

August 2025

Drive Clean Rebate Consumer Characteristics and Equity Metrics Through 2024

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with thanks to J. Bowers, A. Thang, and others at the Center for Sustainable Energy (CSE)



NYSERDA

Outline

- **Intro & Highlights**
- **Who do rebates benefit?**
 - by Household Income
 - Multiple Consumer Characteristics & Comparisons
 - Breaking Disparities into Two Components
 - Assessing Progress
- **Summary**

Appendix

Introduction

- Summarizes consumer characteristics and equity metrics for the New York State Drive Clean Rebate Program (NY DCRP), focusing on survey data characterizing vehicles acquired in 2024
 - 5,593 survey responses weighted to represent 45,443 program participants (see Appendix)
- Compares characteristics of program participants to NY new-vehicle buyers
- Breaks disparities between the program and the population into two components: structural inequities in new-car buying and those more particular to EVs and rebates
- Assesses progress over time

Highlights of Select Findings for 2024 Purchases/Leases

Context

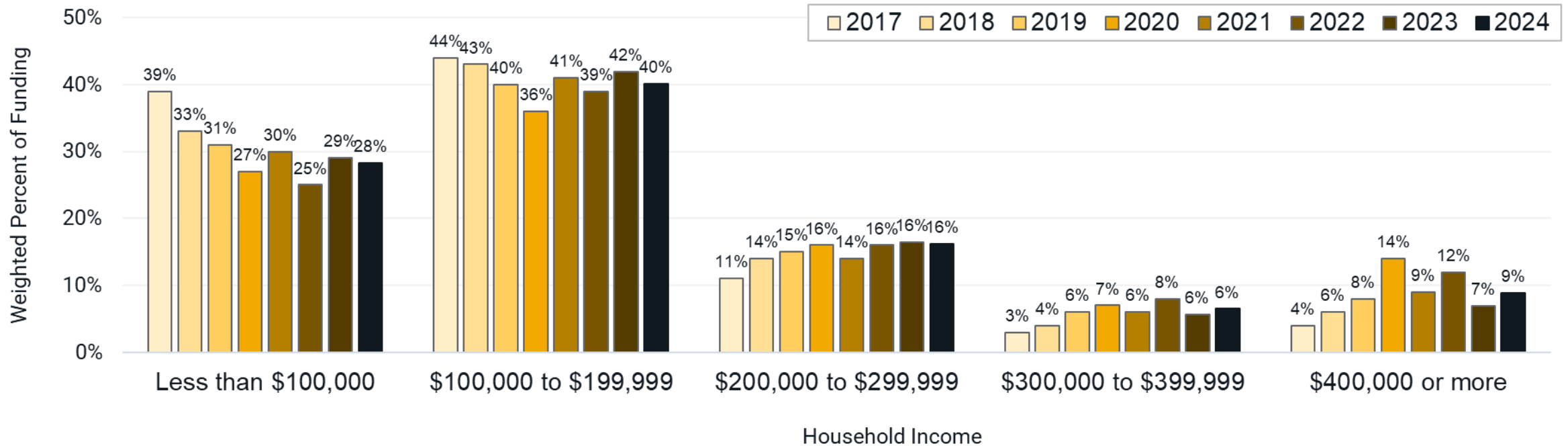
- 2024 was dominated by \$500 rebates; Tesla rebate share (41%) lowest since 2021
 - See Appendix and “NY Drive Clean Rebated Vehicle Characteristics Through 2024”

Consumers Rebated

- **68% of funding went to households with income < \$200k**
- Progress toward the mainstream stalled or reversed in 2024 for most metrics analyzed
- Comparison to new-vehicle buyers:
 - Rebate recipients continue to **identify as solely white/Caucasian less frequently** than new-car buyers
 - **Age ≥ 40 years similarly frequent** to new-car buyers
 - **Household income > \$100k and male gender** were still **most distinguishing** of EVs
 - However, 2/5^{ths} of “income disparity” findings based on Census data likely due to structural inequities in car buying, not particular to rebated EVs

Distribution of Funding by Household Income

68% of funding for 2024 plug-in EV* purchases/leases claimed by households with income < \$200k (down from 71% for 2023)



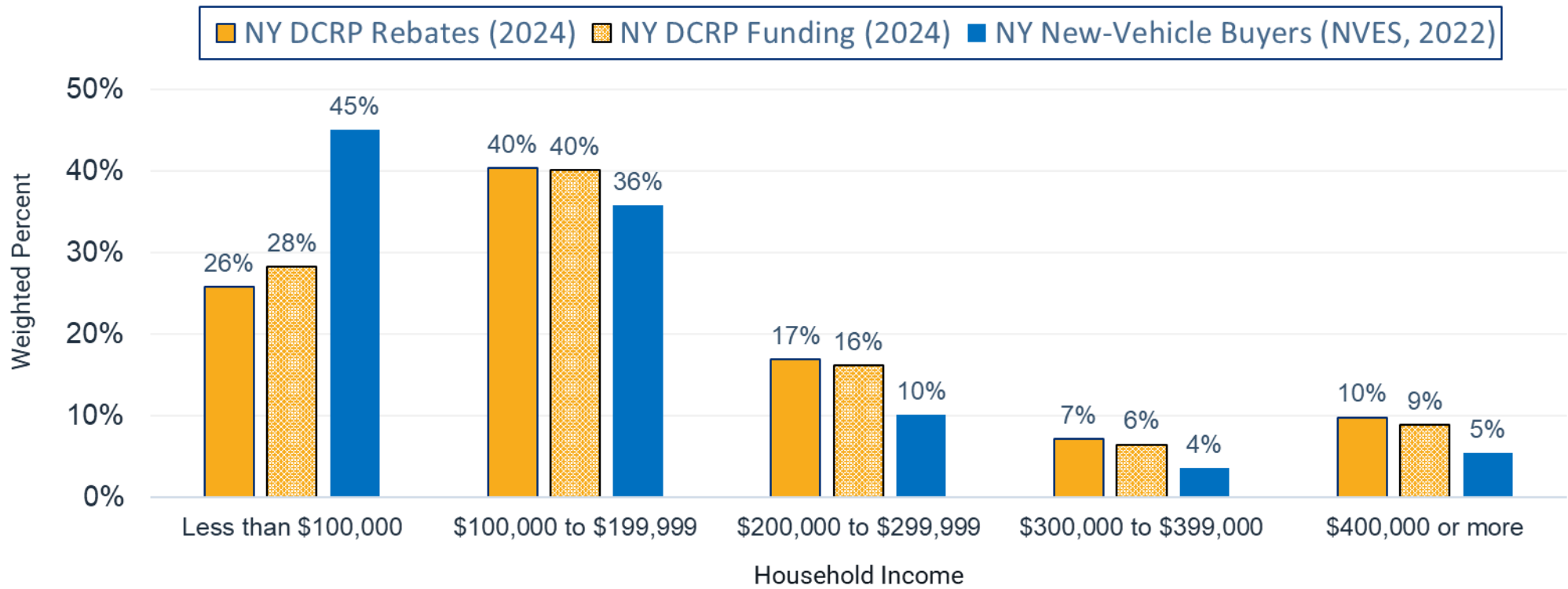
NY DCRP Adoption Survey. 2017 *n* = 842; 2018 *n* = 1,813; 2019 *n* = 1,817; 2020 *n* = 2,852; 2021 *n* = 4,237; 2022 *n* = 4,607; 2023 *n* = 6,159; 2024 *n* = 4,748. *n*-values are filtered and question-specific. 2020–2024 weights specific to 2020–2024 purchases/leases, respectively.

* Plug-in EV = BEV and PHEV.

Comparing NY DCRP Rebates & Funding with New-Vehicle Buyers*

Distribution of Household Income

55% NY New-Vehicle Buyers have income \geq \$100k



* NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: No Tesla consumers were in the NVES NY data sample. However, BEVs were only 3.8% of 2022 NY sales, per [Autos Innovate Electric Vehicle Sales Dashboard](#). Income labels use 100k values as lower limits based on NY DCRP data, but NVES uses 100k values as upper limits. NY DCRP Adoption Survey. 2024 $n = 4,748$. n-values are filtered and question-specific.

Are rebates disproportionately benefiting the majority?

Step 0: Who is the majority in new-car markets?

The majority of new-car buyers

Selected solely white/Caucasian

≥ 40 years old

Own residence

≥ Bachelor's degree

Selected male

≥ \$100k household income

"Prefer not to answer," "I don't know," and similar responses are excluded throughout.

Are rebates disproportionately benefiting the majority?

Step 1: Measure the proportions of rebate recipients falling into “Market-Majority” characteristics

| The majority of new-car buyers | Drive Clean Rebate Program <u>Rebates</u> 2024 purchases/leases <i>n = 5,593</i> |
|---------------------------------------|--|
| Selected solely white/Caucasian | 69% |
| ≥ 40 years old | 77% |
| Own residence | 82% |
| ≥ Bachelor’s degree | 74% |
| Selected male | 70% |
| ≥ \$100k household income | 74% |

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout.

Are rebates disproportionately benefiting the majority?

Step 2: Measure what “mainstream” looks like

| The majority of new-car buyers | Drive Clean Rebate Program Rebates 2024 purchases/leases <i>n = 5,593</i> |
|---------------------------------------|---|
| Selected solely white/Caucasian | 69% |
| ≥ 40 years old | 77% |
| Own residence | 82% |
| ≥ Bachelor’s degree | 74% |
| Selected male | 70% |
| ≥ \$100k household income | 74% |

| NY New-Vehicle Buyers 2022 (NVES 2022) |
|--|
| 76% |
| 76% |
| 77% |
| 64% |
| 55% |
| 55%* |

← As seen on slide 6

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. * NVES represents income > \$100k (not ≥).
 NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample.

Are EVs “going mainstream”? In some ways more than others.

Step 3: Compare

Rebate recipients are most distinguished from new-vehicle buyers by their higher income and male gender but they identify as white less frequently.

| The majority of new-car buyers | Drive Clean Rebate Program Rebates 2024 purchases/leases <i>n = 5,593</i> | Difference (percentage points, ppt) | NY New-Vehicle Buyers 2022 (NVES 2022) |
|---------------------------------------|---|--|--|
| Selected solely white/Caucasian | 69% | ← -7 ppt → | 76% |
| ≥ 40 years old | 77% | ← 1 ppt → | 76% |
| Own residence | 82% | ← 5 ppt → | 77% |
| ≥ Bachelor’s degree | 74% | ← 10 ppt → | 64% |
| Selected male | 70% | ← 15 ppt → | 55% |
| ≥ \$100k household income | 74% | ← 19 ppt → | 55%* |

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. * NVES represents income > \$100k (not ≥).

NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample.

Are EVs “going mainstream”? In some ways more than others.

Step 3: Compare – Funding Perspective Is Similar

Rebate recipients are most distinguished from new-vehicle buyers by their higher income and male gender but they identify as white less frequently.

| The majority of new-car buyers | Drive Clean Rebate Program Funding 2024 purchases/leases <i>n</i> = 5,593 | Difference (percentage points, ppt) | NY New-Vehicle Buyers 2022 (NVES 2022) |
|---------------------------------------|--|--|---|
| Selected solely white/Caucasian | 70% | ← -6 ppt → | 76% |
| ≥ 40 years old | 76% | ← 0 ppt → | 76% |
| Own residence | 81% | ← 4 ppt → | 77% |
| ≥ Bachelor’s degree | 74% | ← 10 ppt → | 64% |
| Selected male | 70% | ← 15 ppt → | 55% |
| ≥ \$100k household income | 72% | ← 17 ppt → | 55%* |

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. * NVES represents income > \$100k (not ≥).

NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample.

Assessing Differences with Appropriate Comparisons

Comparing rebate recipients to population statistics does not tell the story accurately because car buyers are already different from the population.

| The majority of new-car buyers | Drive Clean Rebate Program Rebates 2024 purchases/leases <i>n = 5,593</i> | NY New-Vehicle Buyers 2022 (NVES 2022) | \neq | NY Population 2019–2023 (Census 2023) |
|---------------------------------------|---|--|--------|---|
| Selected solely white/Caucasian | 69% | 76% | | 53% |
| ≥ 40 years old | 77% | 76% | | 50% |
| Own residence | 82% | 77% | | 54% § |
| ≥ Bachelor’s degree | 74% | 64% | | 31% |
| Selected male | 70% | 55% | | 49% |
| ≥ \$100k household income | 74% | 55%* | | 43% § |

§ Based upon household-level data. * NVES represents income > \$100k (not ≥).

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample. Census 2023: 2019–2023 American Community Survey, PUMS.

Breaking Inequities Between the Program and State Population Into Two Components

39% of the income disparity can be explained by structural inequities in car buying; 61% is more particular to EVs and rebates.

| The majority of new-car buyers | Drive Clean Rebate Program Rebates 2024 purchases/leases <i>n</i> = 5,593 | Portion of total difference attributable to EVs | NY New-Vehicle Buyers 2022 (NVES 2022) | Portion of total difference explained by car buying | NY Population 2019–2023 (Census 2023) |
|---------------------------------|--|---|--|---|---------------------------------------|
| Selected solely white/Caucasian | 69% | ← -44% → | 76% | ← 144% → | 53% |
| ≥ 40 years old | 77% | ← 4% → | 76% | ← 96% → | 50% |
| Own residence | 82% | ← 18% → | 77% | ← 82% → | 54% § |
| ≥ Bachelor’s degree | 74% | ← 23% → | 64% | ← 77% → | 31% |
| Selected male | 70% | ← 71% → | 55% | ← 29% → | 49% |
| ≥ \$100k household income | 74% | ← 61% → | 55%* | ← 39% → | 43% § |

§ Based upon household-level data. * NVES represents income > \$100k (not ≥).

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample. Census 2023: 2019–2023 American Community Survey, PUMS.

Assessing Progress

- This section tracks the progression of program-participant characteristics over time, toward those of new-car buyers.
- Two sources of NY new-car buyer characteristics are presented for comparison, but are similar
 - Old: FHWA's 2017 National Household Travel Survey, model-year 2016–17 purchases
 - New: Strategic Vision's New Vehicle Experience Survey, 2022 purchases

Assessing Progress with Appropriate Comparisons

Some differences between DCRP and new-vehicle buyers have faded away (green circles)

| The majority of new-car buyers | NY DCRP Rebates, Purchase/Lease Year: | | | | | | | | NY New-Vehicle Buyers | | NY Population |
|--------------------------------|--|------|------|------|------|------|------|------|-----------------------|--|----------------------------|
| | 2017 [†] | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | (NVES 2022) | (2017 NHTS) Latest Available MYs (2016–17) | 2019–2023 (Census 2023) |
| Solely white/Caucasian | 86% | 82% | 78% | 75% | 75% | 68% | 61% | 69% | 76% | 75% | 53% |
| ≥ 40 years old | 79% | 76% | 74% | 71% | 71% | 71% | 72% | 77% | 76% | 70% | 50% |
| Own Residence | 90% | 90% | 88% | 85% | 83% | 86% | 81% | 82% | 77% | 75% § | 54% § |
| ≥ Bachelor's degree | 73% | 80% | 77% | 80% | 78% | 80% | 76% | 74% | 64% | 65% | 31% |
| Selected male | 68% | 71% | 73% | 75% | 68% | 71% | 72% | 70% | 55% | 51% | 49% |
| ≥ \$100k household income | 63% | 68% | 69% | 72% | 71% | 78% | 73% | 74% | 55%* | 51% § | 43% § |

In 2024:

- Race/ethnicity and age progression reversed but race/ethnicity remained “beyond the mainstream”

[†] From program launch in March 2017. § Based upon household-level data. ppt = percentage points

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. * NVES represents income > \$100k (not ≥). NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample. NHTS weighted to represent population, not new-vehicle subset. New-vehicle buyers identified by within-100-mile match between odometer and miles driven while owned. Census 2023: 2019–2023 American Community Survey, PUMS.

Assessing Progress with Appropriate Comparisons

Some differences between DCRP and new-vehicle buyers are **progressing (gold circle)**

| The majority of new-car buyers | NY DCRP Rebates, Purchase/Lease Year: | | | | | | | | NY New-Vehicle Buyers | | NY Population |
|--------------------------------|--|------|------|------|------|------|------|------|-----------------------|--|----------------------------|
| | 2017 [†] | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | (NVES 2022) | (2017 NHTS) Latest Available MYs (2016–17) | 2019–2023 (Census 2023) |
| Solely white/Caucasian | 86% | 82% | 78% | 75% | 75% | 68% | 61% | 69% | 76% | 75% | 53% |
| ≥ 40 years old | 79% | 76% | 74% | 71% | 71% | 71% | 72% | 77% | 76% | 70% | 50% |
| Own Residence | 90% | 90% | 88% | 85% | 83% | 86% | 81% | 82% | 77% | 75% § | 54% § |
| ≥ Bachelor's degree | 73% | 80% | 77% | 80% | 78% | 80% | 76% | 74% | 64% | 65% | 31% |
| Selected male | 68% | 71% | 73% | 75% | 68% | 71% | 72% | 70% | 55% | 51% | 49% |
| ≥ \$100k household income | 63% | 68% | 69% | 72% | 71% | 78% | 73% | 74% | 55%* | 51% § | 43% § |

In 2024:

- Race/ethnicity and age progression reversed but race/ethnicity remained “beyond the mainstream”
- Educational attainment and gender progressed toward the mainstream

[†] From program launch in March 2017. § Based upon household-level data. ppt = percentage points

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. * NVES represents income > \$100k (not ≥). NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample. NHTS weighted to represent population, not new-vehicle subset. New-vehicle buyers identified by within-100-mile match between odometer and miles driven while owned. Census 2023: 2019–2023 American Community Survey, PUMS.

Assessing Progress with Appropriate Comparisons

Some differences between DCRP and new-vehicle buyers remain (red circle)

| The majority of new-car buyers | NY DCRP Rebates, Purchase/Lease Year: | | | | | | | | NY New-Vehicle Buyers | | NY Population |
|--------------------------------|--|------|------|------|------|------|------|------|-----------------------|--|----------------------------|
| | 2017 [†] | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | (NVES 2022) | (2017 NHTS) Latest Available MYs (2016–17) | 2019–2023 (Census 2023) |
| Solely white/Caucasian | 86% | 82% | 78% | 75% | 75% | 68% | 61% | 69% | 76% | 75% | 53% |
| ≥ 40 years old | 79% | 76% | 74% | 71% | 71% | 71% | 72% | 77% | 76% | 70% | 50% |
| Own Residence | 90% | 90% | 88% | 85% | 83% | 86% | 81% | 82% | 77% | 75% § | 54% § |
| ≥ Bachelor's degree | 73% | 80% | 77% | 80% | 78% | 80% | 76% | 74% | 64% | 65% | 31% |
| Selected male | 68% | 71% | 73% | 75% | 68% | 71% | 72% | 70% | 55% | 51% | 49% |
| ≥ \$100k household income | 63% | 68% | 69% | 72% | 71% | 78% | 73% | 74% | 55%* | 51% § | 43% § |

In 2024:

- Race/ethnicity and age progression reversed but race/ethnicity remained “beyond the mainstream”
- Educational attainment and gender progressed toward the mainstream
- Home ownership and income stalled
- The “road ahead” is the longest for income and gender (15–19 ppt)

[†] From program launch in March 2017. § Based upon household-level data. ppt = percentage points

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. * NVES represents income > \$100k (not ≥). NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample. NHTS weighted to represent population, not new-vehicle subset. New-vehicle buyers identified by within-100-mile match between odometer and miles driven while owned. Census 2023: 2019–2023 American Community Survey, PUMS.

Summary of Select Findings for 2024 Purchases/Leases

Context

- 2023 was dominated by \$500 rebates. Tesla rebate share (41%) lowest since 2021.
 - See Appendix and “NY Drive Clean Rebated Vehicle Characteristics through 2024”

Consumers Rebated

- **68% of funding went to households with income < \$200k** (down from 71% in 2023)
- Progression toward the mainstream stalled or reversed in 2024 for most metrics analyzed
 - Educational attainment and gender progressed
- Comparison to new-vehicle buyers (rather than census data):
 - **Identification as solely white/Caucasian remains less frequent** than new-car buyers though progression reversed
 - **Age ≥ 40 years similarly frequent** to new-car buyers, after progression to being younger was reversed
 - **Household income > \$100k and male gender were still most distinguishing**
 - But 2/5^{ths} of “income disparity” findings based on Census data likely due to structural inequities in car buying (up from 1/3rd)

These metrics help **quantify** the difference between participants and mainstream consumers and the path through strategic consumer segments explored in other research ([link to report](#))

Appendix

- **Acronyms**
- **Additional Details**
- **Resources**

Acronyms

BEV – Battery Electric Vehicle

DAC – Disadvantaged Community

DCRP – Drive Clean Rebate Program (statewide)

e-mile – EPA-rated all-electric mile of driving range

EPA – U.S. Environmental Protection Agency

EV – Electric Vehicle (including PHEVs and BEVs; FCEVs not in the data)

FCEV – Fuel-Cell Electric Vehicle

FHWA – Federal Highway Administration

HH – Household

MSRP – Manufacturer's Suggested Retail Price

MY – Model Year

N.A. – Not Applicable

NHTS – National Household Travel Survey

NVES – New Vehicle Experience Survey

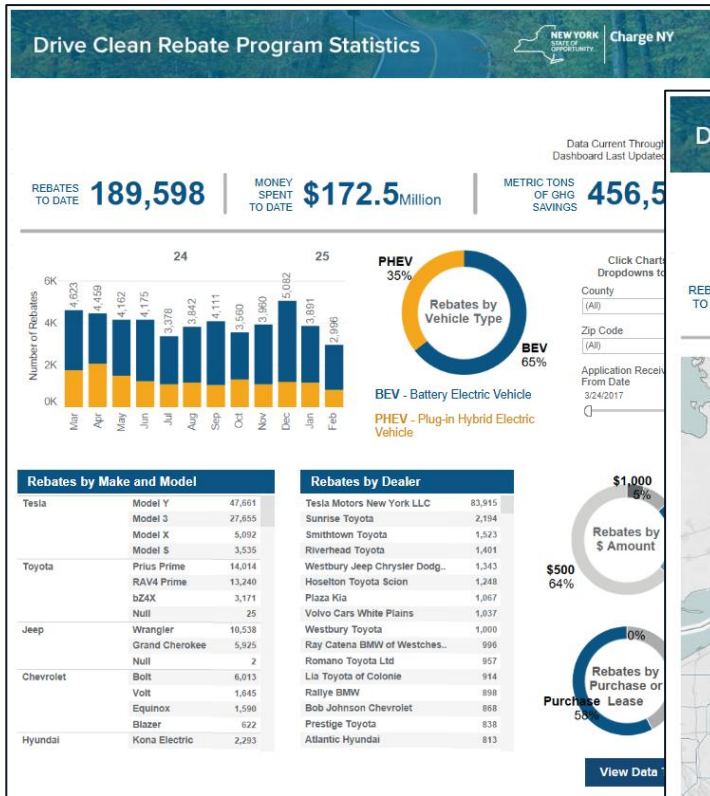
NY – New York State

PHEV – Plug-in Hybrid Electric Vehicle

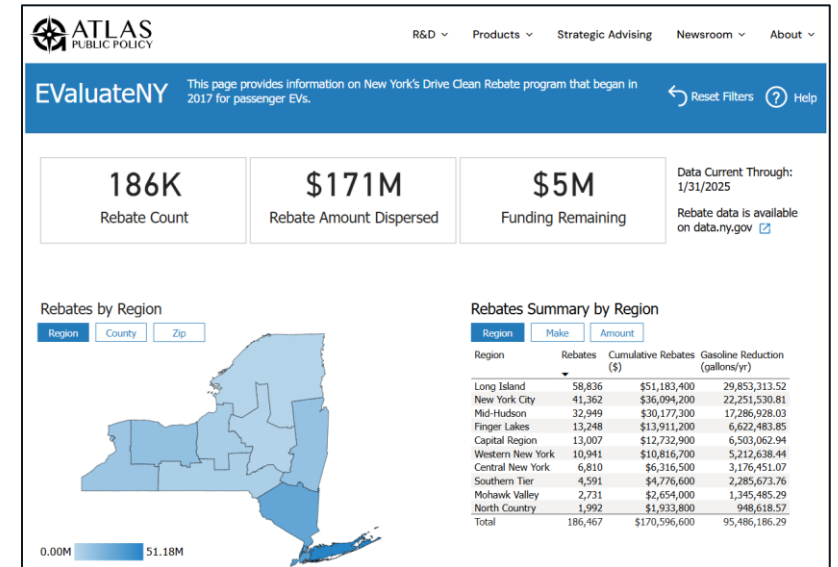
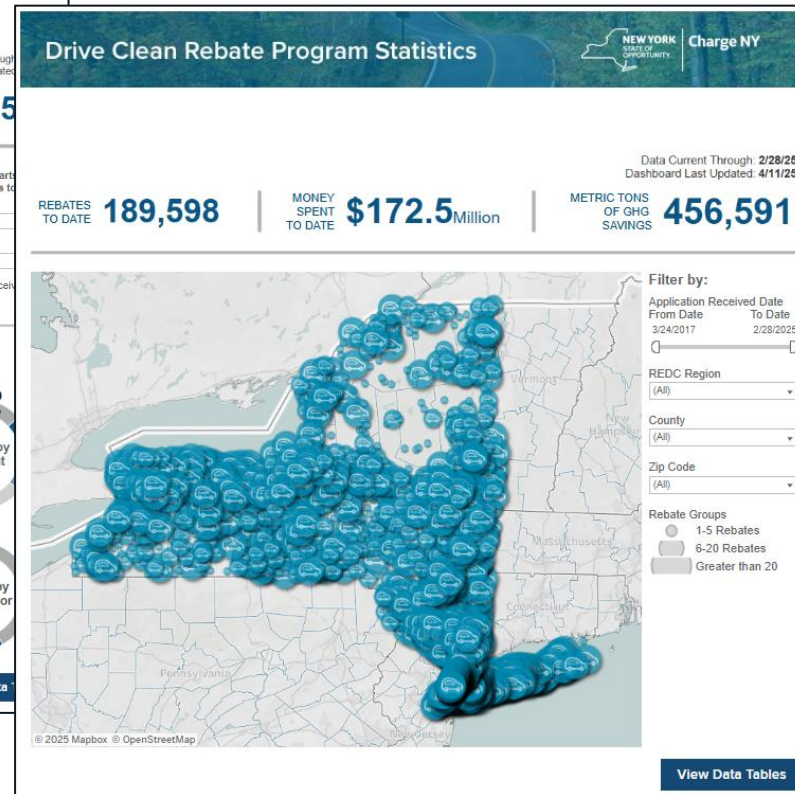
PPT – Percentage Point

PUMS – Public Use Microdata Sample

For additional, up-to-date program data (images as of 4/11/2025)



[Drive Clean Rebate Program Statistics Dashboard](#)

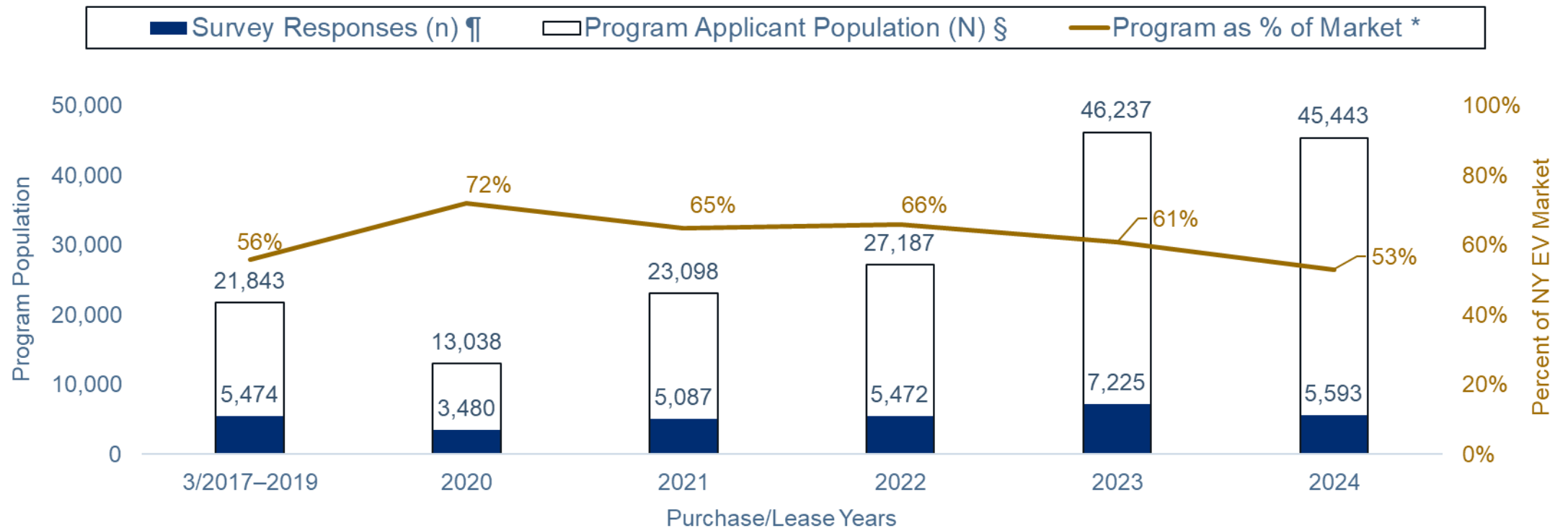


[EValueNY Dashboard](#)

Program data: a large number of applications and surveys

Survey data statistically represent all participants, but participants are a decreasing portion of EV sales

32,331 Total Survey Responses Representing 176,846 Program Participants



¶ Subsequently weighted to represent the program population along the dimensions of vehicle technology (PHEV vs. BEV), model, buy vs. lease, and county.

§ Small numbers of rebated vehicles are not represented in the time frames due to application lags.

* Based on approximate comparisons to total NY EV sales from [Autos Innovate EV Dashboard](#) (AAI & CSE 2025).

Rebate design shapes outcomes

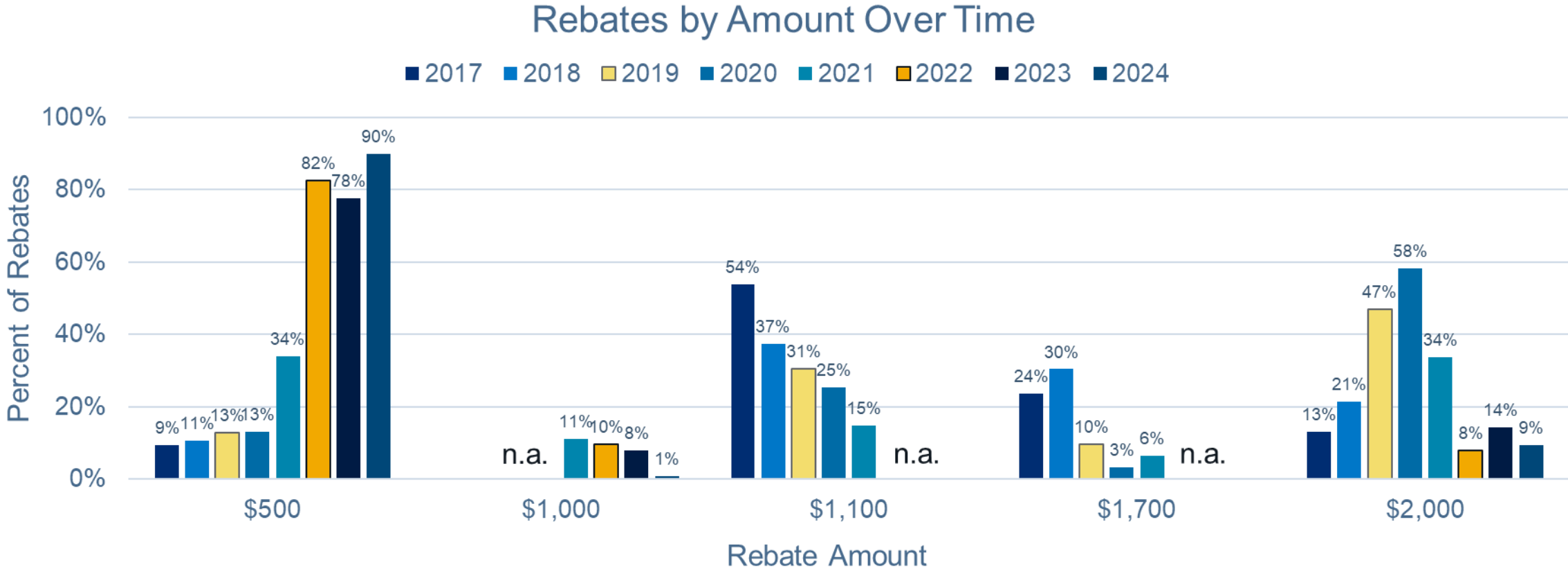
Program design changed mid-2021

| Category | Purchase/lease dates <u>through</u> June 30, 2021 | Purchase/lease dates <u>after</u> June 30, 2021 |
|--|---|--|
| Fuel-Cell EVs*, All-Battery EVs (BEVs), and Plug-in Hybrid EVs (PHEVs) | ≥ 120 e-miles [†] : \$2,000 ≥ 40 e-miles: \$1,700 ≥ 20 e-miles: \$1,100 < 20 e-miles: \$500 | ≥ 200 e-miles: \$2,000 ≥ 40 e-miles: \$1,000 < 40 e-miles: \$500 |
| Misc. | MSRP > \$60,000 = \$500 Point-of-sale | MSRP > \$42,000 = \$500 Point-of-sale |

* FCEVs eligible but unavailable in NY; none rebated. † Electric miles (e-miles) are U.S.-EPA-rated all-electric miles.

The program has shifted dramatically toward \$500 rebates

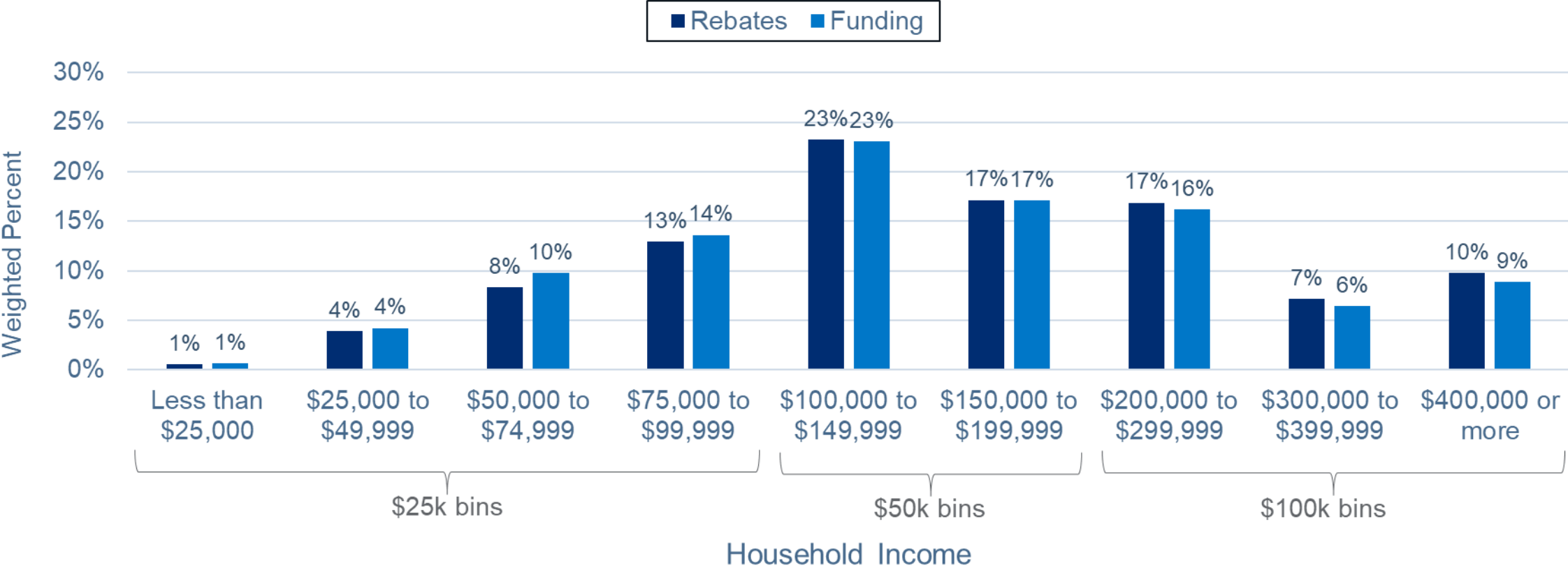
\$1,000 rebates were only 1% of program (2024)



Excludes 12 rebates with irregular amounts (< 0.1% of rebates).

Plug-in EV Household Income: Rebates & Funding

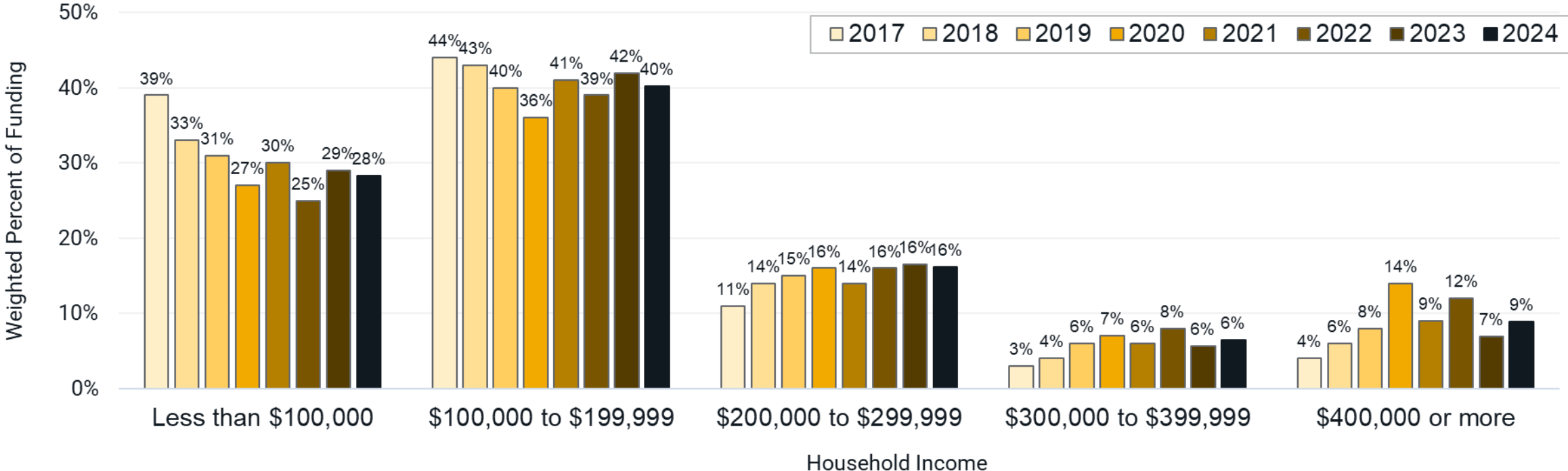
2024 purchases/leases, higher resolution (but uneven bins)



NY DCRP Adoption Survey. 2024 *n* = 4,748.
n-values are filtered and question-specific. 2024 weights specific to 2024 purchases/leases.

Distribution of Funding by Household Income: *Flipping the perspective into an equity metric*

72% of funding for 2024 Plug-in EV* purchases/leases went to households with income > \$100k (up from 71% for 2023)

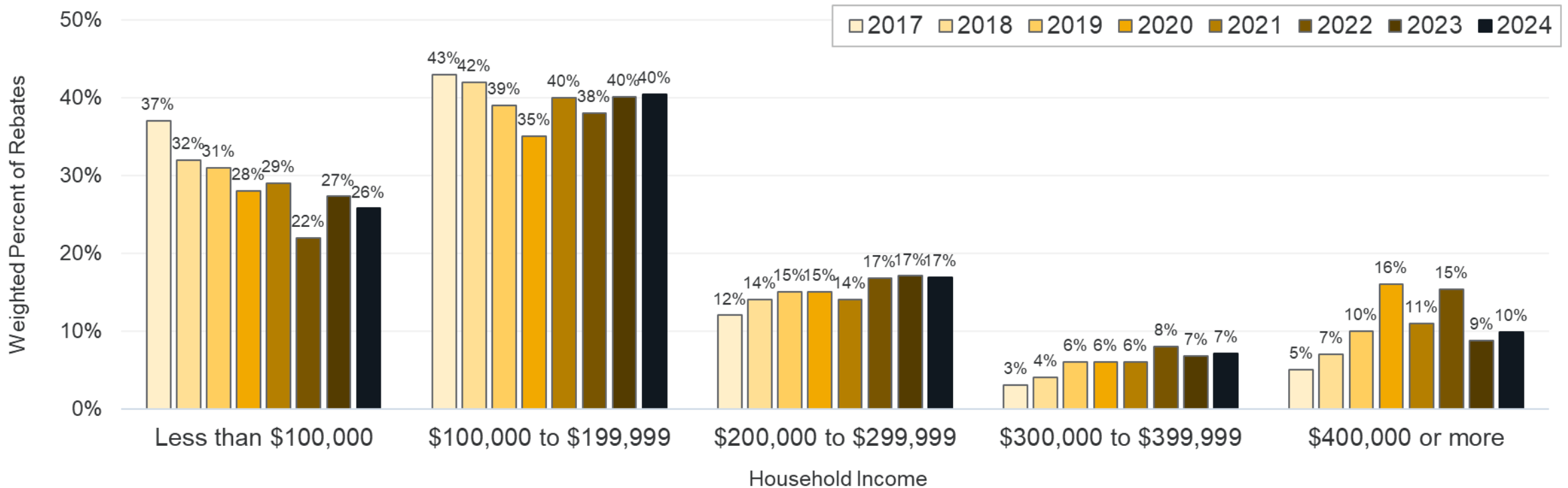


NY DCRP Adoption Survey. 2017 n = 842; 2018 n = 1,813; 2019 n = 1,817; 2020 n = 2,852; 2021 n = 4,237; 2022 n = 4,607; 2023 n = 6,159; 2024 n = 4,748. n-values are filtered and question-specific. 2020–2024 weights specific to 2020–2024 purchases/leases, respectively.

* Plug-in EV = BEV and PHEV.

Distribution of Rebates by Household Income

74% of rebates for 2024 purchases/leases went to households with income > \$100k
(up from 73%)



NY DCRP Adoption Survey. 2017 *n* = 842; 2018 *n* = 1,813; 2019 *n* = 1,817; 2020 *n* = 2,852; 2021 *n* = 4,237; 2022 *n* = 4,607; 2023 *n* = 6,159; 2024 *n* = 4,748.
n-values are filtered and question-specific. 2020–2023 weights specific to 2020–2023 purchases/leases, respectively.

Breaking Inequities Into Two Components (Funding)

Rebated EVs are most distinguished by differences in income and gender.

| The majority of new-car buyers | Drive Clean Rebate Program Funding 2024 purchases/leases n = 5,593 | Portion of total difference attributable to EVs | NY New-Vehicle Buyers 2022 (NVES 2022) | Portion of total difference explained by car buying | NY Population 2019–2023 (Census 2023) |
|--------------------------------|--|---|--|---|---|
| Solely white/Caucasian | 70% | ← -35% → | 76% | ← 135% → | 53% |
| ≥ 40 years old | 76% | ← 0% → | 76% | ← 100% → | 50% |
| Own residence | 81% | ← 15% → | 77% | ← 85% → | 54% § |
| ≥ Bachelor’s degree | 74% | ← 23% → | 64% | ← 77% → | 31% |
| Selected male | 70% | ← 71% → | 55% | ← 29% → | 49% |
| ≥ \$100k household income | 72% | ← 59% → | 55%* | ← 41% → | 43% § |

- Comparing DCRP participants (gold), car buyers (blue), and the state population (gray) clarifies how much of the difference between the state and program populations are particular to inequities in car buying vs. EVs specifically.

- For example, 41% of the “income disparity” between the population and DCRP funding is explained by car-buying (and 59% by EV buying).

§ Based upon household-level data. * NVES represents income > \$100k (not ≥).

“Prefer not to answer,” “I don’t know,” and similar responses are excluded throughout. NVES 2022 (Strategic Vision New Vehicle Experience Study): Note: no Tesla consumers were in the NVES sample. Census 2023: 2019–2023 American Community Survey, PUMS.

What is the Path Forward?

Expanding Market Frontiers Through Strategic Segmentation



Existing Adopters: Market Acceleration

Characterize existing, generally enthusiastic and pre-adapted consumers, to target similar consumers who have the highest likelihood of adoption



“Rebate Essential” Consumers: Minimizing Free Ridership

Characterize adopters most highly influenced by supportive resources to join the EV market, to improve the cost-effectiveness of outreach and program design



“EV Converts”: Moving Mainstream


Characterize EV consumers with low initial interest in EVs, to look for additional opportunities to expand into the mainstream



Priority Populations: Increasing Equity

Characterize adoption by communities with disproportionate socioeconomic vulnerability or pollution exposure, to go beyond the mainstream toward equitable access

Illustrative Progression Using Percentage-Point Differences From the New-Vehicle Baseline (circa 2019, from contract 66267[§])



| New-Vehicle Buyer Majority Characteristic | All DCRP | <i>Rebate Essentials</i> | <i>EV Converts</i> | 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% |

[§] Table 7 from: B.D.H. Williams (2021), [An Electric-Vehicle Consumer Segmentation Roadmap: Strategically Amplifying Participation in the New York Drive Clean Rebate Program](#), NYSERDA Report 21-30.

[†] 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.

Related Analysis & Video

B.D.H. Williams (2023, Apr.), [Assessing progress and equity in the distribution of electric vehicle rebates using appropriate comparisons.](#) *Transport Policy*, 137, 141–151. DOI: 10.1016/J.TRANPOL.2023.04.009. [Video.](#) [Slides.](#)



Assessing progress and equity in the distribution of electric vehicle rebates using appropriate comparisons

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ARTICLE INFO

Keywords:
Electric vehicles
Incentives
Transport policy
Adopter characteristics
Equity
Consumer demographics

ABSTRACT

To meet aggressive transportation-electrification goals, electric-vehicle (EV) sales must expand deeper into mainstream markets. To address equity concerns, EV sales must go beyond the mainstream to increase access to EV benefits. To support needed expansion in sales and equity, this research examined the characteristics of California consumers that claimed the statewide rebate for EVs purchased/leased in 2017–2020. It weighted $n = 32,524$ survey responses to represent $N = 193,167$ rebate recipients and focused on 2020 adoption, trends over time, and differences between consumers of battery and plug-in hybrid EVs. Importantly, incentive-recipient characteristics were compared using Market-Majority Metrics to those of California new-vehicle buyers as a more appropriate baseline. Results raise the possibility that findings about the equity of EV-rebate-recipient incomes based upon comparisons to Census data could largely and more simply be findings about new-car buying, rather than particular to EV-incentive recipients. Rebate-recipient incomes continued to progress toward the mainstream despite the dominance of Tesla consumers and COVID. The distribution of rebate funding by income is now roughly comparable to new-vehicle buyers. Indeed, fewer rebated PHEV consumers (52%) had household incomes greater than \$100,000 than even new-vehicle buyers (56%). Except for age, PHEV consumers are more similar to typical vehicle buyers than BEV consumers are. The characteristics most distinguishing of EV consumers are now home ownership and male sex/gender identification. Market-Majority Metric “heat maps” are developed as an intuitive but quantitative tool to highlight the length of the road ahead that EV markets must travel toward the mainstream and beyond to priority populations.

1. Introduction

1.1. Problem & research aims

Significant public investments are being made to incentivize the purchase or lease of plug-in electric vehicles (EVs). Questions are frequently raised about the beneficiaries of these investments: Who is receiving EV incentives? Is the distribution of EV incentives equitable? Headlines raise concerns about progress—e.g., “Silicon Valley dudes buying Teslas: California struggles to expand electric car market” (Gardiner, 2020).

Discussion about these important topics typically suffers from one or more challenges, including: 1) lack of a quantitative basis and clear definitions upon which to ground specific issues, 2) lack of access to pertinent data that adequately characterize a dynamically evolving nascent EV market, and/or 4) lack of appropriate baselines of comparison that provide meaningful context. For example, it is well established that early EV adoption was associated with “high income” (e.g.,

(Brückmann et al., 2021; Hardman et al., 2016)). However, determining what is “high”—let alone how concerning we should consider incentive-recipient incomes to be—turns out to be surprisingly difficult. This, in turn, complicates the development of optimal strategies to effectively address legitimate concerns about equity and public investment.

“If we could first know where we are, and whither we are tending, we could better judge what to do, and how to do it” —Abraham Lincoln (“House Divided Speech - Lincoln Home National Historic Site,” n.d.)

This research aims to aid the discussion by 1) updating the characterization of EV incentive recipients with relatively recent data, 2) exploring trends over time, and 3) calibrating the conversation about inequities with appropriate bases of comparison. The purpose is not to make final proclamatory determinations, but rather to develop and discuss simple yet illuminating metrics that can inform and empower evaluations of market status, equity, and the road ahead.

Specifically, the characteristics of consumers that have received

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<https://doi.org/10.1016/j.tranpol.2023.04.009>

Received 2 August 2022; Received in revised form 14 April 2023; Accepted 18 April 2023

Available online 26 April 2023

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NY Drive Clean Rebates: Select Related Analysis



Rebate Impacts (DCRP Resources)

- ❖ Williams, B. D. H., & Pallonetti, N. (2025, March 17). [Presentation: “NY Drive Clean Rebate: Vehicle Replacement through 2023.”](http://dx.doi.org/10.13140/RG.2.2.15316.92801) New York State Drive Clean Rebate Program. <http://dx.doi.org/10.13140/RG.2.2.15316.92801>.
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Consumer Segmentation (NYSERDA Contract 66267 & Derivative Products)

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For More Information



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Recommended citation:

B.D.H. Williams and N. Pallonetti (2025, Aug.), Presentation: “Drive Clean Rebate Consumer Characteristics and Equity Metrics Through 2024,” prepared by the Center for Sustainable Energy for NYSERDA.

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