.0038]						8. Energy independence is not at all important (vs. extremely) [0.0013]
13. Bachelor's degree or post-graduate (vs. high school or other) [0.0024]						9. Acquired a non-Tesla BEV (vs. a PHEV) or a PHEV (vs. Tesla) [0.0010]
14. Rent residence (vs. own residence) [0.0022]						10. Purchased vehicle (vs. leased) [0.0009]

4.2.4.1 Common High-Ranking Factors

Consumer awareness of the rebate. As discussed in detail in the task reports, consumer awareness of the rebate before their first visit to the dealership was a common high-ranking factor across all *Rebate Essential* and *EV Convert* models (but did not differentiate DAC from non-DAC participants). Awareness helps distinguish *Rebate Essentials* and lack of awareness distinguishes *EV Converts*, both from non-*Converts* and from *Rebate Essentials* with whom they overlap (see next section).

Low or lack of importance given to energy independence and reducing environmental impacts helps distinguish all *EV Converts* and, as societal motivations for EV adoption, have been discussed as possible pre-converters to EV interest. Although lower ranked, low importance given to environmental impacts helps distinguish Tesla *Rebate Essentials* (perhaps in favor of more practical motivations) and energy independence appears to not have been a priority for the average past DAC participants.

However, giving extreme importance to reducing environmental impacts helped distinguish past DAC participants. Although this factor is lower ranked for DACs and all segments share a relatively high absolute importance given to reducing environmental impacts, DAC participants are the only segment with environmental impacts in the modeling that have yet been found to be distinguished by this concern compared to its compliment.

Giving high importance to free charging away from home helped distinguish PHEV and non-Tesla BEV *Rebate Essentials*, as well as PHEV *Converts* (lower ranked).

Renting one's residence is the second-ranked predictor of DAC status. Although it is ranked last for PHEV *Rebate Essentials*, this commonality with DAC participants provides a faint echo with the connections between PHEV adoption, practical considerations, and DACs found more strongly in California analysis than in New York State, where BEV adoption is relatively more prominent in DACs.

The importance of special electricity rates for charging EVs reinforces the relative practical/financial orientation of PHEV and Tesla *Rebate Essentials* and is faintly echoed as a possible converter for Tesla consumers.

Lower income was the fourth-ranked factor that helped distinguish non-Tesla BEV *Rebate Essentials*, as well as a medium-ranked factor for both PHEV *Rebate Essentials* and, not surprisingly, DAC participants.

No plans to install solar distinguished all *EV Converts* (lower ranked for Tesla consumers) and has been discussed as a possible "pre-converter" to EV interest. **Interestingly, the presence of, absence of, or intentions around installing residential solar power did not help distinguish DAC participants.**

Importance given to the newest technology was identified as a possible pre-converter to EV interest; the lack of its importance defined all *EV Converts* and was highly ranked for non-Tesla BEV *Converts.*

Vehicles with longer electric ranges appear to be doing some work as pre-converters and reducing the essentiality of the rebate, reducing the odds of being a PHEV/non-Tesla BEV *Convert* and non-Tesla BEV *Rebate Essential*, respectively. As discussed above, however, the majority of consumers of even long-electric range vehicles are still *Rebate Essential.*

Echoing consumer awareness, **dealer awareness of the rebate** helped distinguish PHEV and non-Tesla BEV *Rebate Essentials,* whereas lack of dealer awareness was associated with Tesla *Converts*. The latter finding is ranked low and complicated to interpret given the Tesla retail-store model, however.

Larger household size was associated with BEV *Converts* and **larger household vehicle fleets** were associated with non-Tesla BEV *Rebate Essentials*.

On the other hand, **smaller household vehicle fleets** helped distinguish other groups: having one car increased the odds of being a non-Tesla BEV *Convert* and having no cars with the EV as the first-ever household vehicle helped distinguish DAC participants.

Additional, lower-ranked factors were shared across segments, some of which were a part of the discussion of significance versus non-significance in section 4.2.3.

The overlaps between factors that define *Rebate Essentiality, EV Converts* and DAC participants, some of which are high ranked, are discussed next to highlight the overlaps and differences between strategic segments.

4.2.5 The Relationship Between Strategic Segments and Their Progression

Each task report collects pertinent findings—combining both descriptive-statistic and ranked logistic-regression findings and enhancing them with further integration—into a snapshot "profile" of rebated EV adoption in each segment. In contrast to those detailed, segment-specific profiles, this section builds on the discussion of commonalities and differences across segments. It aims to enhance understanding about the relationship between the strategic segments and their progression from enthusiastic early adopters toward the mainstream and beyond.

4.2.5.1 Strategic Segment Overlap

In addition to the factors common across segments discussed as part of the dominance analysis, Table 5 indicates the significance and rank ordering of the interconnectedness between segments. The question that defines *EV Convert* status was found to be significant for all three *Rebate Essential* categories (and highly ranked for PHEV and non-Tesla BEV participants). Specifically, the levels of initial interest found to increase the odds of being *Rebate Essential* were having either "some" initial interest in an EV and/or being very interested. The former level (some interest) falls in the *EV Convert* definition (76% of *EV Converts* and 28% of *Rebate Essentials* versus 23% of the program overall) and the latter falls outside of it. This indicates overlap, but also differences between the two groups. (Several of these are discussed in the task reports.) Similarly, the question defining *Rebate Essentiality* and/or a very similar counterfactual question were significant for all three *EV Convert* categories. Table 6 reinforces this overlap, showing 38% of *Rebate Essentials* are also an *EV Convert*, higher than the overall program percentage (31%), and over 60% of *EV Converts* are also *Rebate Essential* (versus 51% of the program overall).

Table 6. Strategic Segment Overlap

Segment	Percent of row that is:		
	Rebate Essential **[51% of program]**	***EV Convert*** **[31% of program]**	**DAC Participant [6.1% of program]**
Rebate Essential	100%	38%	6.2%
EV Convert	61%	100%	6.4%
DAC Participant	52%	34%	100%

Although there are slightly higher proportions of both *Rebate Essentials* and *EV Converts* among DAC participants, DAC participants are not significantly distinguished by either quality (Table 5). This is consistent with the finding that DAC participants, with a few exceptions like extreme importance placed on reducing environmental impacts and no importance placed on energy independence, were largely not distinguished by their motivations or the importance they place on a variety of financial and other enablers. They typically place high importance on enablers like rebates, but in a way that is largely consistent with other participants. As discussed elsewhere, future "barrier busting" (e.g., to address charging challenges in multi-unit dwellings) may unlock a greater portion of more distinct DAC and other participants.

4.2.5.2 Strategic Segment Progression

With very few exceptions, the descriptive statistics in Table 3 illustrate the progression in demographic and household characteristics that occurs as the focus shifts from all rebated EV adopters to *Rebate Essentials*, to *EV Converts*, to all new-car buyers, and beyond to Disadvantaged Communities. Of the 36 instances of progression from left to right in Table 3, only the following five instances are exceptions to this overall trend (and two of those are modest):

1. DAC educational attainment is somewhat higher than the metric for new-car buyers but lower than that for *EV Converts*.
2. *Rebate Essential* gender identification is modestly more frequently male than all DCRP participants.
3. DAC-participant gender identification is more frequently male than both *EV Converts* and new-vehicle buyers.
4. DAC-participant household size is more frequently smaller than any other group.
5. *Rebate Essential* household vehicle fleet size is trivially more frequently larger than all DCRP participants.

How big of a progression does each segment represent? Building on Table 3, Table 7 provides a rough indication: Consider the seven-percentage-point difference between the All DCRP race/ethnicity metric [82%] and that for NY New-Vehicle Buyers [75%]. Adding up these differences for all nine metrics, 99 total percentage-point differences exist between all rebated adopters and new-vehicle buyers (the mainstream baseline). This is not to say all percentage-point differences are created equal or can be compared across demographic or household characteristics, or that all of the characteristics important to EV adoption are represented in Table 3. Rather, it is a rough illustration of the "distance to travel" toward mainstream adoption, assuming that it is desirable for EV markets to resemble new-car markets on select dimensions as the State strives for 100% EV penetration. *Rebate Essentials*, even as historically constituted through 2019, reduce that 99 total-percentage-point "distance to travel" by six percentage

points, traveling 6% of the way there, while maximizing program cost-effectiveness. *EV Converts* have already taken 18 more percentage-point steps down the road, covering a total of 24% of the journey, while shifting the focus to those who were not already enthusiastic about EVs when they started their car search. And DAC participants help us make concrete a vision of more equitable access to EVs, one that gets us three total percentage points *past* mainstream markets.

Table 7. Percentage-Point Differences from the New-Vehicle Baseline

New-Vehicle Buyer Majority Characteristic	All DCRP	*Rebate Essentials*	*EV Converts*	NY New-Vehicle Buyers†	DAC Participants
Household Size ≤ 3	+4%	+2%	+1%	0%	+7%
≥ 40 Years Old	+6%	+3%	+3%	0%	-11%
Selected Solely White	+7%	+6%	+6%	0%	-4%
≥ 2 Household Cars	+9%	+10%	+8%	0%	-8%
≥ 2 Household Drivers	+10%	+10%	+10%	0%	-1%
≥ Bachelor's Degree	+12%	+12%	+8%	0%	+4%
Own Home	+14%	+13%	+12%	0%	-9%
≥ $100k HH Income	+16%	+14%	+11%	0%	-1%
Selected Male	+21%	+23%	+16%	0%	+20%
total points:	+95%	+91%	+74%	0%	-10%
progression from step:		-4%	-17%	-74%	-10%
progression from starting point:		-4%	-21%	-95%	-105%

† New York State responses to the 2017 National Household Travel Survey (NHTS). NHTS is weighted to represent its population, not the new-vehicle subset. New-vehicle buyers were identified by the authors based on a within-100-mile match between odometer and miles driven while owned. This report uses an improved method to identify the within-100-mile threshold compared to individual task reports.

Holding aside the gender identification metric—the most persistent and striking difference between EV and new-car metrics—*Rebate Essentials* take us eight steps down a 78-step journey toward the new-car market baseline (10%) and *EV Converts* an additional 11 steps (14%). DAC participants take us 23 steps beyond the baseline, traveling 30% more percentage points than required to simply even the score and bringing us into territory that begins to address decades of structural inequities to expand access to the benefits of EVs.

Moving beyond the aggregated story, Table 7, importantly, also gives an indication of the individual journey for each characteristic, rank ordering the percentage-point differences from smallest to largest down the rows. While income differences are indeed among the most prominent, in comparison to the gender gap, the income "distance" is more modest (75% as much "distance to travel") and a clearer path of progression exists for income through amplification of the strategic segments to mainstream markets and beyond to priority populations. On the other hand, no segment reduces the gender gap to less the 16 percentage points, which is as large as the entire income gap is to start. More broadly, Table 7 helps calibrate our understanding of how different or similar EV consumers are from new-car buyers overall, rank orders characteristics by the rough magnitude of those differences and visualizes how far amplification of adoption that is already in effect might take us compared to more transformative measures that might be required.

5 Summary, Caveats, and Conclusions

5.1 Summary of Outcomes and Results

This project consisted of five segmentation examinations of rebated adopters aimed at supporting a variety of goals, including increased understanding of program participants, identification of strategies to reinforce adoption, and prioritization of ways to amplify participation in ways that support market acceleration, program cost-effectiveness, moving EVs into the mainstream, and increasing equitable access. Task reports were prepared to describe each examination and are listed in appendix C. This final report sequences and integrates them into a roadmap that provides a series of consumer-segment steppingstones that point the way, demographically and otherwise, toward mainstream EV adoption and beyond.

5.1.1 Starting Population: All Rebated EV Adopters

Greater understanding of existing adoption informs strategies to scale what is already working to help meet aggressive State goals for rapid market acceleration and increased numbers of vehicles on the road.

Rebated EV Adopters by Vehicle Category. First, observations about the differences between consumers of different vehicle categories were provided. Select observations based on findings in the survey summary document (Cain et al. 2021) were provided to compare and contrast consumers of different vehicle categories. These observations both 1) reinforce the desirability of treating consumers of different vehicle types separately as unique groups and (2) provide context for analysis that does so. **For nearly every survey question tested in the survey summary document, PHEV consumers and BEV consumers differ significantly in their responses.** Further observations were provided **highlighting the differences between Tesla and non-Tesla BEVs**. Response frequencies were provided that both (1) characterize Tesla consumers as falling between PHEV and non-Tesla BEV consumers on some fronts (e.g., the rate at which they replace household vehicles, perhaps speaking to the uncompromised range of Tesla products that make them more similar to PHEVs) and (2) characterize Tesla consumers as unique on other fronts (e.g., higher income and greater ethnic/racial diversity) where PHEV and non-Tesla BEV consumers share more similarities. Select highlights specific to PHEV, Tesla, and non-Tesla BEV consumers are also provided as introductory context as part of category-specific profiles assembled for the strategic segments in the task reports.

Rebated EV Adopter Clusters/"Classes" (Anderson and Tamerius 2021)**.** Breaking down the program participant population into "classes" with similar demographics and household characteristics informs more tailored strategies to scale and accelerate market transformation. **Three classes that constitute nearly 70% of adoption were identified wherein consumer characteristics tend to be more extreme versions of a typical EV adopter profile:** majority white, older, higher educational attainment, and more frequent home ownership. These three groups can be summarized as the following: class 1 trends toward more moderate household income, smaller household size, a higher frequency of individuals identifying as female, greater prevalence of (Toyota) PHEVs, and higher importance placed on environmental motivations; class 2 toward differences in younger age, larger household size, higher incomes and educational attainment, and a proclivity for Teslas; and class 3 toward larger households, household fleets, and numbers of drivers.

Class 5 (10%) trends older, is more frequently female, has smaller households, and least frequently has household incomes greater than $100,000 per year. Class 6 also has lower income participants and is nearly all younger renters and more ethnically diverse. Unlike DAC participants, class 6 is more motivated by practical considerations and less so by environmental concerns. And, finally, in the most rapidly growing group are the members of class 4 (14%), none of whom identify as solely white, and who more frequently are younger, homeowners, households with higher income and/or living in large households. Class 4 rated incentives relatively highly, and a large portion live in Nassau County.

Despite these relative differences, class comparison indicates that, overall, classes tend to similarly rate motivations for adoption and the importance of facilitating incentives and supportive policies. This suggests that several marketing messages might be applicable across all groups. Messaging aimed at the practical benefits of EVs may resonate particularly strongly with a fast-growing subset of consumers (class 4). Free away-from-home charging may be important to unleashing demand in dense urban areas among renters (class 6).

5.1.2 Pathway of Strategic Segments of Predetermined Interest

Informed by a greater understanding of the starting point, the roadmap embarks along a series of strategic-segment steppingstones. Unlike the data clustering of latent-class analysis, each of the following segments were predetermined based on interest in what each segment represents (e.g., cost-effective targets for public subsidy, movement beyond enthusiastic early adopters, or opportunities to increase equity). Further, when collected together, it was found they represent

a progression in demographic and other characteristics toward mainstream new-car markets and beyond. Examination of each utilized descriptive statistics, logistic regressions, and dominance analysis to characterize the segment and to identify and rank order characteristics statistically associated with a particular segment.

5.1.2.1 "Rebate Essential" Participants: Cost-Effective Targets for Incentives

The first step down the pathway is a segment that focuses attention on the consumers most influenced by the rebate, and away from program free riders. *Rebate Essentials* (B. D. H. Williams and Anderson 2021b) are those consumers that would not have purchased/leased their EV without the rebate (Johnson and Williams 2017; B. D. Williams and Anderson 2018; B. D. Williams and Johnson 2017; 2016). *Rebate Essential* characteristics inform the cost-effective targeting of rebate design, outreach, and other supportive resources at similar consumers who represent "true additions" to the EV market in the State, rather than those who would have bought/leased an EV even without support.

Demographically, differences ascertained from the population of EV adopters as a whole begin to reveal the first step toward mainstream markets and beyond (Table 7): **Descriptively, compared to non-*Rebate Essentials*, *Rebate Essentials* trend relatively younger and lower-income and rent somewhat more frequently** (Table 3)**. PHEV *Rebate Essentials* specifically identify less frequentlyas solely white** (B. D. H. Williams and Anderson 2021b).

Predictively, *Rebate Essentials* are distinguished by having initial interest in EVs at the start of the new-car search and by the presence of consumer and dealer awareness of the rebate before their first dealership visit (Tables 4 and 5). PHEV *Rebate Essentials* are further distinguished by demographics, Tesla Rebate Essentials by practical and financial concerns, rather than environmental or technological, motivations, and non-Tesla BEV *Rebate Essentials* by large household fleets and placing high importanceon free charging away from home (possibly both related to shorter-range BEVs). For those seeking other options to help them target Rebate Essentials and focus on program cost-effectiveness, additional details are available in the discussion about Tables 4 and 5 in this report and in the task report.

Notably, a disproportionate amount of *Rebate Essentials* are also *EV Converts* (Table 6)—particularly those with some initial interest in EVs (76% of *EV Converts* and 28% of *Rebate Essentials* versus 23% of the program overall), rather than those very interested (by definition not *EV Converts*) or having no initial interest (less likely to be *Rebate Essential*). Notably distinguishing *Rebate Essentials* from *EV Converts* are gender (*Rebate Essentials* trend more frequently male, *EV Converts* relatively

more frequently female), education (higher attainment versus lower attainment), household fleet size (larger versus smaller) and consumer and dealer awareness (higher versus lower). *EV Converts* also lack income as a distinguishing factor and give lower importance to motivations that might have pre-converted them to *Rebate Essentiality*, such as saving money and energy independence.

5.1.2.2 "EV Convert" Consumers

The next step, building on the techniques developed to examine *Rebate Essentials*, was characterizationof "*EV Convert"* consumers (B. D. H. Williams and Anderson 2021c). *EV Converts* are consumers thathad no or low initial interest in EVs at the beginning of their new-car search, but whom nevertheless did go on to adopt (B. D. Williams and Johnson 2016; 2017; B. D. H. Williams and Anderson 2021a).As described above, EV Converts overlap with Rebate Essentials somewhat, but demographically even more closely resemble new-car buyers than *Rebate Essentials* do (Table 3). As such, identifyingand prioritizing the characteristics of this market segment informs the targeting and expansion of the margin that exists between current adoption and mainstream car markets.

Descriptively, compared to their non-Convert counterparts, *EV Converts* trend relatively youngerand toward relatively lower educational attainment, income, and home ownership, but relatively more frequently are female and have larger households (Table 3). Like for *Rebate Essentials*, PHEV *EV Converts* specifically identify less frequently as solely white (B. D. H. Williams and Anderson 2021c).

Predictively, when controlling for other factors, *EV Converts* are further distinguished by placing relatively lower importance on energy independence and environmental impacts and less frequently having plans to install solar (all potential pre-converters), as well as having lower consumer and dealer awareness of the rebate before their first dealership visit (Tables 4 and 5). PHEV *Converts* are further distinguished by placing lower importance on the convenience of charging (but higher importance on free charging away from home), Tesla *Converts* by the importance of toll discounts, and non-Tesla BEV Converts by small household fleets, the importance placed on saving money and vehicle styling, as wellas satisfaction with DCRP promotion. For those seeking other options to help them target *EV Converts* and make more actionable a focus on influencing those who are not yet enthusiastic about owning an EV, additional details are available in the discussion on those tables and in the task report.

Notably, a large percentage of *EV Converts* are also *Rebate Essentials*: 61% (versus 51% for the program overall, Table 6). As described above, in contrast to *Rebate Essentials*, *EV Converts* tend to more frequently be female and have lower educational attainment, smaller household fleets, and lower consumer and dealer awareness. And although *EV Converts* have lower household incomes than *Rebate Essentials*, they lack income as a distinguishing factor from non-*EV Converts*, when controlling for other factors.

5.1.2.3 Priority Population: Disadvantaged Community Participants

The final segment in the series, adopters in State-designated Disadvantaged Communities (DACs) (B. D. H. Williams and Anderson 2021d), is examined to help EV commercialization go beyond mainstream new-car markets, demographically and otherwise, to promote equitable access to the benefits of transportation electrification.

Descriptively, DAC participants are similar to their non-DAC counterparts only in terms of their household size and the frequency at which they identify as male. Indeed**, even compared to new-vehicle buyers in New York State, they trend younger and less frequently identify as white, have four-year degrees, own homes, and have two or more cars. The frequency of household incomes over $100,000 per year is comparable to new-vehicle buyers** and considerably lower (50%) than even *EV Converts* (62%) (Table 3). As such, DAC participants represent a step beyond mainstream car markets to even more equitable access (Table 7). The notable exceptions to this include DAC participants' relatively smaller household size, higher educational attainment, and, in particular, more frequent identification as male when compared to new-vehicle buyers (Table 7).

Housing characteristics ranked highly: multi-unit-dwelling residence type was ranked no. 1, residence renting no. 2, and location in a NYC metro county no. 4. Rounding out the higher-ranked factors is a household fleet characteristic—if the rebated EV is the household's first-ever vehicle or an addition to the household rather than a replacement, the odds of being a DAC participant are increased.

Lower-ranked factors included three motivational factors—the odds were increased by giving relatively extreme importance to reducing environmental impacts and high importance to the convenience of charging, along with giving no importance to energy independence—and two transactional characteristics—purchasing rather than leasing the EV and/or acquiring a non-Tesla BEV also increased the odds of being a DAC participant.

The importance of a variety of financial incentives did not help distinguish DACs, which may speak to the consistency of their importance in a given income group (or other cohort defined by a controlling factor).

Among the factors notable for not being significant factors in New York State include race/ethnicity, residential solar, access to charging at or near work, consumer and dealer awareness of the rebate, and consumer satisfaction with DCRP promotion.

That **early DAC adopters share some characteristics of early adopters overall** may speak to the early stage of market evolution in DACs. It is possible DAC consumers that have adopted to date overcame or did not face barriers (e.g., lack of charging access or consumer or dealer awareness) that might otherwise still be holding back a potential body of DAC adopters whose qualities and circumstances might further distinguish DAC from non-DAC adopters in future stages of EV market evolution.

5.1.2.4 Cross-Segment Considerations

Each task report summarizes findings of significance in a variety of ways, including by vehicle category, for factors that were found to be significant across categories, as part of category- or segment-specific profiles, and in the context of the rank ordering. Examining significance and notable non-significance at a higher level through a more integrative lens also provides the following valuable insights.

Demographic Factors

Demographic factors primarily helped distinguish PHEV *Rebate Essentials*, for whom all demographic factors modeled were significant, whereas no demographic factors significantly distinguished Tesla *Rebate Essentials*. More generally, **the significance of demographic factors, controlling for other factors, was sparse**. For example, household income expectedly helped distinguish *Rebate Essentials* and DAC participants (increasing income decreased the odds for both). Other examples were given in the segment-specific summaries above. **The most notable non-significance was probably the lack of significance of race/ethnicity across models, and in the DAC model in particular.**

Household

Household factors distinguished DAC participants the most (described above), and *Rebate Essentials* the least. The notable exception was that the presence of, absence of, or intentions around installing residential solar power was not a significant predictor of DAC status. The odds of being an *EV Convert* were decreased if the consumer had solar and, in some cases, even if the consumerwas considering installation. As such, **solar appears to be a "pre-converter" to interest in EVs.**

Charging Access

Charging access surprisingly was only found significant in one specific circumstance: the odds of being a non-Tesla BEV Convert decreased with known access to charging at home.

Charging access at home and work is relatively uniform across segments (appendix A-2). **Even DAC-participant access to charging at home is relatively high** compared to expectations set by the high percentage of renters and multi-unit dwellers: 80% in DACs versus 90% outside of DACs. It is possible this is reflective of the **two types of adoption** that might be going on in DACs: **adoption by distinct DAC consumers** and **adoption by DAC consumers with some overlap with adoption overall. Barrier busting** may be needed to unlock nonparticipants who make the participant population more fully reflect the unique qualities of the segments.

Motivational

Notably, the significance of financial and practical considerations was not uniform for *Rebate Essentials* and, surprisingly, financial and practical motivations were not found to distinguish DAC participants.

If anything, giving even higher importance to societal motivations decreased the odds of being *Rebate Essential* (who seem relatively more focused on practical considerations) or an *EV Convert* (who would have been pre-converted if they gave higher importance). But giving high importance to environmental impacts was found to distinguish DAC participants. The importance of energy independence decreased the odds of being both DAC and *EV Convert* participants. **Factors like the importance of environmental impacts, energy independence, the desire for new tech, andcarpool-lane access are likely "pre-converters" to EV interest**.

Enabling

In the case of enablers, *EV Converts* and *Rebate Essentials* share many distinguishing characteristics. For example, Tesla consumers in both segments are distinguished by high importance given to toll-related discounts and at least some importance given to EV electricity rates. And PHEV *Converts* share with PHEV and non-Tesla BEV *Rebate Essentials* the significance of the importance given to free charging away from home.

No enabler that made it into the modeling of DAC participants was found to be a distinguisher (federal tax credit, *Rebate Essentiality*, satisfaction with the rebate amount, etc.). Further, this analysis fails to find evidence for deficiencies in EV/rebate outreach and education in DACs, at least according to those that have already been successful in adopting.

Combined with low awareness of the rebate before visiting the dealership, high satisfaction with the rebate amount **may indicate the rebate represents a "pleasant surprise" to a typical non-Tesla BEV *Convert*.** However, it should be noted that the rebate amount may have been "good enough" for adopters in the data set but still not so for those that have not yet adopted.

Dealer Experience

Few factors related to the dealer experience included in the model were found significant.

Transactional

Evidence has been found that vehicles with long electric range are doing some of the work of the rebate and of pre-converting consumers to EV interest and adoption. This is consistent with analysisin California. Nevertheless, a relatively large percentage of *Rebate Essentials* were Bolt consumers, and the majority of Bolt consumers were still *Rebate Essential* (appendix A-2).

Purchasing (versus leasing) **was found to distinguish DAC from non-DAC participants**. This has been discussed in the context of additional research literature highlighting the importance to lower-income consumers of reducing both upfront and monthly costs to make EVs accessible.

5.2 Caveats and Next Steps

Although touched on throughout the report, it should be noted more generally that this work is centered on consumers who overcame barriers to adoption, purchased or leased an EV, and participated in the DCRP. Extrapolating these findings beyond program participants should be done with caution. Additional research would be required to understand consumers who might have a high proclivity to adopt an EV and/or who might otherwise be highly influenced by the incentive, but who have not overcome other barriers to acquiring an EV.

Even within the focus of the research, the range of topics explored is limited by (1) sample size, particularly for DAC participants, which effects the number of independent variables that can be effectively explored and (2) the availability of data characterizing any given topic of interest. Although the DCRP Adoption Survey is an extremely rich source of options, additional topics can of course be of interest and relevance. One example that proved significant in related work in California was the association found between segments and vehicle price. Data characterizing the manufacturer's suggested retail price (MSRP) of rebated vehicles was not readily available for this analysis but could be generated for follow-on analysis. Vehicle price information may be particularly relevant in the context of equity and incentive design features—such as the DCRP's rebate amount based on MSRP or other program's MSRP-based rebate eligibility (aka "MSRP caps"). These features cost-effectively support the volume production of affordable new EVs—and, subsequently, affordable used EVs. It might also be interesting to further compare and contrast DAC participants with *EV Converts, Rebate Essentials,* and other segments on this and other dimensions.

From a more technical modeling perspective, additional analysis could be conducted to further examine the relationship between factors that had to be removed due to correlation (modeling "Stage 0" in appendix B) or multicollinearity (Stage 1). Further, additional modeling could be conducted using moderator variables or a variable that combines a variety of incentive-related factors (e.g., importance of parking incentives, Green Pass/EZPass/toll-related incentives, and EV-specific electricity rates) into a single factor.

5.3 Additional Observations and Recommendations

The descriptive characteristics analyzed here—such as those in Tables 2, 3, and 7 and Appendices A-1 and A-2—all help us better understand rebated EV adopters. Table 5, in turn, helps us rank order the most robustly significant factors and tells us where to focus first and most. Cumulatively, these findings inform

the best guess of how to reinforce what is already working, increase program cost-effectiveness, and advance EV markets toward the mainstream, as well as to increase access to clean transportation options to Disadvantaged Communities (lower income communities located in environmental justice areas or within New York State Opportunity Zones).

The results have been provided, discussed, and summarized in a variety of ways in the preceding sections, and in the task reports they were further detailed and collected into summarizing profiles for each strategic segment. Next, they will be collected and distilled into select recommendations for program strategy.

Findings that bear reiterating in the context of program strategy and implementation include the following.

To scale current adoption:

- Although the latent-class analysis clustered past adopters into distinct demographic/ household-characteristic groups, all classes tend to rate motivations for, and enablers of, adoption similarly, suggesting several marketing messages might be applicable across the groups.
    - The plurality of respondents in each segment indicated that the environment was the most important motivation, the State rebate was "extremely important," and saving money on fuel was very important in the decision to acquire an EV.
- However, some tailored messaging may be effective with the two more distinct, fast-growing groups: class 4 (14% of the program: moderately aged, high-income, non-white consumers in large households) and 6 (8% of the program: young renters)
    - Messaging aimed at the practical benefits of EVs may resonate strongly.
    - The perceived importance of other incentives suggest potential for partnering for education and outreach around EV adoption and EV-specific electricity rates and toll discounts.
- Findings help confirm that free or low-cost away-from-home charging may be important to unleashing demand in dense urban areas among renters.
- As the market expands, additional subgroups may emerge. Reevaluating EV adopter market segments over time will allow agencies and other actors supporting market development to recalibrate expectations and strategies.

To increase program cost-effectiveness:

- Analysis of *Rebate Essentiality* does not provide sufficient evidence to limit the number of rebates for which an individual or household is eligible.
- To date, the rebate has been most influential as a tool for bringing people into the EV market when presented to consumers during the pre-dealership-visit information gathering phase, rather than as a sales tool at the dealership. These findings point to an opportunity for increased program cost-effectiveness through outreach about the rebate to potential EV consumers, and in particular to potential consumers of PHEV products.
- However, dealer awareness is also a (lower-ranked) significant predictor for PHEV and non-Tesla BEV consumers, possibly indicating that knowledgeable dealers act as a "backstop" for incentive awareness and either reinforce consumer awareness or use the incentive to convert non-aware consumers into EV adopters.
- The importance of other incentives also emerged as common, highly ranked significant factors. The importance of free charging away from home and special EV electricity rates were important contributors for two vehicle categories each, and the importance of the Green Pass or similar toll/E-ZPass discounts was the top-ranked predictor associated with *Rebate Essentiality* for Tesla consumers. These findings indicate a general opportunity to reinforce market adoption via other incentive programs that would reinforce the influence of the rebate on "true additions" to the market.
- Findings indicate an opportunity to improve program cost-effectiveness by seeking out consumers with lower initial interest in EVs and educating them about the benefits of EV ownership and incentives.

To expand the program further beyond enthusiastic early adopters:

- *EV Converts* appear to value free away-from-home charging (PHEV *Converts*), special electricity rates and toll discounts (Tesla *Converts*), or saving money overall and vehicle styling/comfort (non-Tesla BEV *Converts*).
- Expanding EV markets more toward mainstream consumer characteristics can have some trade-offs with program cost-effectiveness in some cases, represented by the overlap and differences between *Rebate Essentials* and *EV Converts.*
- The close ties typically assumed between solar adoption and EV adoption are weakened by the finding that *EV Converts*, across vehicle categories, relatively less frequently have plans to install solar at their homes. Similarly, their motivations are relatively less frequently environmental or social, and they are relatively more frequently female.
- In addition to targeting potential *EV Converts* with tailored strategies and messaging, another appropriate strategy is to increase pre-conversion:
    - Broad strategies include, for example, education campaigns that increase awareness of environmental, energy-independence, and solar-energy issues that might become pre-converting motivations.
    - More program-proximate opportunities to pre-convert consumers might include increasing access to, or awareness of, home charging, continuing availability of compelling rebates, and increasing awareness of rebates.

- Evidence was found that rebates help convert consumers with low initial interest in EVs to higher interest.
    - Even though *EV Converts* may or may not have known about the rebate before their first visit to a dealer, and even though the dealer may be playing an important role in converting consumers to EV adoption (see next), the rebate may be a necessary element in that process.
- Although it might be more cost-effective to increase rebate awareness before consumers get to the dealership, dealers may have an important role—to act as a "backstop" for incentive awareness and either reinforce consumer awareness or use the incentive to convert non-aware consumers into EV adopters. This capacity should be supported.
- Relatedly, there is a tension between (1) targeting cost-effective *Rebate Essential* characteristics and/or those shared by the majority of "typical" past EV consumers that may be easy to encourage (e.g., through motivations based on societal factors, such as the importance of energy independence or reducing environmental impacts) and (2) aiming slightly off target (but not too far away), in order to encourage adoption by those that are not yet "pre-converted" nor quite as dependent on the rebate.

To reinforce participation by Disadvantaged Communities:

- The average characteristics shared by new-car buyers as a whole—who tend to have somewhat higher incomes to start with, for example—should moderate any expectations of extreme diversification in EV markets. Further insight into these topics could result from follow-on research to better understand the characteristics of New York State new-car buyers in general, to characterize the baseline pool of consumers from which a new-car rebate draws.
- DAC participants have thus far placed extreme importance on reducing environmental impacts and the convenience of charging and low importance on energy independence. Outreach and other messaging could reflect this to reinforce similar adoption.
- Although DACs exist throughout the State, rebated DAC adoption to date appears to be associated somewhat with residence in a New York City metropolitan area county. Concentrating efforts to reinforce DAC adoption in NYC counties may have some efficiencies and other advantages in the near term, albeit advantages that must be balanced with geographic equity and other considerations.
- The odds of being a DAC participant were found to increase with EV purchasing, rather than leasing. Qualifying for credit and other factors can make it difficult to access leasing options. Other research highlights the relative importance to lower-income consumers of purchase-price reductions that reduce both upfront and monthly costs, not reduce upfront costs by raising (potentially already high) monthly costs (Pierce, Mcomber, and Deshazo 2020). On the other hand, leasing, if accompanied by the leasing company claiming the federal tax credit directly (where a lower-income consumer may not have sufficient tax liability) and building that into favorable leasing terms—can lead to attractive lease rates. To accelerate adoption of EVs in DACs, it is likely both upfront-cost incentives and financing support will be needed. However, evidence from this analysis of the Drive Clean Rebate Project indicates that the picture of EV purchasing is somewhat more straightforward than that of leasing for DAC participants.

- Controlling for factors like income, DAC participants did not appear distinct in what has enabled them to adopt an EV to date. No evidence was found that they gave greater (or lesser) importance to financial incentives, suffered from disproportionate lack of charging access, or had lower EV awareness compared to non-DAC adopters.
    - However, this is not to say that, for example, DAC participants do not place high importance on rebates and other financial considerations. It is to say that the way they do so, controlling for income and other factors, is consistent with non-DAC consumers—and therefore not distinguishing.
    - Similarly, DAC adoption can undoubtedly be accelerated by increased awareness through targeted outreach strategies, increased access to charging, and other activities that break down barriers to adoption that is not yet happening. But no evidence has yet been found that the level of overall awareness and access to charging differed between DAC and non-DAC participants through 2019.
- Over time as the market develops, things may change. Similarly, charging access is likely to become an increasingly important, possibly disproportionate, constraint on widespread adoption in DACs, due to the high incidence of renters and multi-unit dwellers.
- These findings, and their limitations, highlight the need for a two-pronged approach to research and programs in support of adoption among priority populations:
    - Current adoption must be better understood in order to inform tailored strategies for expanding that adoption in ways that "meet DAC adoption where it is" and is most likely to happen. Doing so will increase the effectiveness of supporting DAC adoption and likelihood of expansion, particularly in the near and medium term.
    - Simultaneously, "barrier busting" research and programs must also find the most effective ways to unlocking latent demand facing DAC-specific hurdles. Doing so will likely free different kinds of consumers to enter the market, transforming DAC adoption. This will increase the equity and, ultimately, scale of DAC adoption, particularly in the medium term and beyond.

More broadly, this project as a whole has strived to develop insight to inform a multipronged approach to supporting EV adoption in New York State. This report has focused on presenting the individual prongs explored in the task reports sequenced and framed into the form of a roadmap that progresses from where EV markets are today and toward where they need to be. Commonalities, overlap across segments, and progressions have been discussed (e.g., both *Rebate Essentials* and DAC participants are distinguished by relatively lower household incomes; the optimal place for action is between *Rebate Essentials* and *EV Converts* where consumers have some initial interest in EVs, rather than little-to-none or a lot of interest; and most demographics have a path of progression, but some roads to travel are longer and the gender gap is the more persistent). And strategies that can address participants across multiple categories and classes are of course desirable and have been sought.

However, the integration should not be overstated at the cost of overshadowing tailored insights into the individual parts. Trade-offs also exist between the overlapping-but-distinct goals of market multiplication, cost-effectiveness, mainstreaming, and equity explored here. Even the spectrum that connects them changes from a focus on facility at one end to a discussion of divergence and difficult challenges at the other. Accepting that one policy cannot effectively address them all is important. Being as explicit as possible about which goal or goals a given strategy or action is meant to address allows tailored lessons to inform its design and effective implementation. Indeed, clarifying the distinctiveness of related initiatives can be critical to ensuring their individual and collective success. To these ends, if the set menu is too much to digest at once, the individual task reports and the segments they dive into represent à la carte items to pick and choose from depending on a stakeholder's priorities and appetites.

On balance, it is hoped that this multipronged but integrated analysis will help inform a multipronged approach to market support—a group of strategies (working in concert where possible) to reinforce and amplify EV adoption on multiple fronts, each uniquely valuable but collectively progressive. Although complex and ambitious, such efforts are likely needed to achieve the scale and quality of EV commercialization that will provide widespread and equitable access to the benefits of transformative transportation electrification in New York State.

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Appendix A: Data and Inputs

Table A-1. Independent Variable Data Summary: All Participants and By Vehicle Category

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
Demographic								
Q31 Gender		5,306		3,227		1,287		792
Female	28%	1,511	34%	1,085	17%	216	26%	209
Male	72%	3,795	66%	2,141	83%	1,071	74%	582
Q34 Race and Ethnicity		5,132		3,136		1,222		774
Black or African American	2%	113	2%	58	3%	40	2%	15
East Asian	5%	274	4%	124	10%	121	4%	30
Latino/a or Hispanic	5%	249	4%	133	7%	87	4%	29
Middle Eastern	1%	28	≈0%	10	1%	12	1%	5
Native American or Alaska Native	1%	37	1%	29	≈0%	1	1%	7
Native Hawaiian or Pacific Islander	≈0%	7	≈0%	3	≈0%	4	≈0%	1
South Asian	4%	182	3%	81	7%	83	2%	17
White or Caucasian	81%	4,169	85%	2,659	70%	853	85%	657
Other	1%	72	1%	41	2%	20	1%	11
Q30 Age		5,343		3,253		1,294		796
16–20	≈0%	14	≈0%	10	≈0%	2	≈0%	3
21–29	6%	301	5%	168	7%	92	5%	42
30–39	18%	980	15%	497	23%	301	23%	182
40–49	20%	1,094	18%	596	26%	338	20%	160
50–59	25%	1,337	26%	850	23%	297	24%	189
60–69	19%	1,033	21%	697	14%	178	20%	158
70–79	10%	514	12%	382	6%	75	7%	57
80+	1%	69	2%	52	1%	12	1%	5
Q32 Education		5,338		3,252		1,291		794
High school graduate or less	5%	259	5%	178	4%	45	4%	35
Some college, no degree	11%	593	12%	403	8%	104	11%	86
Associate degree	7%	354	7%	243	5%	59	7%	52
Bachelor's degree	32%	1,715	30%	967	38%	487	33%	261
Graduate degree	45%	2,418	45%	1,462	46%	596	45%	360

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
Q33 Income		4,452		2,704		1,050		698
Less than $25,000	1%	52	1%	36	≈0%	5	1%	10
$25,000 to $49,999	5%	243	6%	175	2%	18	7%	49
$50,000 to $74,999	12%	520	14%	373	5%	49	14%	99
$75,000 to $99,999	14%	642	17%	456	8%	86	14%	100
$100,000 to $149,999	25%	1,112	27%	729	19%	197	26%	185
$150,000 to $199,999	16%	722	16%	441	16%	168	16%	113
$200,000 to $299,999	14%	618	12%	328	20%	205	12%	85
$300,000 to $399,999	5%	202	3%	83	9%	92	4%	27
$400,000 or more	8%	340	3%	82	22%	229	4%	30
Household								
Q25 Homeownership		5,275		3,204		1,279		793
Own	89%	4,698	90%	2,888	86%	1,105	89%	705
Rent	11%	577	10%	316	14%	174	11%	87
Q26 Residence Type		5,385		3,273		1,305		807
Detached house (single-family home)	81%	4,386	84%	2,748	74%	963	84%	676
Attached house (e.g., townhome, duplex, triplex)	7%	402	7%	229	9%	112	8%	61
Apartment/condominium	10%	547	8%	265	17%	220	8%	62
Other, please specify	1%	50	1%	31	1%	10	1%	9
Q27 Solar		5,448		3,313		1,323		811
Yes, I have solar panels installed.	16%	884	15%	481	17%	223	22%	180
No, and I have no plans to install them.	45%	2,478	49%	1,618	41%	536	40%	323
No, but I am considering installing them.	38%	2,087	37%	1,214	43%	564	38%	308
Q28 Household Size		5,423		3,296		1,319		808
1	9%	492	9%	312	8%	102	10%	77
2	38%	2,065	41%	1,344	31%	405	39%	317
3	18%	996	18%	605	18%	235	19%	156
4	22%	1,214	21%	680	28%	366	21%	168
5	8%	453	7%	245	11%	144	8%	65
6	3%	136	2%	70	4%	51	2%	14
7	1%	36	1%	20	1%	10	1%	7
8	≈0%	17	≈0%	13	≈0%	4	0%	0
9 or more	≈0%	14	≈0%	7	≈0%	3	1%	4

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
Q29 Licensed Drivers per HH		5,401		3,279		1,318		805
1	12%	666	13%	422	11%	143	13%	101
2	62%	3,354	61%	2,015	62%	823	64%	516
3	16%	880	16%	532	16%	216	16%	132
4	7%	368	7%	226	8%	108	4%	34
5	2%	112	2%	69	2%	25	2%	18
6	≈0%	18	≈0%	13	≈0%	2	≈0%	2
7	≈0%	1	≈0%	1	0%	0	0%	0
8	0%	0	0%	0	0%	0	0%	0
9 or more	≈0%	3	≈0%	1	≈0%	1	≈0%	1
Q3 Replacement Status		5,454		3,317		1,327		811
It replaces (or will replace) another household car.	84%	4,556	87%	2,878	81%	1,070	75%	608
It adds to the other cars in my household's fleet.	13%	732	11%	368	14%	183	22%	181
It is my household's first-ever car.	1%	70	1%	22	3%	37	1%	11
My household has had cars in the past, but did not have one when we purchased/ leased this electric car.	2%	96	1%	50	3%	36	1%	11
Q5 Cars in Household		5,457		3,320		1,328		809
1	19%	1,052	19%	643	22%	294	14%	116
2	49%	2,666	50%	1,653	43%	577	54%	436
3	21%	1,140	20%	675	22%	293	21%	172
4 or more	11%	598	11%	349	12%	164	11%	85
Charging Access								
Q22a At your home		5,442		3,311		1,323		807
Yes, and I can charge for free	25%	1,385	26%	871	21%	284	28%	230
Yes, but I must pay to charge	65%	3,525	65%	2,143	65%	859	65%	523
No	9%	470	8%	255	13%	167	6%	48
I don't know	1%	40	1%	31	1%	7	≈0%	2
Not applicable	≈0%	22	≈0%	11	≈0%	6	1%	5
Q22c At your workplace		5,375		3,277		1,299		799
Yes, and I can charge for free	16%	883	16%	539	15%	191	19%	152
Yes, but I must pay to charge	8%	404	6%	212	9%	121	9%	71
No	53%	2,833	53%	1,722	54%	704	51%	407
I don't know	3%	181	4%	119	4%	46	2%	15
Not applicable	20%	1,075	21%	684	18%	236	19%	154

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
Q22d Near your workplace		5,341		3,251		1,295		795
Yes, and I can charge for free	11%	570	9%	277	12%	154	17%	139
Yes, but I must pay to charge	20%	1,044	12%	404	35%	455	23%	186
No	34%	1,816	38%	1,243	27%	344	29%	229
I don't know	16%	836	19%	624	10%	124	11%	89
Not applicable	20%	1,074	22%	704	17%	218	19%	152
Motivational								
Q7 Initial interest		5,465		3,325		1,328		811
I did not know electric cars existed.	≈0%	11	≈0%	5	≈0%	1	1%	5
I knew electric cars existed, but had no interest in one.	8%	415	9%	297	4%	48	8%	69
I had some interest in an electric car.	23%	1,284	27%	907	17%	223	19%	155
I was very interested in an electric car.	69%	3,756	64%	2,117	80%	1,057	72%	583
Q9a Saving money on fuel costs		5,451		3,312		1,330		809
Not at all important	2%	96	1%	37	3%	44	2%	15
Slightly important	7%	395	6%	184	11%	147	8%	64
Moderately important	20%	1,074	17%	554	25%	333	23%	187
Very important	28%	1,502	28%	936	26%	351	27%	215
Extremely important	44%	2,385	48%	1,601	34%	455	41%	328
Q9b Saving money overall		5,447		3,308		1,328		811
Not at all important	4%	203	2%	69	8%	108	3%	26
Slightly important	9%	484	7%	227	13%	179	10%	78
Moderately important	22%	1,189	19%	625	27%	363	25%	202
Very important	26%	1,426	28%	933	22%	295	24%	198
Extremely important	39%	2,144	44%	1,454	29%	384	38%	306
Q9c Reducing environmental impacts		5,445		3,308		1,327		809
Not at all important	2%	117	2%	78	2%	27	1%	12
Slightly important	5%	252	5%	162	4%	50	5%	39
Moderately important	12%	655	13%	443	10%	128	10%	85
Very important	21%	1,126	21%	697	21%	282	18%	148
Extremely important	61%	3,295	58%	1,928	63%	840	65%	526
Q9d Carpool or High Occupancy Vehicle (HOV)		5,444		3,309		1,325		811
Not at all important	47%	2,533	46%	1,530	41%	543	57%	460
Slightly important	15%	835	14%	463	18%	238	17%	135
Moderately important	15%	832	14%	473	18%	241	15%	118
Very important	8%	453	8%	277	10%	131	6%	45

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
Extremely important	15%	791	17%	566	13%	172	7%	53
Q9e Increased energy independence		5,443		3,308		1,328		807
Not at all important	5%	279	5%	171	5%	64	5%	44
Slightly important	7%	396	7%	231	7%	97	8%	68
Moderately important	20%	1,073	21%	679	19%	251	18%	142
Very important	28%	1,499	28%	926	27%	356	27%	217
Extremely important	40%	2,196	39%	1,301	42%	559	42%	336
Q9f Convenience of Charging		5,446		3,307		1,330		809
Not at all important	4%	199	4%	145	2%	31	3%	23
Slightly important	7%	382	8%	265	4%	59	7%	58
Moderately important	24%	1,283	26%	861	19%	249	21%	173
Very important	32%	1,765	32%	1,063	31%	414	36%	287
Extremely important	33%	1,817	29%	972	43%	577	33%	268
Q9g Car performance		5,425		3,295		1,327		803
Not at all important	2%	125	3%	96	1%	13	2%	16
Slightly important	6%	303	7%	218	2%	25	7%	60
Moderately important	23%	1,257	27%	874	12%	163	27%	220
Very important	35%	1,876	34%	1,120	34%	455	38%	301
Extremely important	34%	1,863	30%	986	51%	672	26%	205
Q9h Car styling, finish, and comfort		5,426		3,294		1,329		802
Not at all important	3%	152	3%	104	1%	9	5%	39
Slightly important	8%	446	9%	302	3%	44	12%	100
Moderately important	27%	1,442	28%	937	16%	213	36%	292
Very important	35%	1,925	35%	1,153	39%	512	32%	260
Extremely important	27%	1,461	24%	798	42%	552	14%	111
Q9i A desire for the newest technology		5,434		3,302		1,327		805
Not at all important	8%	446	10%	314	3%	34	12%	97
Slightly important	11%	606	13%	431	5%	69	13%	105
Moderately important	26%	1,406	28%	916	18%	245	30%	245
Very important	26%	1,434	26%	867	28%	378	23%	189
Extremely important	28%	1,542	23%	774	45%	600	21%	169
Enabling Factors								
Q12b Federal tax incentives		5,443		3,311		1,323		809
Not at all important	3%	175	4%	117	3%	39	2%	19
Slightly important	5%	268	4%	145	8%	101	3%	22
Moderately important	13%	718	12%	394	17%	229	12%	95
Very important	22%	1,214	22%	736	23%	305	21%	173

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
Extremely important	51%	2,768	51%	1,704	46%	610	56%	454
Not applicable	6%	300	7%	215	3%	40	6%	45
Q12c Green Pass or similar toll/E-ZPass discounts		5,433		3,306		1,323		804
Not at all important	24%	1,306	24%	782	22%	291	29%	233
Slightly important	17%	916	15%	497	20%	260	20%	159
Moderately important	20%	1,074	20%	651	20%	268	19%	156
Very important	13%	726	14%	449	15%	200	9%	76
Extremely important	16%	887	18%	580	15%	204	13%	104
Not applicable	10%	523	10%	347	8%	101	9%	76
Q12d Manufacturer or dealer incentives (e.g., low interest rate, cash back)		5,444		3,315		1,324		805
Not at all important	9%	505	4%	147	23%	299	7%	59
Slightly important	8%	424	6%	195	13%	166	8%	63
Moderately important	17%	923	16%	538	20%	260	16%	125
Very important	23%	1,248	27%	881	14%	191	22%	177
Extremely important	35%	1,930	42%	1,383	16%	217	41%	329
Not applicable	8%	413	5%	170	14%	191	7%	52
Q12e Parking incentives (employer, business, or government)		5,429		3,303		1,324		803
Not at all important	39%	2,093	39%	1,278	37%	495	40%	320
Slightly important	12%	650	12%	401	12%	158	11%	91
Moderately important	13%	697	12%	409	13%	178	14%	110
Very important	9%	467	9%	293	8%	109	8%	65
Extremely important	10%	525	9%	310	11%	142	9%	73
Not applicable	18%	997	19%	613	18%	241	18%	144
Q12f Special electricity rates for charging at home		5,422		3,299		1,322		801
Not at all important	21%	1,162	22%	739	19%	250	22%	174
Slightly important	11%	602	11%	356	11%	147	12%	98
Moderately important	16%	869	15%	497	18%	234	17%	138
Very important	14%	741	13%	432	15%	197	14%	112
Extremely important	18%	991	18%	591	20%	262	17%	139
Not applicable	19%	1,057	21%	685	18%	232	17%	140
Q12g Free Charging Away from Home		5,436		3,304		1,328		805
Not at all important	15%	839	17%	565	14%	183	11%	90
Slightly important	14%	782	14%	479	13%	175	16%	128
Moderately important	21%	1,144	21%	683	21%	281	22%	180
Very important	17%	941	16%	539	19%	246	19%	157

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
Extremely important	24%	1,288	23%	763	24%	323	25%	202
Not applicable	8%	441	8%	276	9%	118	6%	47
Q16 Awareness		5,467		3,328		1,327		811
Yes	55%	3,025	47%	1,577	66%	879	70%	569
No	45%	2,442	53%	1,752	34%	448	30%	242
Q13 Rebate Essentiality (would not have acquired without rebate)		5,458		3,318		1,329		812
Not Rebate Essential	49%	2,692	47%	1,573	60%	797	40%	321
Rebate Essential	51%	2,766	53%	1,744	40%	531	60%	491
Q14 Counterfactual 1 (behavior absent rebate)		5,457		3,319		1,326		812
Yes, I would have purchased/leased this exact electric car anyway	40%	2,163	38%	1,246	50%	662	31%	255
Yes, but I would have purchased/leased a less expensive version of the same model	24%	1,298	24%	804	25%	329	20%	165
No	37%	1,996	38%	1,269	25%	336	48%	391
Q17a Promotion		5,450		3,315		1,327		808
Not at all satisfied	7%	403	8%	255	7%	94	7%	55
Slightly satisfied	9%	508	9%	304	9%	123	10%	81
Moderately satisfied	25%	1,339	24%	789	28%	370	22%	181
Very satisfied	21%	1,159	21%	686	22%	292	22%	181
Extremely satisfied	23%	1,275	24%	792	20%	266	27%	216
Not applicable	14%	766	15%	489	14%	183	12%	94
Q17d Amount of Rebate		5,458		3,321		1,327		810
Not at all satisfied	4%	207	3%	103	7%	88	2%	16
Slightly satisfied	11%	621	9%	308	18%	235	10%	77
Moderately satisfied	33%	1,777	31%	1,034	37%	485	32%	258
Very satisfied	28%	1,511	29%	963	22%	293	31%	254
Extremely satisfied	21%	1,135	23%	777	14%	184	22%	175
Not applicable	4%	208	4%	136	3%	42	4%	29
Dealer Experience								
Q18 EVs at Dealer		5,447		3,310		1,327		810
None; electric cars had to be ordered	11%	623	4%	138	32%	429	7%	57
1–2	31%	1,670	34%	1,120	14%	180	46%	369
3–5	28%	1,508	30%	988	20%	268	31%	253
6–10	15%	792	17%	576	9%	124	11%	92
11–20	8%	411	8%	281	8%	107	3%	22

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
More than 20	8%	442	6%	208	16%	218	2%	16
Q19 Dealer Awareness		5,458		3,319		1,328		811
Yes	79%	4,300	78%	2,590	81%	1,071	79%	639
No	8%	446	9%	288	6%	78	10%	80
I don't know	13%	711	13%	441	13%	178	11%	92
Q20b Total cost of ownership		5,452		3,318		1,325		809
Not at all knowledgeable	3%	159	3%	104	1%	9	6%	47
Slightly knowledgeable	9%	476	10%	317	3%	44	14%	115
Moderately knowledgeable	23%	1,234	26%	855	12%	154	28%	225
Very knowledgeable	27%	1,460	27%	889	29%	382	23%	189
Extremely knowledgeable	27%	1,475	21%	711	47%	618	18%	146
I don't recall	2%	130	3%	95	1%	18	2%	17
Did not discuss	9%	517	10%	346	8%	100	9%	70
Q20c Government financial incentives		5,458		3,324		1,323		811
Not at all knowledgeable	3%	170	4%	126	1%	9	4%	34
Slightly knowledgeable	8%	462	10%	321	3%	41	12%	101
Moderately knowledgeable	19%	1,032	20%	678	11%	151	25%	204
Very knowledgeable	28%	1,552	29%	979	25%	333	30%	240
Extremely knowledgeable	35%	1,891	29%	979	53%	705	25%	207
I don't recall	2%	126	3%	103	1%	18	1%	5
Did not discuss	4%	224	4%	138	5%	66	3%	21
Q20f Environmental benefits of electric cars		5,452		3,319		1,325		808
Not at all knowledgeable	3%	164	3%	111	≈0%	4	6%	50
Slightly knowledgeable	9%	467	10%	330	1%	19	15%	118
Moderately knowledgeable	19%	1,013	21%	709	9%	124	22%	180
Very knowledgeable	24%	1,288	24%	800	24%	313	22%	175
Extremely knowledgeable	28%	1,546	21%	695	53%	708	18%	143
I don't recall	2%	113	2%	77	2%	26	1%	10
Did not discuss	16%	862	18%	598	10%	131	16%	132
Q20h Home charging (outlet/equipment options, installation costs, etc.)		5,446		3,316		1,322		808
Not at all knowledgeable	9%	474	10%	330	2%	30	14%	115
Slightly knowledgeable	14%	780	16%	521	6%	81	22%	178
Moderately knowledgeable	19%	1,034	20%	666	15%	202	21%	166
Very knowledgeable	20%	1,078	18%	612	26%	341	15%	125
Extremely knowledgeable	21%	1,165	17%	559	38%	508	12%	99

Table A-1 continued

	All		PHEV		Tesla		Non-Tesla BEV	
	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #	Wghtd %	Wghtd #
I don't recall	2%	129	3%	101	1%	16	1%	11
Did not discuss	14%	786	16%	527	11%	144	14%	115
Q20i Away-from-home charging (workplace, public)		5,438		3,306		1,322		810
Not at all knowledgeable	10%	542	12%	408	2%	29	13%	105
Slightly knowledgeable	15%	837	18%	593	5%	63	22%	181
Moderately knowledgeable	19%	1,056	20%	671	15%	201	23%	184
Very knowledgeable	15%	824	11%	380	24%	321	15%	124
Extremely knowledgeable	19%	1,008	11%	365	42%	561	10%	83
I don't recall	3%	162	4%	129	2%	23	1%	10
Did not discuss	19%	1,009	23%	761	10%	126	15%	122
Transactional								
Vehicle Make		5,474		3,332		1,330		812
Chevrolet	13%	726	12%	404	0%	0	40%	322
Ford	8%	434	13%	428	0%	0	1%	6
Honda	9%	518	16%	518	0%	0	0%	0
Nissan	3%	167	0%	0	0%	0	21%	167
Tesla	24%	1,330	0%	0	100%	1,330	0%	0
Toyota	25%	1,364	41%	1,364	0%	0	0%	0
Other Makes	17%	934	19%	617	0%	0	40%	323
Purchase versus Lease		5,474		3,332		1,330		812
Lease	41%	2253	46%	1,542	16%	218	61%	493
Purchase	59%	3221	54%	1,790	84%	1,112	39%	319

Table A-2. Independent Variable Data Summary: All Participants, By Segment, and for New-Vehicle Buyers

Note: Columns presenting task 3–5 results used the analytical data sets processed in preparation for the multiple imputation in those tasks.

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS*	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New-Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	51%	49%	31%	69%	N/A	6.1%	94%
Demographic														
Gender	*5,306*	*1,461*	*1,077*	*1,065*	*743*	*508*	*451*	*2,547*	*2,488*	*1,592*	*3,466*		*306*	*4,619*
Female	28%	31%	23%	29%	23%	42%	26%	26%	30%	33%	26%	49%	29%	28%
Male	72%	69%	77%	71%	77%	58%	74%	74%	70%	67%	74%	51%	71%	72%
Racial/Ethnic Identity (select all that apply)	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
Black or African American	2%	1%	0%	0%	7%	1%	7%	2%	2%	3%	2%		5%	2%
East Asian	5%	0%	0%	0%	28%	2%	8%	6%	4%	5%	5%		8%	5%
Latino/Hispanic	5%	0%	2%	2%	17%	3%	12%	5%	5%	5%	5%		8%	4%
Middle Eastern	1%	0%	0%	0%	2%	0%	1%	1%	0%	1%	0%		1%	1%
Native American or Alaska Native	1%	1%	0%	1%	1%	1%	2%	1%	1%	1%	1%		1%	1%
Native Hawaiian or Pacific Islander	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%		0%	0%
Other	1%	1%	0%	0%	4%	3%	2%	1%	1%	1%	1%		3%	1%
South Asian	3%	0%	0%	0%	20%	2%	3%	4%	3%	3%	3%		3%	3%
White or Caucasian	76%	88%	100%	94%	1%	81%	62%	75%	78%	75%	77%		67%	77%
Racial/Ethnic Identity (collapsed into a single selection)	*4,954*	*1,356*	*1,089*	*1,022*	*594*	*479*	*413*	*2,357*	*2,350*	*1,482*	*3,242*		*284*	*4,321*
Black or African American	2%	0%	0%	0%	8%	1%	5%	1%	2%	2%	1%	6%	4%	2%
East Asian	5%	0%	0%	0%	35%	2%	8%	6%	4%	5%	5%	9%	9%	5%
South Asian	3%	0%	0%	0%	24%	1%	4%	4%	3%	3%	3%		2%	3%
Native American or Alaska Native	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	~0%	0%	0%
Native Hawaiian or Pacific Islander	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
White or Caucasian	82%	97%	97%	97%	0%	88%	62%	81%	83%	81%	82%	75%	71%	82%
Latino/Hispanic	3%	0%	0%	0%	21%	1%	10%	4%	4%	4%	3%	Surveys	7%	3%
Middle Eastern	0%	0%	0%	0%	2%	0%	1%	0%	0%	0%	0%	not	0%	0%
Other individual race/ethnicity	1%	1%	0%	0%	5%	3%	2%	1%	1%	1%	1%	directly	2%	1%
Multiple selections	3%	1%	3%	3%	4%	3%	7%	3%	3%	3%	3%	compara	4%	3%
Age	*5,343*	*1,467*	*1,081*	*1,073*	*762*	*503*	*456*	*2,566*	*2,500*	*1,597*	*3,496*		*307*	*4,646*
16–20	0%	0%	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
21–29	6%	3%	1%	9%	6%	4%	21%	6%	5%	7%	5%	10%	11%	5%
30–39	18%	5%	35%	6%	28%	12%	42%	20%	17%	20%	18%	20%	30%	18%
40–49	20%	0%	47%	16%	35%	13%	16%	23%	19%	22%	20%	28%	22%	21%
50–59	25%	23%	16%	47%	23%	22%	9%	25%	25%	25%	25%	18%	12%	26%
60–69	19%	41%	1%	18%	7%	29%	6%	17%	21%	17%	20%	17%	15%	19%
70–79	10%	26%	0%	3%	1%	15%	4%	7%	12%	8%	10%	6%	9%	9%
80+	1%	3%	0%	0%	0%	5%	1%	1%	2%	1%	2%	1%	1%	1%
Education	*5,338*	*1,478*	*1,080*	*1,064*	*759*	*508*	*449*	*2,564*	*2,495*	*1,592*	*3,494*		*301*	*4,645*
High school or less	5%	5%	2%	7%	5%	4%	7%	5%	5%	7%	4%	14%	9%	5%
Some college	11%	12%	7%	12%	12%	10%	16%	11%	10%	12%	10%	21%	11%	11%
Associate degree	7%	8%	5%	7%	5%	8%	9%	7%	7%	9%	6%		12%	6%
Bachelor's degree	32%	27%	36%	34%	31%	34%	33%	33%	32%	33%	32%	28%	30%	33%
Graduate degree	45%	47%	49%	41%	48%	43%	35%	44%	47%	40%	48%	36%	39%	46%

Table A-2 continued

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	103%	100%	31%	69%	N/A	6%	94%
Income	*4,452*	*1,148*	*953*	*908*	*604*	*424*	*416*	*2,170*	*2,063*	*1,341*	*2,902*		*267*	*3,867*
Less than $25,000	1%	1%	0%	0%	1%	2%	5%	1%	1%	2%	1%	5%	3%	1%
$25,000–$49,999	5%	5%	0%	4%	2%	16%	15%	6%	5%	8%	4%	11%	12%	5%
$50,000–$74,999	12%	14%	4%	7%	9%	28%	20%	12%	12%	12%	11%	19%	21%	11%
$75,000–$99,999	14%	20%	9%	11%	12%	22%	15%	16%	14%	16%	14%	14%	14%	15%
$100,000–$149,999	25%	25%	27%	26%	25%	22%	19%	26%	23%	26%	24%	28%	26%	25%
$150,000–$199,999	16%	13%	21%	21%	19%	7%	10%	17%	16%	16%	16%	9%	9%	17%
$200,000–$299,999	14%	10%	22%	17%	18%	1%	7%	14%	14%	11%	15%		11%	14%
$300,000–$399,999	5%	4%	6%	6%	5%	0%	3%	4%	5%	3%	5%	14%	2%	5%
$400,000 or more	8%	7%	10%	8%	8%	2%	7%	5%	11%	5%	9%		2%	8%
Household														
Own or rent Residence	*5,275*	*1,474*	*1,078*	*1,020*	*753*	*505*	*445*	*2,542*	*2,461*	*1,563*	*3,466*	*r arranger*	*302*	*4,591*
Own	89%	100%	98%	97%	96%	88%	4%	88%	90%	87%	90%	75%	66%	90%
Rent	11%	0%	2%	3%	4%	12%	96%	12%	10%	13%	10%	25%	34%	10%
Residence type	*5,385*	*1,491*	*1,088*	*1,075*	*770*	*511*	*450*	*2,587*	*2,525*	*1,608*	*3,525*		*306*	*4,691*
Apartment/condo	10%	4%	5%	2%	4%	17%	68%	10%	10%	10%	10%		28%	9%
Attached house	7%	6%	6%	2%	10%	10%	23%	8%	8%	9%	7%		17%	7%
Detached house	81%	90%	90%	95%	84%	73%	5%	82%	81%	80%	82%		52%	83%
Other, please specify	1%	1%	0%	1%	1%	1%	4%	1%	1%	1%	1%		3%	1%
Solar	*5,448*	*1,505*	*1,089*	*1,083*	*789*	*524*	*457*	*2,627*	*2,554*	*1,634*	*3,571*		*312*	*4,760*
No plans	45%	49%	34%	38%	35%	57%	82%	45%	45%	55%	41%		53%	45%
No, but considering installing	38%	32%	50%	43%	46%	30%	16%	39%	38%	35%	40%		35%	39%
Yes	16%	19%	16%	19%	19%	13%	2%	15%	17%	10%	19%		12%	17%
Houshold size	*5,423*	*1,508*	*1,087*	*1,086*	*787*	*495*	*459*	*2,611*	*2,540*	*1,627*	*3,551*		*310*	*4,730*
1	9%	1%	0%	0%	0%	81%	17%	8%	9%	9%	9%	13%	12%	9%
2	38%	96%	18%	0%	15%	15%	47%	35%	41%	34%	40%	31%	37%	38%
3	18%	3%	25%	38%	23%	4%	17%	20%	17%	20%	18%	19%	20%	19%
4	22%	0%	42%	35%	41%	0%	11%	23%	21%	24%	22%	27%	18%	23%
5	8%	0%	11%	18%	14%	0%	6%	9%	8%	9%	8%	7%	7%	8%
6	3%	0%	3%	6%	5%	0%	0%	2%	3%	3%	2%	1%	3%	3%
7	1%	0%	0%	1%	1%	0%	0%	1%	0%	1%	0%	2%	3%	1%
8	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9 or more	0%	0%	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	1%	0%
Number of licensed drivers in household	*5,401*	*1,507*	*1,085*	*1,086*	*780*	*483*	*459*	*2,594*	*2,535*	*1,618*	*3,540*		*307*	*4,710*
1	12%	0%	1%	0%	3%	100%	31%	12%	12%	12%	12%	22%	23%	12%
2	62%	100%	99%	0%	65%	0%	59%	62%	63%	60%	64%	54%	59%	63%
3	16%	0%	0%	64%	18%	0%	8%	17%	15%	16%	16%	15%	11%	17%
4	7%	0%	0%	26%	10%	0%	1%	7%	7%	9%	6%	8%	4%	7%
5	2%	0%	0%	9%	2%	0%	0%	2%	2%	3%	2%	1%	0%	2%
6	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
9 or more	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table A-2 continued

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	103%	100%	31%	69%	N/A	6%	94%
Number of cars in household	*5,457*	*1,508*	*1,086*	*1,085*	*788*	*534*	*457*	*2,627*	*2,554*	*1,636*	*3,574*		*311*	*4,750*
1	19%	9%	12%	6%	13%	68%	56%	18%	21%	20%	19%	28%	36%	18%
2	49%	65%	67%	21%	53%	25%	36%	51%	47%	47%	49%	41%	45%	49%
3	21%	20%	16%	40%	23%	4%	7%	21%	22%	22%	21%	20%	14%	22%
4 or more	11%	6%	5%	33%	11%	3%	1%	11%	11%	11%	11%	11%	6%	11%
Replacement status	*5,454*	*1,505*	*1,085*	*1,084*	*788*	*534*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
Replacement	84%	90%	83%	82%	78%	86%	75%	81%	86%	83%	84%		73%	84%
Addition to HH fleet	13%	9%	15%	18%	19%	10%	9%	16%	11%	14%	13%		16%	13%
First ever car	1%	0%	1%	0%	1%	2%	9%	1%	1%	1%	1%		7%	1%
Owned a car in past, but not when acquired EV	2%	1%	1%	0%	2%	2%	7%	2%	2%	2%	2%		5%	2%
NYC metro	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
Other counties	88%	95%	89%	94%	80%	89%	59%	87%	88%	87%	88%		68%	89%
NYC metro county	12%	5%	11%	6%	20%	11%	41%	13%	12%	13%	12%		32%	11%
Charging Access														
Access to charging at home	*5,442*	*1,500*	*1,085*	*1,083*	*785*	*533*	*456*	*2,627*	*2,554*	*1,629*	*3,564*		*312*	*4,760*
I don't know	1%	1%	0%	1%	1%	1%	2%	1%	1%	1%	1%		0%	1%
Not applicable	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%		1%	0%
No	9%	3%	4%	3%	8%	14%	44%	9%	8%	10%	8%		19%	8%
Yes, and I can charge for free	25%	32%	21%	26%	22%	23%	20%	23%	27%	22%	27%		27%	25%
Yes, but I must pay to charge	65%	63%	74%	70%	69%	61%	33%	67%	63%	67%	65%		54%	66%
Access to charging at work	*5,375*	*1,470*	*1,080*	*1,070*	*774*	*525*	*455*	*2,588*	*2,523*	*1,608*	*3,523*		*310*	*4,689*
I don't know	3%	3%	3%	2%	5%	3%	3%	3%	4%	4%	3%		3%	3%
Not applicable	20%	40%	8%	12%	7%	32%	10%	16%	23%	15%	22%		21%	20%
No	53%	40%	59%	60%	61%	46%	58%	56%	50%	58%	51%		48%	53%
Yes, and I can charge for free	16%	12%	22%	18%	17%	15%	18%	17%	15%	16%	17%		17%	16%
Yes, but I must pay to charge	8%	5%	9%	8%	10%	4%	11%	8%	8%	7%	8%		10%	8%
Access to charging near work	*5,341*	*1,458*	*1,077*	*1,065*	*773*	*518*	*450*	*2,579*	*2,502*	*1,602*	*3,495*		*305*	*4,665*
I don't know	16%	15%	17%	18%	17%	15%	11%	15%	16%	20%	13%		12%	16%
Not applicable	20%	41%	8%	12%	6%	31%	10%	17%	23%	16%	21%		21%	20%
No	34%	27%	36%	38%	40%	32%	31%	37%	31%	37%	33%		35%	34%
Yes, and I can charge for free	11%	6%	13%	12%	10%	10%	15%	11%	10%	10%	11%		8%	11%
Yes, but I must pay to charge	20%	10%	25%	20%	26%	11%	33%	20%	19%	17%	21%		23%	20%
Motivational														
Initial knowledge or interest	*5,465*	*1,508*	*1,087*	*1,084*	*789*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
No knowledge	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%		0%	0%
No interest	8%	6%	8%	10%	6%	7%	12%	10%	5%	24%	0%		8%	7%
Some interest	23%	23%	22%	24%	26%	21%	27%	28%	19%	76%	0%		26%	24%
Very interested	69%	72%	70%	66%	68%	72%	60%	62%	76%	0%	100%		66%	69%
Importance of saving on fuel	*5,451*	*1,506*	*1,087*	*1,075*	*790*	*534*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*311*	*4,748*
Not at all important	2%	2%	2%	2%	2%	2%	1%	1%	2%	1%	2%		1%	2%
Slightly important	7%	9%	9%	5%	6%	6%	8%	5%	9%	7%	7%		6%	7%
Moderately important	20%	23%	21%	19%	16%	18%	16%	17%	22%	18%	20%		18%	20%
Very important	28%	28%	28%	29%	25%	30%	24%	29%	26%	31%	26%		25%	28%
Extremely important	44%	38%	41%	46%	51%	44%	50%	47%	40%	42%	45%		51%	44%

Table A-2 continued

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	103%	100%	31%	69%	N/A	6%	94%
Importance of saving overall	*5,447*	*1,503*	*1,089*	*1,076*	*787*	*532*	*459*	*2,621*	*2,546*	*1,634*	*3,561*		*312*	*4,760*
Not at all important	4%	4%	4%	3%	4%	4%	2%	2%	5%	2%	4%		2%	4%
Slightly important	9%	11%	9%	8%	5%	9%	9%	6%	12%	7%	10%		7%	9%
Moderately important	22%	26%	25%	21%	17%	19%	14%	20%	24%	17%	24%		14%	22%
Very important	26%	26%	26%	27%	23%	30%	25%	28%	25%	30%	25%		28%	26%
Extremely important	39%	32%	36%	41%	50%	39%	49%	44%	34%	43%	37%		48%	39%
Importance of reducing environmental impact	*5,445*	*1,500*	*1,085*	*1,079*	*788*	*534*	*459*	*2,627*	*2,554*	*1,632*	*3,562*		*312*	*4,760*
Not at all important	2%	2%	3%	3%	2%	2%	3%	3%	2%	3%	2%		1%	2%
Slightly important	5%	4%	5%	5%	4%	4%	7%	5%	4%	8%	3%		5%	4%
Moderately important	12%	9%	14%	14%	12%	12%	13%	13%	11%	21%	8%		12%	12%
Very important	21%	20%	23%	19%	20%	21%	21%	22%	20%	26%	19%		18%	21%
Extremely important	61%	65%	56%	60%	63%	61%	56%	57%	64%	41%	69%		64%	60%
Importance of access to carpool/HOV lanes	*5,444*	*1,502*	*1,087*	*1,080*	*785*	*532*	*458*	*2,627*	*2,554*	*1,631*	*3,563*		*312*	*4,760*
Not at all important	47%	54%	48%	46%	34%	52%	36%	44%	49%	48%	46%		45%	47%
Slightly important	15%	16%	15%	16%	13%	13%	19%	16%	14%	14%	16%		15%	15%
Moderately important	15%	13%	14%	15%	19%	14%	21%	15%	16%	16%	15%		16%	15%
Very important	8%	7%	8%	7%	11%	9%	11%	9%	8%	8%	8%		11%	8%
Extremely important	15%	10%	15%	16%	23%	13%	13%	16%	13%	14%	15%		12%	14%
Importance of energy independence	*5,443*	*1,502*	*1,086*	*1,078*	*787*	*532*	*458*	*2,627*	*2,554*	*1,629*	*3,565*		*312*	*4,760*
Not at all important	5%	4%	5%	6%	5%	7%	4%	5%	5%	7%	4%		7%	5%
Slightly important	7%	7%	7%	8%	6%	4%	11%	8%	7%	11%	6%		7%	7%
Moderately important	20%	17%	21%	20%	20%	18%	23%	20%	19%	28%	16%		21%	20%
Very important	28%	30%	29%	25%	24%	26%	29%	27%	29%	29%	27%		26%	28%
Extremely important	40%	41%	37%	40%	45%	45%	33%	40%	40%	24%	47%		38%	40%
Importance of convenience of charging	*5,446*	*1,500*	*1,085*	*1,080*	*788*	*534*	*459*	*2,627*	*2,554*	*1,628*	*3,567*		*312*	*4,760*
Not at all important	4%	4%	3%	3%	3%	5%	4%	3%	4%	5%	3%		2%	4%
Slightly important	7%	7%	8%	8%	5%	8%	5%	7%	7%	8%	6%		5%	7%
Moderately important	24%	25%	26%	24%	18%	20%	22%	23%	24%	27%	22%		21%	23%
Very important	32%	35%	33%	31%	31%	33%	29%	33%	32%	32%	33%		38%	32%
Extremely important	33%	28%	30%	33%	43%	35%	40%	34%	33%	28%	36%		34%	33%
Importance of vehicle performance	*5,425*	*1,490*	*1,082*	*1,078*	*784*	*533*	*458*	*2,616*	*2,539*	*1,630*	*3,550*		*309*	*4,746*
Not at all important	2%	2%	3%	2%	3%	2%	2%	3%	2%	2%	2%		2%	2%
Slightly important	6%	6%	7%	6%	4%	3%	5%	6%	5%	6%	6%		6%	6%
Moderately important	23%	23%	27%	25%	19%	23%	18%	24%	22%	24%	23%		21%	23%
Very important	35%	36%	35%	34%	32%	36%	33%	34%	35%	37%	33%		32%	35%
Extremely important	34%	32%	28%	34%	42%	36%	42%	33%	36%	30%	36%		40%	34%
Importance of Vehicle Styling	*5,426*	*1,493*	*1,084*	*1,076*	*781*	*533*	*458*	*2,617*	*2,537*	*1,624*	*3,556*		*312*	*4,745*
Not at all important	3%	4%	3%	2%	2%	4%	2%	3%	3%	3%	3%		2%	3%
Slightly important	8%	9%	9%	8%	7%	9%	5%	8%	8%	8%	8%		11%	8%
Moderately important	27%	27%	29%	28%	24%	29%	18%	27%	26%	26%	27%		23%	27%
Very important	35%	37%	34%	35%	34%	32%	40%	35%	35%	39%	34%		31%	35%
Extremely important	27%	23%	25%	27%	33%	27%	34%	27%	28%	25%	28%		33%	27%

Table A-2 continued

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	103%	100%	31%	69%	N/A	6%	94%
Importance of desire for the newest technology	*5,434*	*1,493*	*1,086*	*1,080*	*783*	*534*	*458*	*2,620*	*2,546*	*1,628*	*3,560*		*312*	*4,760*
Not at all important	8%	10%	8%	9%	5%	9%	6%	9%	8%	11%	7%		8%	8%
Slightly important	11%	13%	11%	13%	8%	11%	7%	12%	11%	12%	11%		12%	11%
Moderately important	26%	26%	28%	26%	22%	29%	21%	26%	25%	30%	23%		25%	26%
Very important	26%	28%	26%	25%	27%	25%	29%	26%	27%	26%	27%		25%	26%
Extremely important	28%	24%	27%	27%	38%	26%	38%	27%	30%	20%	32%		30%	28%
Enabling Factors														
Importance of federal tax credit	*5,443*	*1,503*	*1,087*	*1,075*	*784*	*534*	*459*	*2,622*	*2,535*	*1,630*	*3,567*		*312*	*4,760*
Not applicable	6%	8%	5%	6%	3%	6%	3%	6%	4%	7%	5%		6%	5%
Not at all important	3%	4%	2%	3%	3%	3%	4%	1%	5%	3%	3%		2%	3%
Slightly important	5%	6%	4%	6%	4%	6%	3%	1%	8%	4%	5%		3%	5%
Moderately important	13%	15%	12%	12%	10%	14%	16%	8%	19%	12%	14%		11%	13%
Very important	22%	21%	23%	23%	23%	25%	19%	19%	26%	22%	23%		20%	22%
Extremely important	51%	46%	53%	50%	58%	46%	54%	63%	38%	51%	51%		58%	51%
Importance of Green Pass/toll/EZPass-related discounts	*5,433*	*1,497*	*1,085*	*1,080*	*779*	*532*	*458*	*2,618*	*2,540*	*1,628*	*3,560*		*312*	*4,743*
Not applicable	10%	12%	10%	8%	8%	10%	8%	10%	10%	10%	10%		10%	10%
Not at all important	24%	27%	28%	24%	15%	28%	18%	20%	28%	22%	25%		27%	24%
Slightly important	17%	18%	18%	18%	14%	16%	13%	16%	18%	15%	17%		15%	17%
Moderately important	20%	19%	18%	21%	20%	21%	20%	19%	20%	20%	20%		19%	20%
Very important	13%	12%	13%	14%	14%	12%	18%	15%	12%	14%	13%		14%	13%
Extremely important	16%	12%	13%	15%	28%	12%	23%	20%	12%	18%	16%		15%	16%
Importance of manufacturer incentives	*5,444*	*1,500*	*1,086*	*1,081*	*787*	*532*	*457*	*2,620*	*2,545*	*1,636*	*3,565*		*310*	*4,751*
Not applicable	8%	9%	7%	7%	8%	7%	7%	8%	7%	7%	8%		11%	7%
Not at all important	9%	10%	9%	8%	9%	8%	11%	6%	13%	6%	11%		7%	9%
Slightly important	8%	9%	8%	8%	7%	7%	6%	5%	10%	5%	9%		5%	8%
Moderately important	17%	18%	17%	17%	16%	18%	15%	13%	21%	17%	17%		14%	17%
Very important	23%	23%	25%	23%	21%	24%	21%	22%	24%	24%	23%		21%	23%
Extremely important	35%	32%	34%	37%	39%	36%	40%	46%	25%	41%	33%		41%	35%
Importance of parking incentives	*5,429*	*1,497*	*1,088*	*1,076*	*786*	*528*	*456*	*2,618*	*2,543*	*1,630*	*3,557*		*312*	*4,743*
Not applicable	18%	20%	16%	17%	18%	22%	18%	19%	18%	19%	18%		23%	18%
Not at all important	39%	46%	40%	39%	25%	43%	27%	34%	44%	36%	39%		35%	39%
Slightly important	12%	12%	15%	13%	9%	12%	10%	12%	12%	12%	12%		9%	12%
Moderately important	13%	12%	12%	13%	17%	8%	15%	14%	12%	14%	12%		11%	13%
Very important	9%	6%	9%	8%	12%	7%	12%	9%	8%	9%	8%		10%	9%
Extremely important	10%	4%	8%	9%	19%	7%	18%	13%	6%	10%	10%		11%	10%
Importance of EV-specific electric rates	*5,422*	*1,492*	*1,086*	*1,080*	*785*	*524*	*455*	*2,610*	*2,544*	*1,627*	*3,548*		*311*	*4,730*
Not applicable	19%	22%	19%	21%	14%	21%	16%	20%	19%	19%	19%		19%	19%
Not at all important	21%	25%	22%	21%	12%	26%	19%	18%	25%	18%	23%		19%	21%
Slightly important	11%	12%	12%	12%	7%	11%	11%	10%	12%	10%	11%		12%	11%
Moderately important	16%	15%	17%	16%	18%	13%	19%	15%	17%	19%	15%		15%	16%
Very important	14%	12%	15%	13%	18%	10%	13%	14%	13%	15%	13%		12%	14%
Extremely important	18%	14%	16%	18%	30%	17%	21%	23%	14%	19%	18%		22%	18%

Table A-2 continued

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	103%	100%	31%	69%	N/A	6%	94%
Importance of free charging away from home	*5,436*	*1,499*	*1,085*	*1,078*	*786*	*532*	*457*	*2,620*	*2,541*	*1,630*	*3,562*		*312*	*4,760*
Not applicable	8%	8%	7%	10%	8%	9%	7%	8%	8%	8%	8%		6%	8%
Not at all important	15%	20%	16%	14%	11%	15%	10%	12%	19%	13%	16%		13%	16%
Slightly important	14%	18%	16%	15%	10%	13%	7%	13%	16%	13%	15%		13%	14%
Moderately important	21%	21%	22%	22%	18%	23%	19%	20%	22%	21%	21%		20%	21%
Very important	17%	15%	17%	17%	21%	17%	20%	18%	17%	19%	17%		17%	18%
Extremely important	24%	18%	21%	22%	33%	23%	38%	29%	18%	25%	23%		31%	23%
Consumer Rebate Awareness at First Dealer Visit	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
No	45%	49%	37%	46%	41%	49%	50%	37%	52%	59%	38%		41%	45%
Yes	55%	51%	63%	54%	59%	51%	50%	63%	48%	41%	62%		59%	55%
Rebate Essential	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
Yes	51%	46%	53%	52%	53%	48%	57%	100%	0%	62%	46%		52%	51%
No	49%	54%	47%	48%	47%	52%	43%	0%	100%	38%	54%		48%	49%
Purchase Decision Absent Rebate (1)	*5,457*	*1,505*	*1,088*	*1,083*	*788*	*534*	*459*	*2,624*	*2,551*	*1,636*	*3,574*		*312*	*4,755*
No	37%	34%	41%	38%	33%	33%	41%	68%	4%	47%	32%		39%	36%
Same	40%	44%	37%	38%	41%	41%	33%	8%	72%	30%	44%		38%	40%
Same/less expensive	24%	22%	23%	23%	26%	26%	26%	24%	24%	23%	24%		23%	24%
Satisfaction with DCRP promotion	*5,450*	*1,505*	*1,086*	*1,081*	*786*	*535*	*457*	*2,616*	*2,550*	*1,636*	*3,574*		*312*	*4,760*
Not applicable	14%	18%	12%	14%	9%	17%	14%	10%	17%	15%	13%		13%	14%
Not at all satisfied	7%	8%	7%	6%	8%	8%	7%	6%	9%	6%	8%		6%	8%
Slightly satisfied	9%	9%	10%	9%	8%	11%	11%	9%	10%	9%	9%		10%	9%
Moderately satisfied	25%	24%	28%	25%	24%	22%	21%	24%	25%	23%	25%		22%	24%
Very satisfied	21%	20%	21%	21%	24%	20%	23%	23%	20%	22%	21%		26%	21%
Extremely satisfied	23%	21%	23%	25%	27%	23%	25%	28%	19%	24%	23%		23%	24%
Satisfaction with rebate amount	*5,458*	*1,507*	*1,089*	*1,083*	*788*	*533*	*458*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
Not applicable	4%	4%	3%	3%	3%	4%	5%	2%	6%	4%	4%		4%	4%
Not at all satisfied	4%	3%	4%	3%	7%	2%	4%	3%	5%	3%	4%		3%	4%
Slightly satisfied	11%	9%	12%	9%	16%	11%	14%	11%	11%	12%	11%		17%	11%
Moderately satisfied	33%	32%	33%	33%	34%	33%	29%	33%	32%	32%	33%		29%	33%
Very satisfied	28%	30%	30%	29%	21%	26%	25%	28%	28%	29%	27%		25%	28%
Extremely satisfied	21%	21%	18%	23%	18%	23%	23%	22%	19%	20%	21%		22%	21%
Dealer Experience														
EVs Seen at Dealer	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
None	12%	9%	13%	10%	17%	8%	18%	11%	13%	10%	13%		13%	12%
1–2	31%	33%	28%	30%	29%	34%	28%	31%	29%	32%	29%		30%	30%
3–5	28%	29%	28%	27%	25%	29%	23%	29%	27%	27%	28%		28%	28%
6–10	14%	15%	14%	16%	13%	15%	12%	15%	14%	16%	14%		15%	14%
11–20	8%	8%	7%	7%	6%	9%	10%	7%	8%	8%	7%		8%	8%
More than 20	8%	6%	9%	9%	10%	5%	10%	8%	9%	7%	9%		6%	8%
Dealer Awareness of Rebate	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
I don't know	13%	13%	12%	12%	15%	15%	14%	10%	16%	13%	13%		12%	13%
No	8%	6%	10%	8%	10%	7%	10%	7%	9%	9%	8%		8%	8%
Yes	79%	81%	78%	80%	75%	78%	77%	83%	75%	78%	80%		80%	79%

Table A-2 continued

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	103%	100%	31%	69%	N/A	6%	94%
Dealer total cost of ownership knowledge	*5,452*	*1,503*	*1,087*	*1,084*	*784*	*536*	*459*	*2,623*	*2,548*	*1,636*	*3,574*		*312*	*4,749*
I don't recall	2%	2%	2%	2%	2%	4%	4%	2%	3%	3%	2%		3%	2%
Did not discuss	9%	11%	8%	8%	9%	12%	7%	8%	11%	8%	10%		10%	9%
Not at all knowledgeable	3%	3%	4%	2%	4%	3%	3%	3%	3%	3%	3%		4%	3%
Slightly knowledgeable	9%	8%	10%	9%	8%	9%	7%	9%	7%	10%	8%		8%	8%
Moderately knowledgeable	23%	22%	24%	23%	24%	22%	19%	24%	21%	24%	22%		20%	23%
Very knowledgeable	27%	28%	27%	28%	25%	25%	27%	26%	27%	28%	26%		24%	27%
Extremely knowledgeable	27%	26%	26%	27%	29%	26%	33%	27%	27%	24%	28%		32%	27%
Dealer government incentives knowledge	*5,458*	*1,508*	*1,088*	*1,084*	*785*	*535*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,755*
I don't recall	2%	3%	2%	2%	2%	2%	4%	2%	3%	3%	2%		3%	2%
Did not discuss	4%	4%	3%	4%	5%	5%	4%	3%	6%	4%	4%		6%	4%
Not at all knowledgeable	3%	3%	4%	2%	2%	4%	5%	3%	3%	4%	3%		4%	3%
Slightly knowledgeable	8%	8%	10%	8%	10%	7%	7%	8%	8%	10%	8%		9%	8%
Moderately knowledgeable	19%	18%	21%	19%	20%	17%	17%	20%	18%	21%	18%		17%	19%
Very knowledgeable	28%	30%	27%	30%	26%	30%	26%	29%	29%	28%	29%		24%	29%
Extremely knowledgeable	35%	35%	33%	35%	34%	36%	36%	35%	34%	31%	37%		37%	35%
Dealer EV environmental benefits knowledge	*5,452*	*1,505*	*1,084*	*1,082*	*787*	*536*	*458*	*2,622*	*2,549*	*1,636*	*3,574*		*310*	*4,752*
I don't recall	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%		1%	2%
Did not discuss	16%	18%	13%	15%	13%	23%	13%	15%	17%	15%	16%		19%	15%
Not at all knowledgeable	3%	3%	4%	3%	3%	3%	4%	3%	3%	3%	3%		2%	3%
Slightly knowledgeable	9%	7%	11%	10%	9%	7%	5%	9%	8%	8%	8%		8%	8%
Moderately knowledgeable	19%	18%	20%	18%	19%	18%	17%	20%	18%	21%	17%		19%	18%
Very knowledgeable	24%	23%	23%	26%	24%	23%	24%	24%	24%	27%	22%		19%	24%
Extremely knowledgeable	28%	29%	27%	26%	31%	24%	34%	27%	29%	23%	31%		31%	29%
Dealer home charging knowledge	*5,446*	*1,500*	*1,086*	*1,084*	*784*	*534*	*457*	*2,627*	*2,554*	*1,636*	*3,570*		*312*	*4,749*
I don't recall	2%	3%	2%	2%	1%	3%	4%	2%	3%	3%	2%		4%	2%
Did not discuss	14%	16%	15%	13%	11%	17%	14%	14%	15%	12%	16%		16%	14%
Not at all knowledgeable	9%	8%	11%	8%	9%	9%	8%	10%	8%	9%	9%		5%	9%
Slightly knowledgeable	14%	13%	17%	15%	15%	13%	11%	16%	13%	17%	13%		17%	14%
Moderately knowledgeable	19%	18%	18%	19%	22%	18%	19%	21%	17%	20%	18%		16%	19%
Very knowledgeable	20%	21%	17%	21%	18%	19%	22%	18%	22%	21%	19%		20%	20%
Extremely knowledgeable	21%	21%	20%	21%	25%	20%	22%	20%	22%	18%	23%		21%	22%
Dealer away-from-home charging knowledge	*5,438*	*1,502*	*1,081*	*1,083*	*780*	*534*	*458*	*2,618*	*2,544*	*1,626*	*3,566*		*310*	*4,744*
I don't recall	3%	3%	2%	4%	2%	4%	2%	2%	4%	4%	3%		5%	3%
Did not discuss	19%	22%	19%	18%	13%	24%	13%	18%	19%	17%	19%		20%	18%
Not at all knowledgeable	10%	9%	12%	11%	10%	10%	9%	11%	9%	11%	10%		10%	10%
Slightly knowledgeable	15%	17%	15%	15%	16%	15%	11%	17%	14%	17%	15%		13%	16%
Moderately knowledgeable	19%	20%	20%	21%	18%	17%	20%	20%	18%	22%	18%		15%	20%
Very knowledgeable	15%	14%	14%	14%	17%	16%	20%	14%	16%	16%	15%		18%	15%
Extremely knowledgeable	19%	15%	18%	18%	25%	16%	24%	17%	20%	15%	20%		19%	19%

Table A-2 continued

	DCRP	Task 6 - EV Adopters						Task 3 - Rebate Essentials		Task 4 - EV Converts		NHTS	Task 5 - DAC Participants	
Characteristic	**All**	**1**	**2**	**3**	**4**	**5**	**6**	**Rebate Essential**	**Not Rebate Essential**	**Convert**	**Not a Convert**	**New Car Buyers**	**Inside a DAC**	**Outside a DAC**
Percent of Program:		28%	20%	20%	14%	10%	8%	103%	100%	31%	69%	N/A	6%	94%
Transaction														
Make	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
BMW	5%	4%	6%	6%	6%	3%	3%	4%	5%	6%	4%		1%	5%
Chevrolet	13%	16%	15%	13%	7%	17%	9%	13%	14%	9%	15%		12%	13%
Ford	8%	7%	8%	12%	4%	8%	10%	8%	7%	12%	6%		6%	8%
Honda	9%	9%	10%	9%	10%	9%	10%	12%	7%	13%	8%		9%	9%
Hyundai	3%	3%	3%	3%	3%	3%	3%	4%	2%	3%	3%		4%	3%
Kia	4%	4%	5%	5%	4%	3%	8%	6%	3%	7%	3%		7%	4%
Mitsubishi	2%	2%	3%	3%	2%	2%	1%	2%	2%	3%	2%		2%	2%
Nissan	3%	2%	5%	3%	3%	3%	2%	4%	2%	3%	3%		5%	3%
Other	3%	3%	4%	3%	2%	3%	2%	2%	3%	3%	3%		3%	3%
Tesla	24%	16%	26%	22%	42%	16%	34%	19%	29%	16%	28%		26%	25%
Toyota	25%	36%	16%	23%	17%	32%	16%	25%	25%	26%	24%		25%	25%
Transaction type	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
Purchase	59%	63%	57%	53%	64%	60%	52%	56%	63%	51%	63%		63%	59%
Lease	41%	37%	43%	47%	36%	40%	48%	44%	37%	49%	37%		37%	41%
Vehicle category	*5,474*	*1,512*	*1,089*	*1,086*	*790*	*538*	*459*	*2,627*	*2,554*	*1,636*	*3,574*		*312*	*4,760*
PHEV	61%	70%	57%	64%	46%	69%	50%	63%	59%	71%	56%		55%	60%
Tesla	24%	16%	26%	22%	42%	16%	34%	19%	29%	16%	28%		26%	25%
Non-Tesla BEV	15%	15%	17%	15%	12%	15%	15%	18%	12%	13%	15%		19%	15%

Table A-3. Variables Included in Modeling of Rebate Essentials, EV Converts, and DAC Participants

	Rebate Essentials			*EV Converts*			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Demographic							
Q31 Gender	*In*	*In-NS*	*In*	*In*	*In*	*In*	*In-NS*
Q34 Race and ethnicity	*In-NS*	*In*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*
Q30 Age	*In*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*MC*
Q32 Education	*In*	*In-NS*	*In-NS*	*In*	*In-NS*	*In-NS*	*MC*
Q33 Household income	*In*	*In-NS*	*In*	*In-NS*	*In-NS*	*In-NS*	*In*
Household							
Q25 Own or rent residence	*In*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In*
Q26 Residence type	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*PM*	*In-NS*	*In*
Q27 Solar	*In-NS*	*In-NS*	*In-NS*	*In*	*In*	*In*	*In-NS*
Q28 Household size	*In-NS*	*In-NS*	*In-NS*	*PM*	*In*	*In*	*PM, C*
Q29 Number of licensed drivers in household	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In*	*In-NS*
Q3 Replacement status	*In*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In*
Q5 Number of cars in Household	*In-NS*	*In-NS*	*In*	*In-NS*	*In-NS*	*In*	*PM*
Q8 First EV Purchased	*In-NS*	*In-NS*	*In-NS*	*DV Overlap*	*DV Overlap*	*DV Overlap*	*PM*
NYC metro area	*NC*	*NC*	*NC*	*In-NS*	*In-NS*	*In-NS*	*In*
Charging Access							
Q22a Access to charging at your home	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In*	*In-NS*
Q22c Access to charging at your workplace	*Comb. Q22d*	*Comb. Q22d*	*Comb. Q22d*	*Comb. Q22d*	*Comb. Q22d*	*Comb. Q22d*	*Comb. Q22d*
Q22d Access to charging near your workplace	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*
Motivational							
Q7 Initial interest in an EV	*In*	*In*	*In*	*DV*	*DV*	*DV*	*In-NS*
Q9a Importance of saving money on fuel costs	*In-NS*	*In*	*In-NS*	*PM*	*PM*	*PM*	*PM, C*
Q9b Importance of saving money overall	*NC*	*NC*	*NC*	*MC*	*In-NS*	*In*	*In-NS*
Q9c Importance of reducing environmental impacts	*MC*	*In*	*In-NS*	*MC*	*In*	*In*	*In*
Q9d Importance of carpool or High Occupancy Vehicle (HOV) lane access	*In*	*In-NS*	*In-NS*	*In-NS*	*In*	*In-NS*	*MC*
Q9e Importance of energy independence	*In-NS*	*In-NS*	*In-NS*	*In*	*In*	*In*	*In*
Q9f Importance of the convenience of charging	*In-NS*	*In-NS*	*In-NS*	*In*	*In-NS*	*In-NS*	*In*
Q9g Importance of car performance	*MC*	*In*	*In-NS*	*MC*	*In-NS*	*In-NS*	*In-NS*
Q9h Importance of car styling, finish, and comfort	*In-NS*	*MC*	*In-NS*	*MC*	*PM*	*In*	*PM*
Q9i Importance of desire for the newest technology	*In-NS*	*In*	*In-NS*	*In*	*In*	*In*	*In-NS*

Table A-3 continued

	Rebate Essentials			*EV Converts*			DAC
	PHEV	Tesla	Non-Tesla BEV	PHEV	Tesla	Non-Tesla BEV	All
Enabling Factors							
Q12b Importance of the federal tax credit	*NC*	*NC*	*NC*	*In-NS*	*In-NS*	*In-NS*	*In-NS*
Q12c Importance of Green Pass or similar toll/E-ZPass discounts	*In-NS*	*In*	*In-NS*	*In-NS*	*In*	*In-NS*	*MC*
Q12d Importance of manufacturer or dealer incentives (e.g., low interest rate, cash back)	*NC*	*NC*	*NC*	*In*	*NA*	*In-NS*	*NA*
Q12e Importance of parking incentives (employer, business, or government)	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*In-NS*	*MC*
Q12f Importance of special electricity rates for charging at home	*In*	*In*	*In-NS*	*In-NS*	*In*	*In-NS*	*MC*
Q12g Importance of free charging away from home	*In*	*In-NS*	*In*	*In*	*In-NS*	*In-NS*	*In-NS*
Q13 Rebate Essentiality (would not have acquired without rebate)	*DV*	*DV*	*DV*	*In*	*In*	*In-NS*	*In-NS*
Q14 Purchase decision absent rebate	*NC*	*NC*	*NC*	*In*	*In-NS*	*In*	*PM*
Q16 Consumer awareness of the rebate before first dealership visit	*In*	*In*	*In*	*In*	*In*	*In*	*In-NS*
Q17a Satisfaction with NY DCRP promotion	*NC*	*NC*	*NC*	*In-NS*	*In-NS*	*In*	*In-NS*
Q17d Satisfaction with the rebate amount	*In*	*In-NS*	*In-NS*	*MC*	*In-NS*	*In-NS*	*In-NS*
Dealer Experience							
Q18 Number of EVs seen at the dealership	*In-NS*	*NA*	*In-NS*	*In-NS*	*NA*	*In-NS*	*NA*
Q19 Dealer aware of rebate on first visit	*In*	*In-NS*	*In*	*In-NS*	*In*	*In-NS*	*In-NS*
Q20b Dealer knowledge of total cost of ownership	*NC*	*NC*	*NC*	*In-NS*	*In-NS*	*In-NS*	*PM*
Q20c Dealer knowledge of government financial incentives	*NC*	*NC*	*NC*	*In-NS*	*In-NS*	*In-NS*	*PM*
Q20f Dealer knowledge of environmental benefits of electric cars	*NC*	*NC*	*NC*	*In-NS*	*In-NS*	*In-NS*	*PM*
Q20h Dealer knowledge of home charging (outlet/equipment options, installation costs, etc.)	*In*	*In-NS*	*In-NS*	*In-NS*	*In*	*In-NS*	*PM*
Q20i Dealer knowledge of away-from-home charging (workplace, public)	*NC*	*NC*	*NC*	*In-NS*	*In*	*PM*	*PM*
Transactional							
Vehicle make	*In-NS*	*NA*	*In*	*In*	*NA*	*In*	*PM*
Rebated vehicle financing type (purchase versus Lease)	*NC*	*NC*	*NC*	*NC*	*NC*	*NC*	*In*
Rebated vehicle category (PHEV, Tesla, non-Tesla BEV)	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*In*

C = Correlation (pre-modeling)
Comb. = combined with (another survey question)
DV = Dependent variable
In = Included in the model
In-NS = Included but not found significant
MC = Multicollinearity (VIF)
NA = Not applicable
NC = Not considered
PM = Pre-modeling decision

Appendix B: Modeling and Reduction

Table B-1. Model Reduction

Modeling Stage	1: PHEV Rebate Essentials	2: Tesla Rebate Essentials	3: Non-Tesla BEV Rebate Essentials	4: PHEV Converts	5: Tesla Converts	6: Non-Tesla BEV Converts	7: DAC Participants
Stage 0. Pre-modeling	**Overlap with segment definition:** • Importance of federal tax incentive • Importance of manufacturer incentives	**N.A.:** • Number of EVs seen at the dealership		**Overlap with segment definition:** • First EV **Correlation:** • Importance of saving money on fuel • Household size	**Overlap with segment definition:** First EV **N.A.:** • # of EVs seen at the dealership • Importance of manufact. incent. **Correlation:** • Import. of saving money on fuel • Residence type • Import. of style/fit	**Overlap with segment definition:** • First EV **Correlation:** • Importance of saving money on fuel • Dealer knowledge of away from home charging	**Correlation:** • Importance of saving money on fuel • Household size
Stage 1. Multi-collinearity	a. Importance of vehicle performance b. Importance of environment. impacts	a. Importance of vehicle style, fit, comfort		a. Importance of vehicle style, fit, comfort b. Importance of vehicle performance c. Satisfaction with the rebate amount d. Importance of saving money overall e. Importance of reducing environmental impact			a. Education b. Importance of parking incentives c. Importance of Green Pass/toll/ EZPass discounts d. Importance of access to HOV lanes e. Age f. Importance of EV electric rates
Resulting in the Full Models							

Table B-1 continued

Modeling Stage	1: PHEV Rebate Essentials	2: Tesla Rebate Essentials	3: Non-Tesla BEV Rebate Essentials	4: PHEV Converts	5: Tesla Converts	6: Non-Tesla BEV Converts	7: DAC Participants
Stage 2: Stepwise by AIC	Solar Licensed drivers in household Access to charging at home Energy independ. Vehicle make Access to charging at or near work Household size	Gender Residence type Household size Number of licensed drivers Replacement vehicle First EV Importance of parking incentives Dealer knowledge of incentives Dealer knowledge of home charging Access to charging at home Access to charging at/near work	Race /ethnicity Own/rent residence Residence type Solar Replacement vehicle HOV-lane access Convenience of charging Number of EVs seen at the dealership At or near workplace charging	NYC Metro area Number of EVs seen at the dealership Dealer awareness of DCRP Access to charging at home, Own versus rent residence Vehicle replaced an existing vehicle or was added to the household fleet Number of cars in household	NYC Metro area Importance of the federal tax credit Importance of free charging away from home Purchase/lease decision absent DCRP Satisfaction with DCRP promotion Dealership knowledge of TCO Dealer knowledge of incentives Dealer knowledge of environment. benefits Access to charging at or near work Access to charging at home Own versus rent residence Number of cars in household Import. of vehicle performance	NYC Metro area Importance of free charging away from home Importance of parking incentives Rebate Essential Dealer awareness of DCRP At or near workplace charging Own versus rent residence Residence type Education	Importance of the federal tax credit Importance of free charging away from home Rebate Essentiality Dealer awareness of the rebate Access to charging at home Number of licensed drivers in household Gender Initial interest in an EV Importance of access to the newest technology

Table B-1 continued

Modeling Stage	1: PHEV Rebate Essentials	2: Tesla Rebate Essentials	3: Non-Tesla BEV Rebate Essentials	4: PHEV Converts	5: Tesla Converts	6: Non-Tesla BEV Converts	7: DAC Participants
Stage 3. Inconsistently selected by AIC	a. Race/ ethnicity b. Importance of Green Pass or similar toll discounts c. Number of EVs seen at the dealership d. Residence type e. Importance of access to the newest technology f. Importance of parking incentives g. Dealer knowledge of incentives h. Number of cars in the household i. Importance of the convenience of charging	a. Importance of the convenience of charging b. Highest education achieved in household c. Importance of energy independence d. Own or rent residence e. Satisfaction with the rebate amount f. Age g. Importance of HOV lane access	a. Importance of Green Pass or similar toll discounts b. Importance of environmental impact c. Importance of parking incentives d. Number of licensed drivers in household e. Household size f. Age g. First EV purchased h. Access to charging at home i. Highest household education achieved	a. Import. of access to HOV lanes b. Household income c. Race/ethnicity id. d. Number of licensed drivers in household e. At/near work charging f. Import. of special electricity rates for EVs g. Import. of Green Pass/toll discounts h. Residence type i. Importance of parking incentives j. Dealer knowledge of incentives k. Dealer knowledge of TCO l. Age m. Importance of the federal tax credit n. Dealer knowledge of away from home charging o. Dealer knowledge of home charging p. Satisfaction with DCRP promotion	a. Replacement or additional vehicle to household fleet b. Racial/ethnic identity c. Importance of saving money overall d. Household income e. Number of licensed drivers in household f. Age	a. Household income b. Age c. Importance of the federal tax credit d. Vehicle replaced another vehicle or was an addition to the household fleet e. Dealer knowledge of total cost of ownership f. Importance of special electricity rates for EV charging g. Racial/ethnic identity	a. Saving money overall b. Race/ethnicity c. Satisfaction with DCRP promotion d. Consumer awareness of the rebate before first dealership visit e. Access to charging at or near work f. Satisfaction with the DCRP rebate amount

Table B-1 continued

Modeling Stage	1: PHEV Rebate Essentials	2: Tesla Rebate Essentials	3: Non-Tesla BEV Rebate Essentials	4: PHEV Converts	5: Tesla Converts	6: Non-Tesla BEV Converts	7: DAC Participants
Stage 4. Remaining insignificant variables	a. Importance of vehicle styling b. First EV c. Importance of saving money on fuel	a. Number of cars in household b. Dealer awareness of rebate on first visit c. Importance of free charging away from home d. Household income e. Solar	a. Importance of desire for new technology b. Satisfaction with the rebate amount c. Importance of vehicle performance d. Importance of vehicle styling e. Dealer knowledge of incentives f. Importance of energy independence g. Dealer knowledge of home charging h. Importance of EV electricity rates i. Importance of saving money on fuel	a. Dealer knowledge of environmental benefits	a. Importance of parking incentives b. Importance of the convenience of charging c. Satisfaction with the rebate amount d. Education	a. Importance of Green Pass/toll-related discounts b. Satisfaction with the rebate amount c. Import. of HOV/ carpool-lane access d. Import. of manufact. incentives e. Number of EVs seen at the dealership f. Importance of vehicle performance g. Dealer knowledge of incentives h. Dealer knowledge of environment. benefits i. Dealer knowledge of home charging j. Importance of the convenience of charging	a. Importance of vehicle performance b. Solar on home
Resulting in the Parsimonious Models							

Appendix C: List of Task Reports

C.1 Project Task 2 Report: Survey Summary Document

Cain, N.L., Anderson, J., Williams, B.D.H, Fullenkamp, E. (2021, January). *Summary of the Drive Clean Rebate Program's Consumer Adoption Survey: 2017–2019 Purchases/Leases*, Task 2 Report for NYSERDA Contract 66267, conducted by the Center for Sustainable Energy for the New York State Energy Research and Development Authority.

C.2 Project Task 3 Report: *Rebate Essentials*

Williams, B.D.H., Anderson, J.B. (2021, April). Targeting Electric Vehicle Rebates Cost Effectively: An Exploration of Factors Related to "Rebate Essentiality" Among Participants in the Drive Clean Rebate Program. Task 3 Report for NYSERDA Contract 66267, conducted by the Center for Sustainable Energy for the New York State Energy Research and Development Authority.

C.3 Project Task 4 Report: *EV Converts*

Williams, B.D.H., Anderson, J.B. (2021, July). From Low Initial Interest to Electric Vehicle Adoption: An Exploration of Factors Related to Being an "EV Convert" Among Participants in the Drive Clean Rebate Program. Task 4 Report for NYSERDA Contract 66267, conducted by the Center for Sustainable Energy for the New York State Energy Research and Development Authority.

C.4 Project Task 5 Report: DAC Participants

Williams, B.D.H., Anderson, J.B. (2021, September). Supporting EV Adoption by Priority Populations: An Exploration of Factors Related to Being a Disadvantaged-Community Participant in the Drive Clean Rebate Program. Task 5 Report for NYSERDA Contract 66267, conducted by the Center for Sustainable Energy for the New York State Energy Research and Development Authority.

C.5 Project Task 6 Report: Latent-Class Analysis

Anderson, J. and Tamerius, J. (2021, September). *Exploring Characteristics of New York Drive Clean Rebate Program Participants: A Latent Class Analysis.* Task 6 Report for NYSERDA Contract 66267, conducted by the Center for Sustainable Energy for the New York State Energy Research and Development Authority.

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