

Electric Vehicle Sales Analysis

2016–2021 Report

Submitted by Apex Analytics, LLC



Contents

Introduction 1

1. YourState BEV, PHEV, and Hybrid Sales: 2016 through 2021 2

2. Geographic Concentration of Sales..... 4

3. Used and Fleet Vehicle Sales..... 8

4. Sales by Body Type 10

5. Sales by Manufacturer and Dealer..... 14

6. Sales by Customer Demographics 18

Appendix 1: Comprehensive List of Vehicles **Error! Bookmark not defined.**

Introduction

YourCompany engaged Apex Analytics (Apex) to conduct an analysis of electric vehicle sales (EV) in *YourState*. This is the first of four quarterly reports, which will include EV sales through Q4 of 2022.

To conduct the analysis, Apex purchased EV registration data from a third-party provider that has contracted with *YourState's* Department of Motor Vehicles.¹ While individual purchaser information is redacted from the data for confidentiality reasons, the data do contain detailed information on EV sales at the zip code level, including sales by the following dimensions:

- Plug-in hybrid electric vehicles (PHEV), battery electric vehicles (BEV), hybrid vehicles, and gas vehicles (i.e., internal combustion engines)
- Vehicle make, model, and year
- Used vs. new vehicles
- Vehicle class (e.g., light duty vs. heavy duty)
- Fleet vs. individually owned vehicles
- Dealer name and location

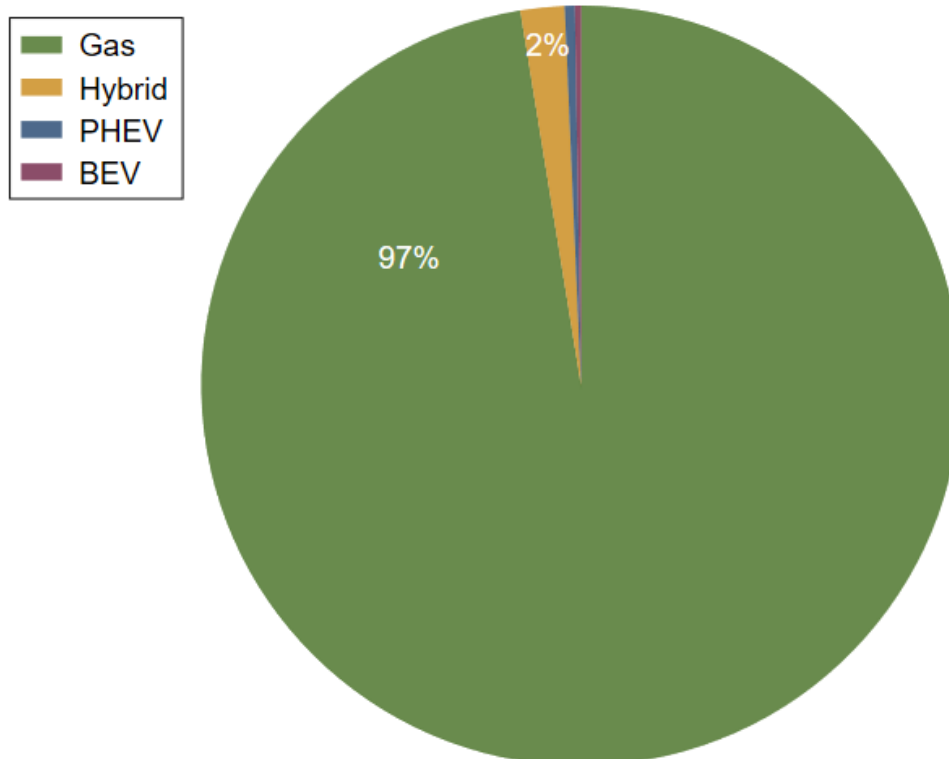
In addition, Apex merged the sales data with demographic data to examine potential impacts on EV sales by such factors as education and income.

¹ Note that registrations and sales are used synonymously in this report.

1. BEV, PHEV, and Hybrid Sales: 2016 through 2021

Figure 1-1 presents the share of light-duty vehicle sales from 2016 through 2021 by fuel type. In total, there were 900,000 light-duty vehicle sales in *YourState* between January 2016 and December 2021. Alternative fuel vehicles (hybrids, BEVs, and PHEVs) constituted a small percentage (3%) of these total sales.

Figure 1-1: 2016–2021 Light-Duty Vehicle Sales



As shown in Figure 1-2 and Figure 1-3 sales of alternative fuel vehicles have increased over time. Still, even at the highest point in late 2021, sales of alternative fuel vehicles represented less than 5% of all vehicles sold, less than half of which were BEVs or PHEVs (Figure 1-2). In addition, BEV sales never exceeded 1% of total light-duty vehicle sales in any quarter over the last five years (Figure 1-3).

Figure 1-2: Alternative Fuel Vehicles – Percent of Light-Duty Vehicle Sales

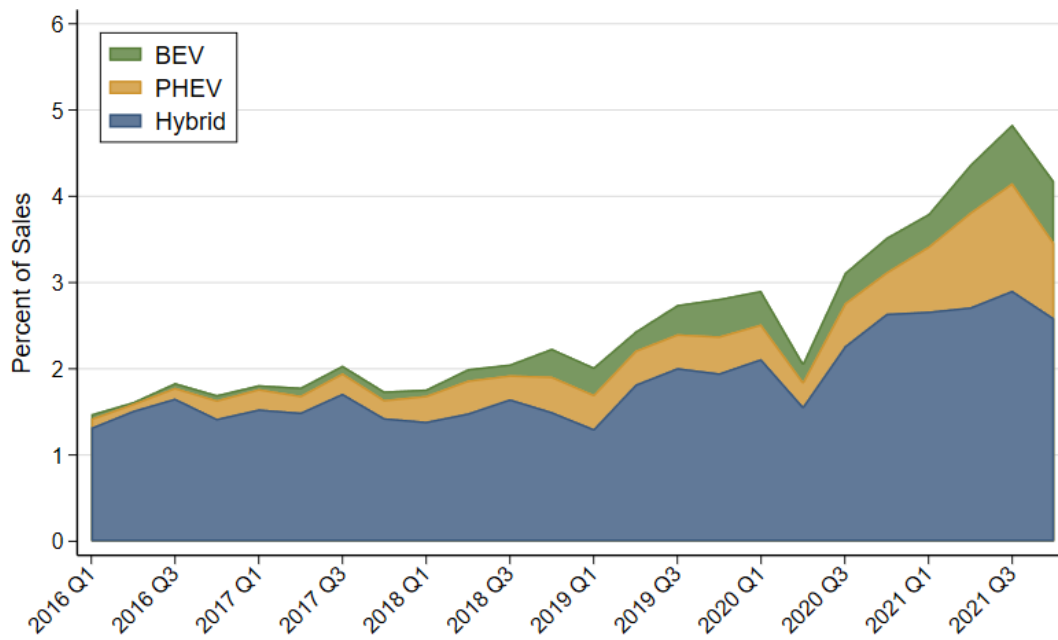
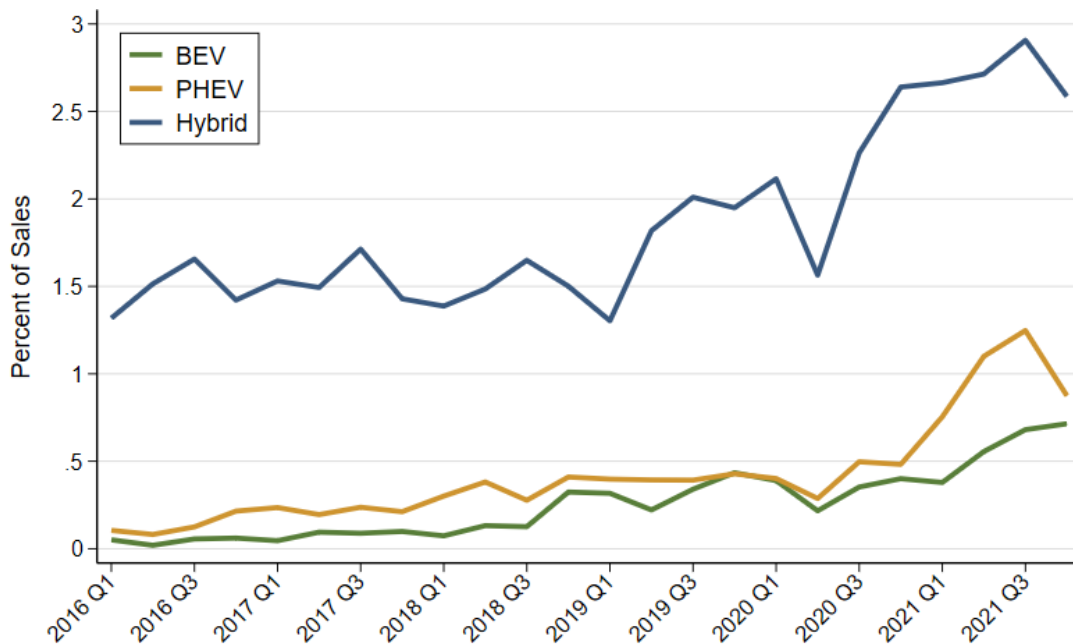


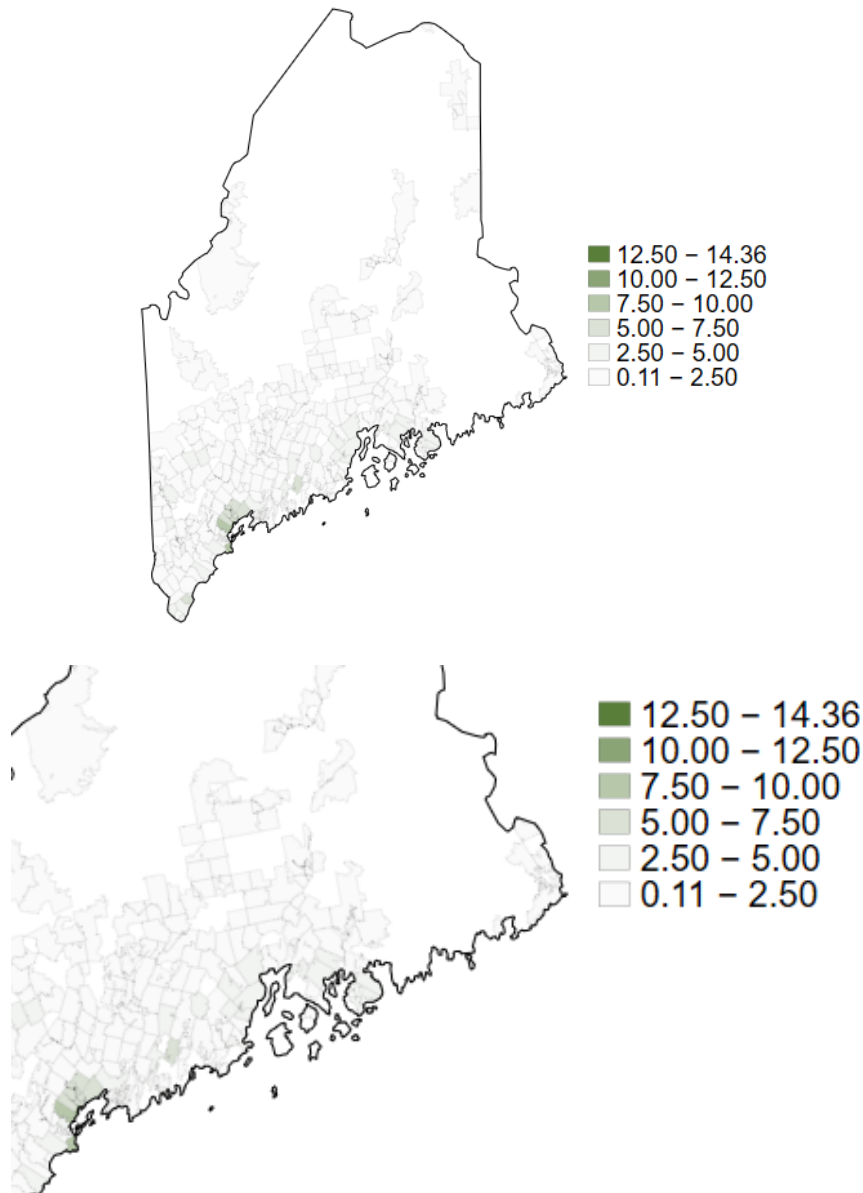
Figure 1-3: Alternative Fuel Vehicles – Percent of Light-Duty Vehicle Sales



2. Geographic Concentration of Sales

Figure 2-1 shows BEV sales per 1,000 residents² by zip code. Only zip codes with populations greater than 1,000 are included.

Figure 2-1: BEV Sales per 1,000 Residents – By Zip Code



² The number of vehicle sales by zip code was divided by the population of the zip code to obtain per capita sales. The per capita sales were then multiplied by 1,000, resulting in the vehicle sales per 1,000 residents.

Figure 2-2 shows the same information as Figure 2-1 (sales per 1,000 residents by zip code) but for PHEVs. Only zip codes with populations greater than 1,000 are included.

Figure 2-2: PHEV Sales per 1,000 Residents – By Zip Code

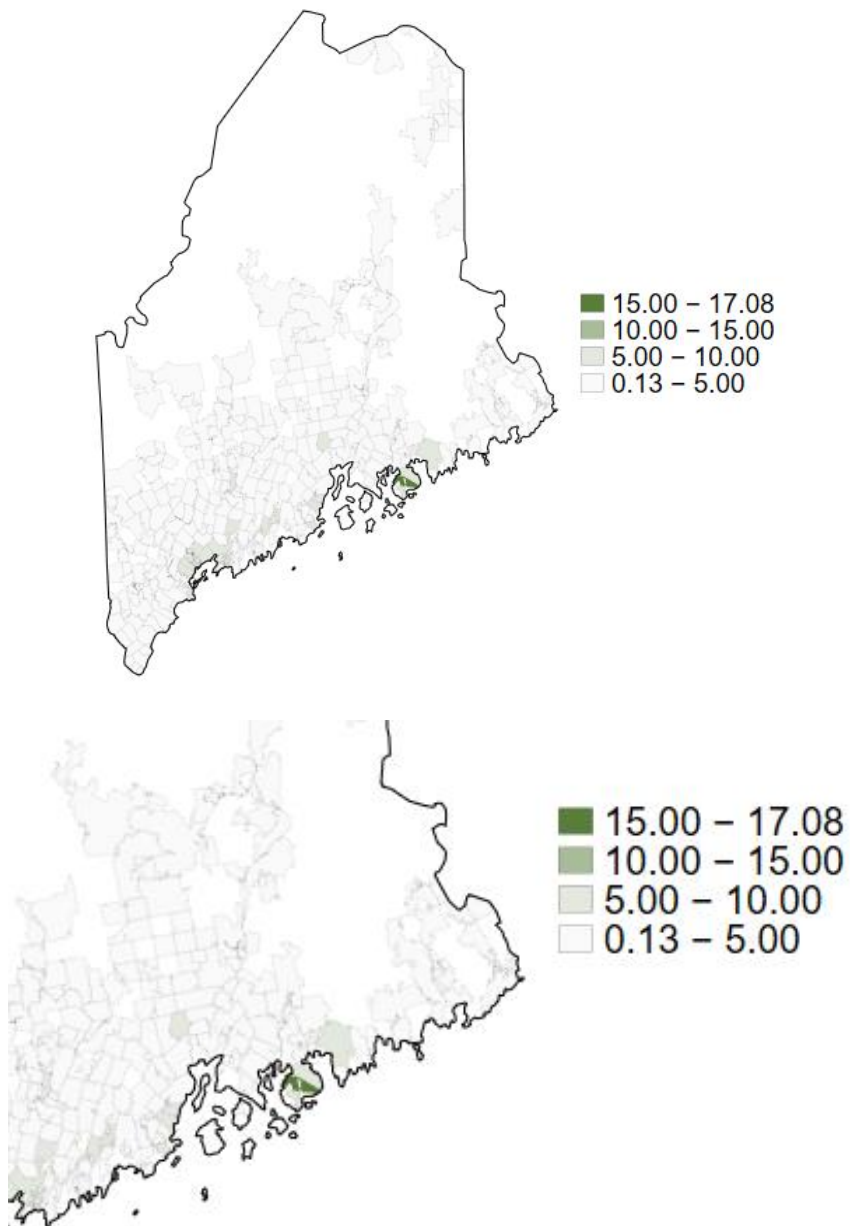


Figure 2-3 summarizes BEV and PHEV sales per 1,000 residents for the top counties in *YourState*.

Figure 2-3: BEV and PHEV Sales by County, per 1,000 Residents (2021)

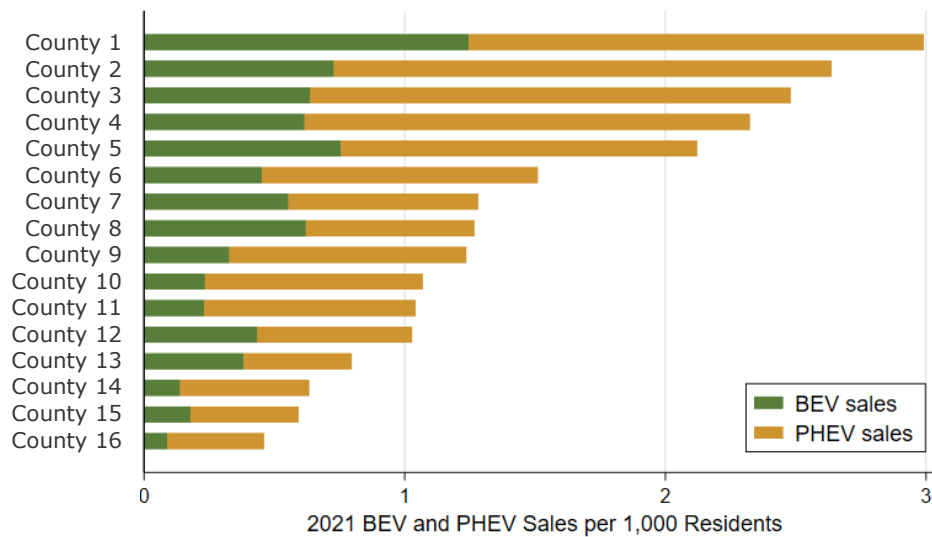


Figure 2-4 presents BEV sales per 1,000 residents for the top five counties in *YourState*.

Figure 2-4: BEV Sales – Top 5 Counties, per 1,000 Residents

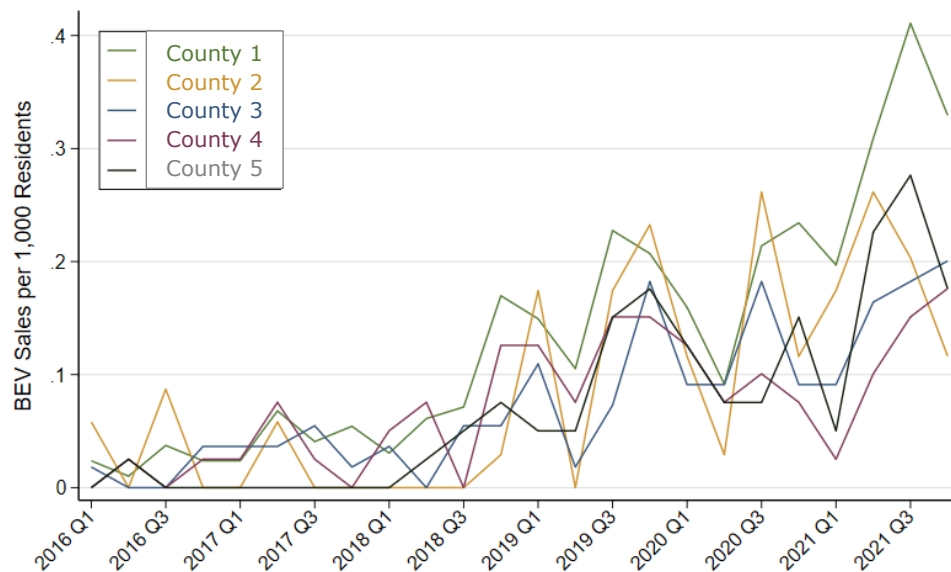


Figure 2-5 summarizes BEV and PHEV sales for the top 20 cities in *YourState*. Only cities with populations greater than 1,000 are included.

Figure 2-5: BEV and PHEV Sales by City, per 1,000 Residents² (2021)

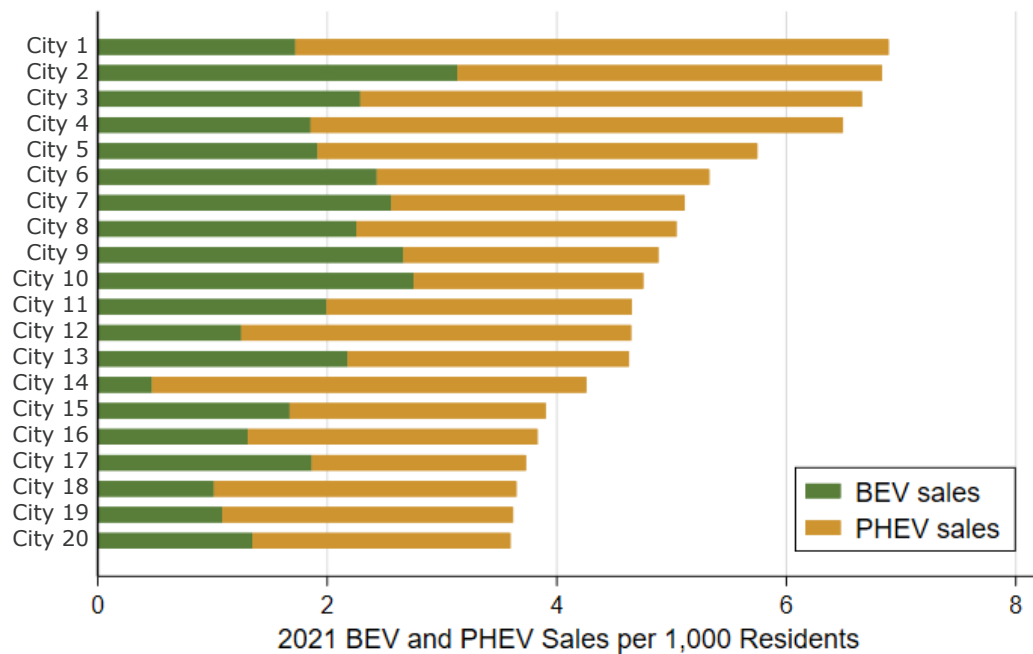
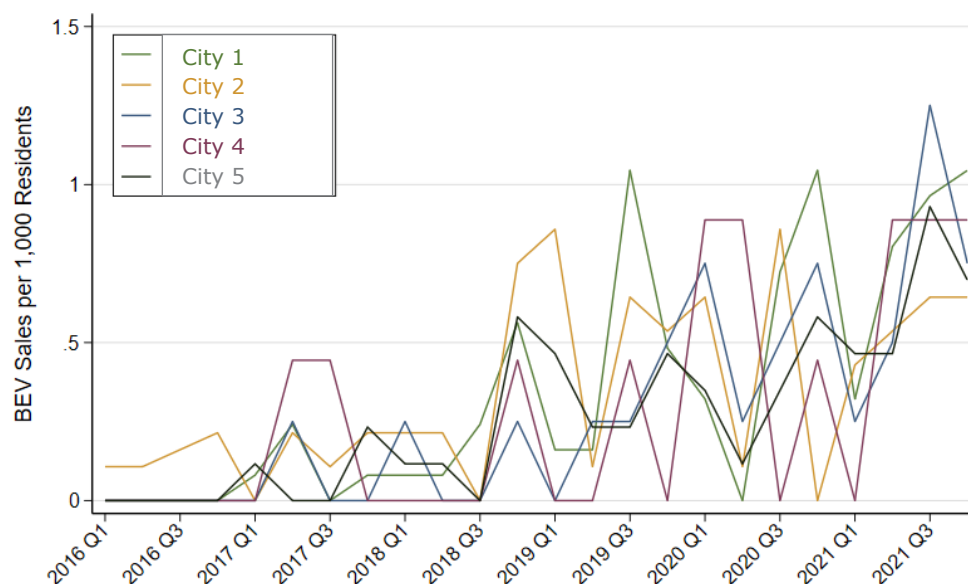


Figure 2-6 presents BEV sales per 1,000 residents² for the top five cities. Only cities with populations greater than 1,000 are included.

Figure 2-6: BEV Sales – Top 5 Cities, per 1,000 Residents



3. Used and Fleet Vehicle Sales

Figure 3-1 presents BEV sales for new and used vehicles. Used vehicles are divided into two categories: pump-in (sales from out of state) and transfers within the state. As shown in the figure, the vast majority of BEV sales are new vehicles, which is to be expected given that BEVs are still relatively new to the market.

Figure 3-1: BEV Sales – New vs. Used

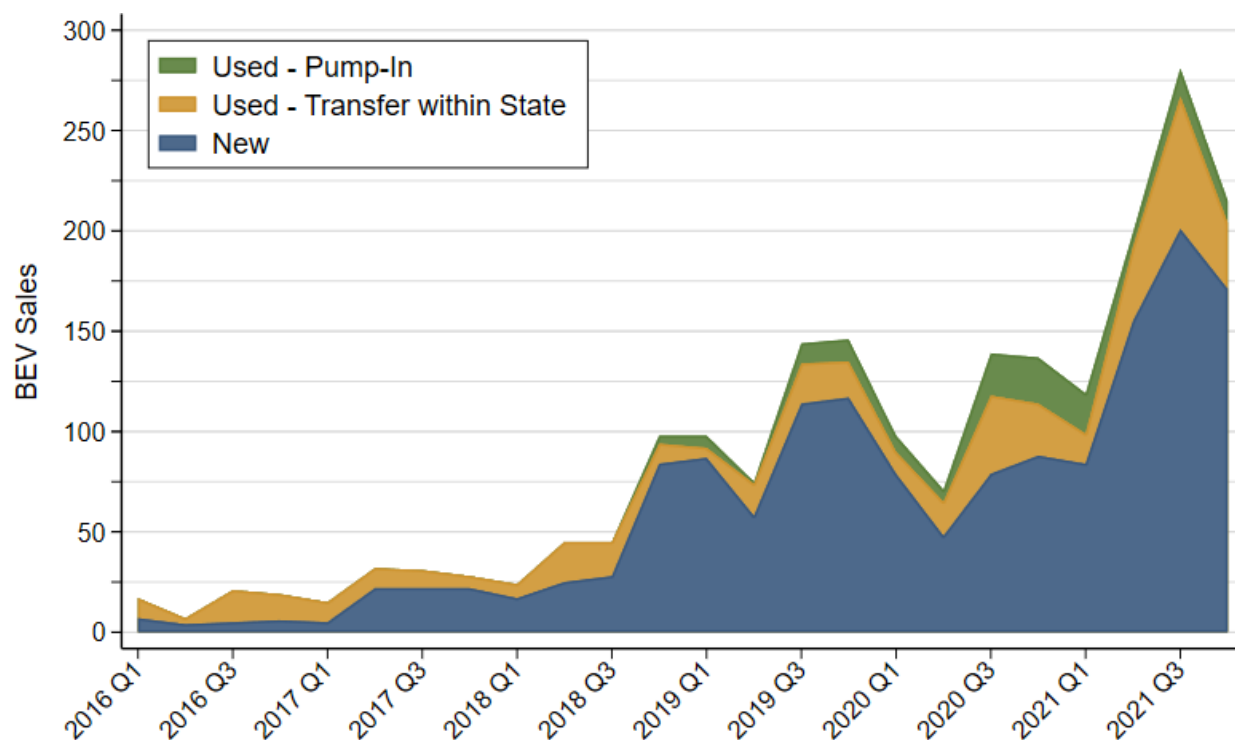
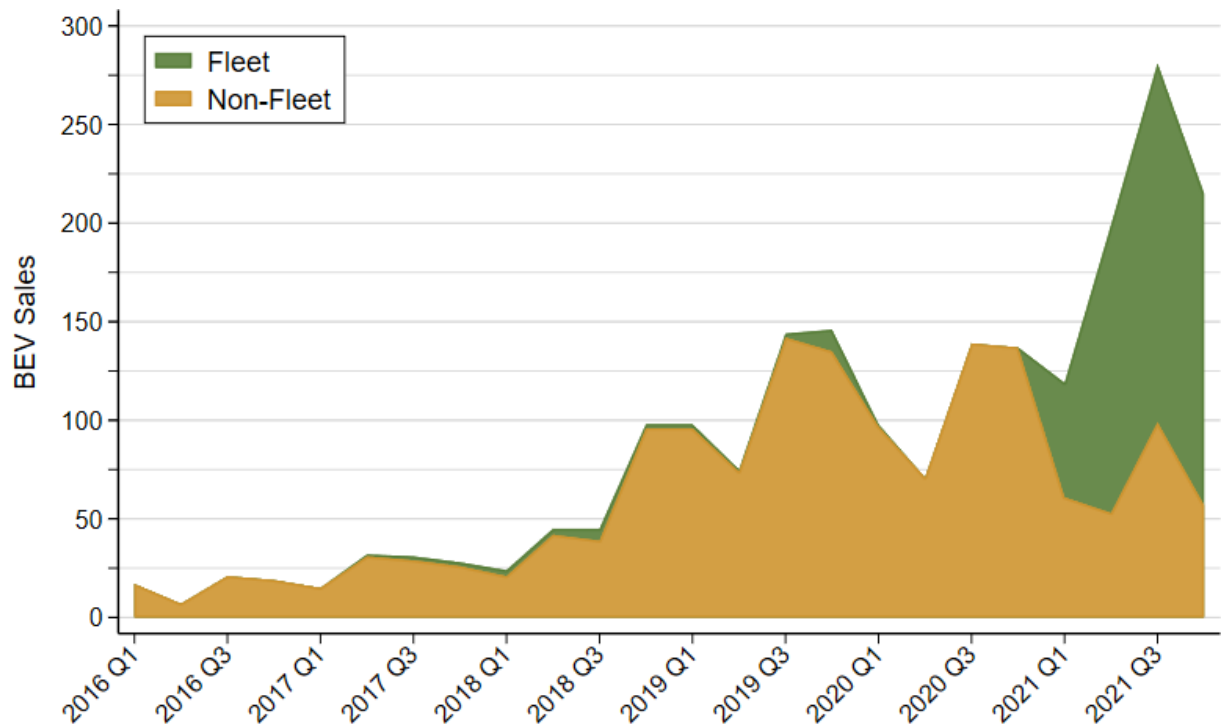


Figure 3-2 presents fleet and non-fleet BEV sales. Appendix 1 contains details regarding fleet vehicle types.

Figure 3-2: BEV Sales – Fleet vs. Non-Fleet



4. Sales by Body Type

Table 4-1 presents examples of light duty BEVs and PHEVs for each body type.³

Table 4-1: BEV and PHEV Examples by Body Type

Body Type	Examples
Compact	Chevrolet Volt, Ford Focus
Compact Sport Utility	Toyota RAV4 Prime, Tesla Model Y, Ford Mustang Mach-E, Subaru Crosstrek, Jeep Wrangler Unlimited
Full-Sized Sport Utility	Volvo XC90, Tesla Model X, BMW X5, Audi e-tron, Porsche Cayenne
Luxury	BMW i3, Audi A3 Sportback e-tron, BMW 5 Series, BMW 3 Series, Volvo S90
Mid-Sized	Toyota Prius Prime, Nissan LEAF, Ford Fusion Energi, Chevrolet Bolt EV, Ford C-MAX Energi
Minivan	Chrysler Pacifica Hybrid
Small Sport Utility	Hyundai Kona EV, Kia Niro EV, Kia Niro Plug-In Hybrid, Kia Soul EV, Volvo XC40
Sporty	Tesla Model 3, Tesla Model S, Porsche Taycan, BMW i8, Audi e-tron GT
Subcompact	Nissan LEAF, Smart fortwo electric drive, MINI Hardtop 2 Door, Mitsubishi i-MiEV, Smart EQ fortwo

³ A comprehensive list is provided in Appendix 1.

Figure 4-1 summarizes light-duty vehicle sales by body type in 2021. Compact sport utility vehicles make up the largest share of light-duty vehicles, followed by pickup trucks and full-sized sport utility vehicles.

Figure 4-1: Light-Duty Vehicle Sales by Body Type (2021)

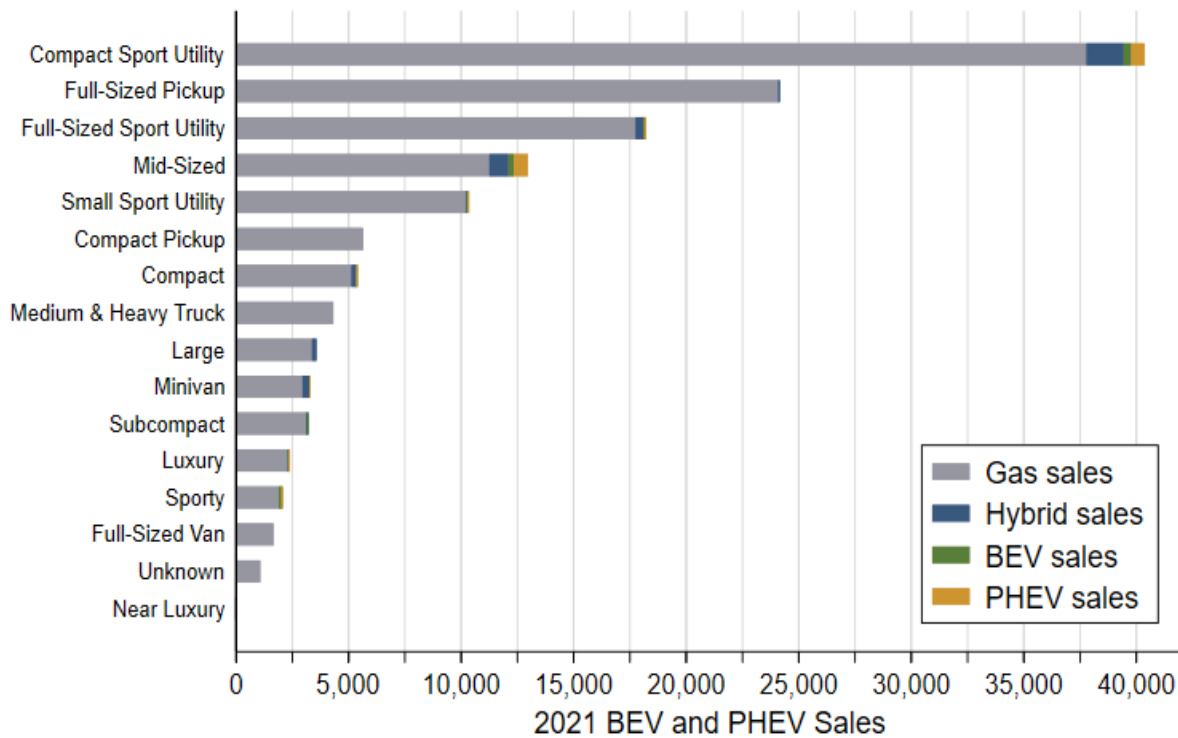


Figure 4-2 focuses on BEV and PHEV sales by body type. Some examples of BEV and PHEV compact sport utility vehicles include the Toyota RAV4 Prime and the Tesla Model Y.

Figure 4-2: BEV and PHEV Vehicle Sales by Body Type (2021)

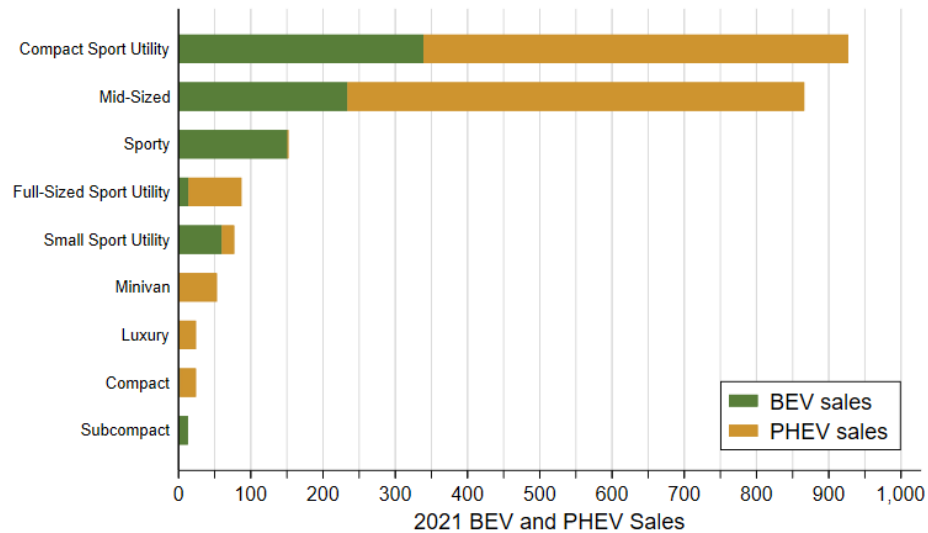
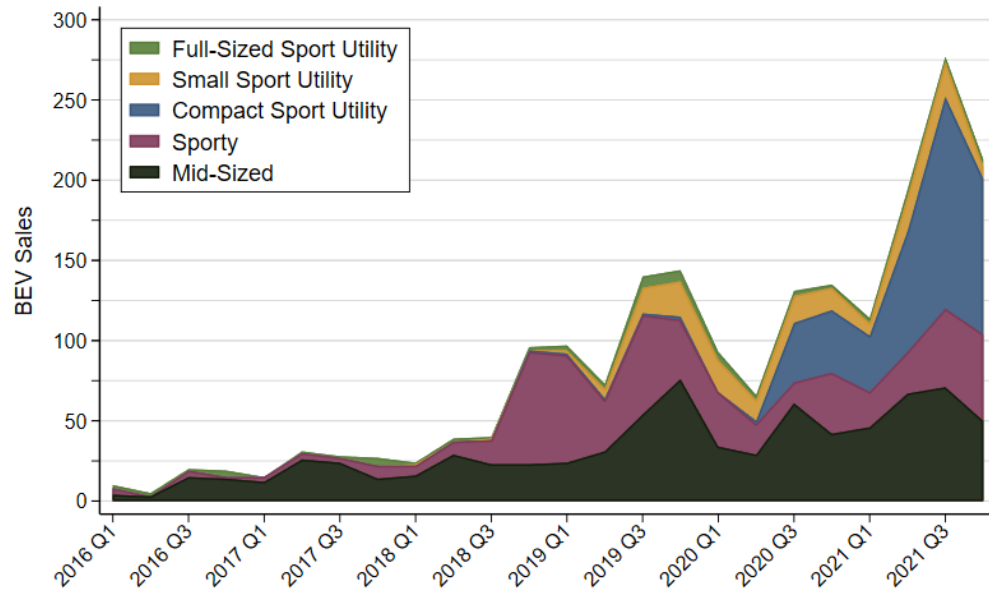


Figure 4-3 presents BEV sales by body type from 2016 through the end of 2021. The increase in compact sport utility vehicle sales in mid-2020 is attributable to the introduction of the Mustang Mach-E and the Tesla Model Y.

Figure 4-3: BEV Vehicle Sales by Body Type



5. Sales by Manufacturer and Dealer

Figure 5-1 presents 2021 BEV and PHEV vehicle sales by manufacturer. Toyota comprises the largest share of sales (all of which are PHEV), followed by Tesla and Ford.

Figure 5-1: BEV and PHEV Sales by Manufacturer (2021)

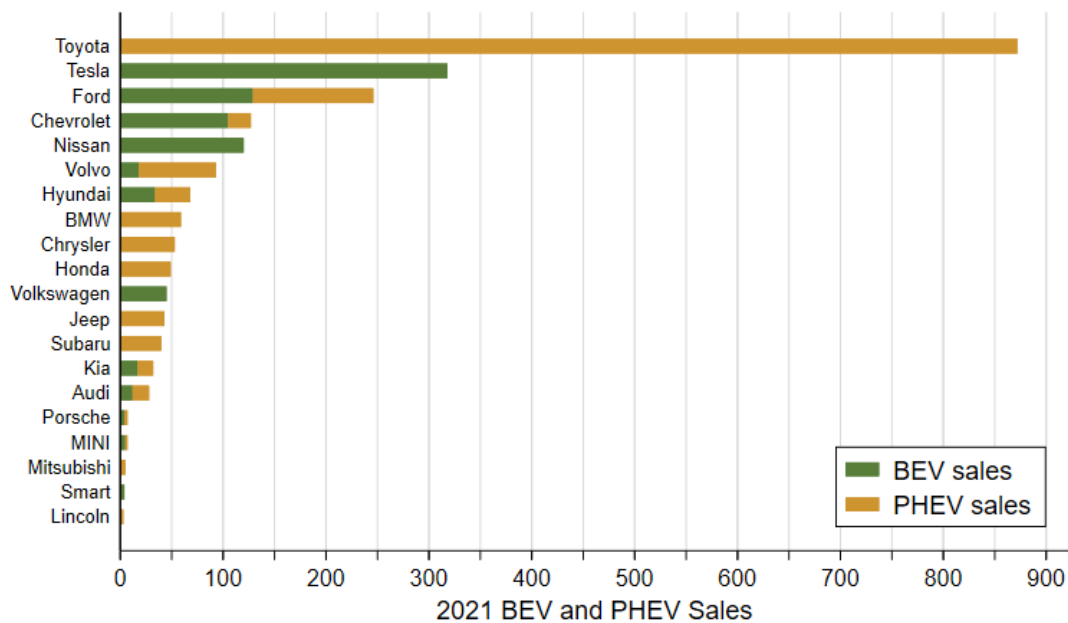


Figure 5-2 shows BEV vehicle sales for the top five manufacturers from 2016 through 2021. Tesla has the largest share of BEV sales. However, the Mustang Mach-E significantly increased BEV sales for Ford in 2021.

Figure 5-2: BEV Sales – Top 5 Manufacturers

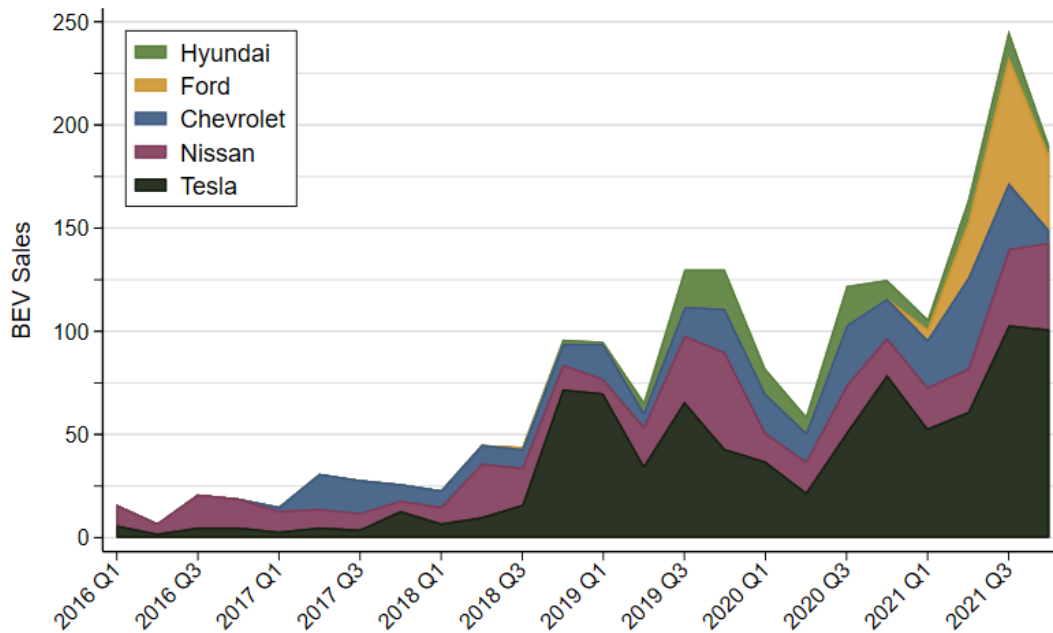


Figure 5-3 presents the top 20 sellers of BEVs and PHEVs in *YourState* for 2021.

Figure 5-3: BEV and PHEV Sales by Seller (2021)

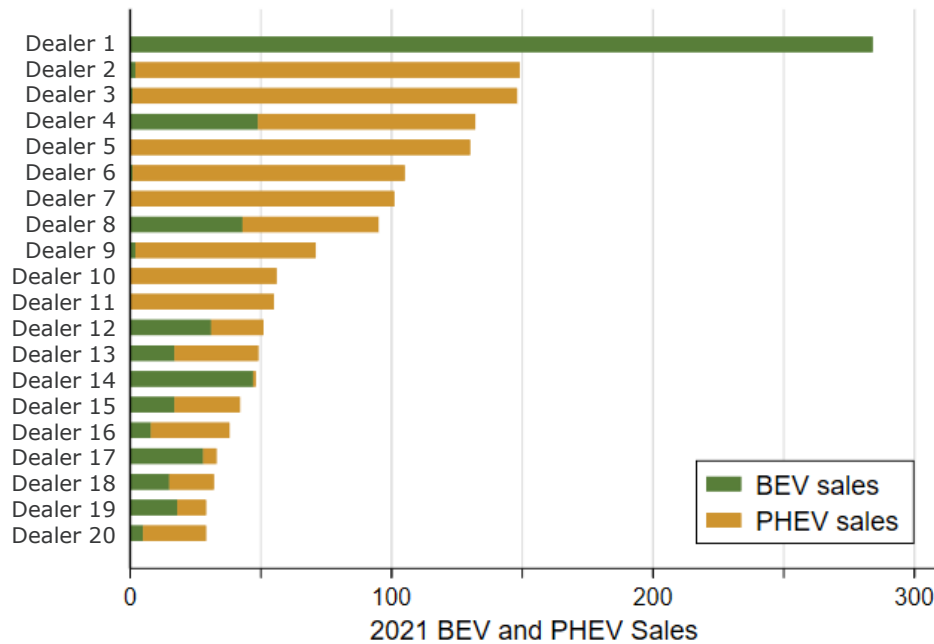
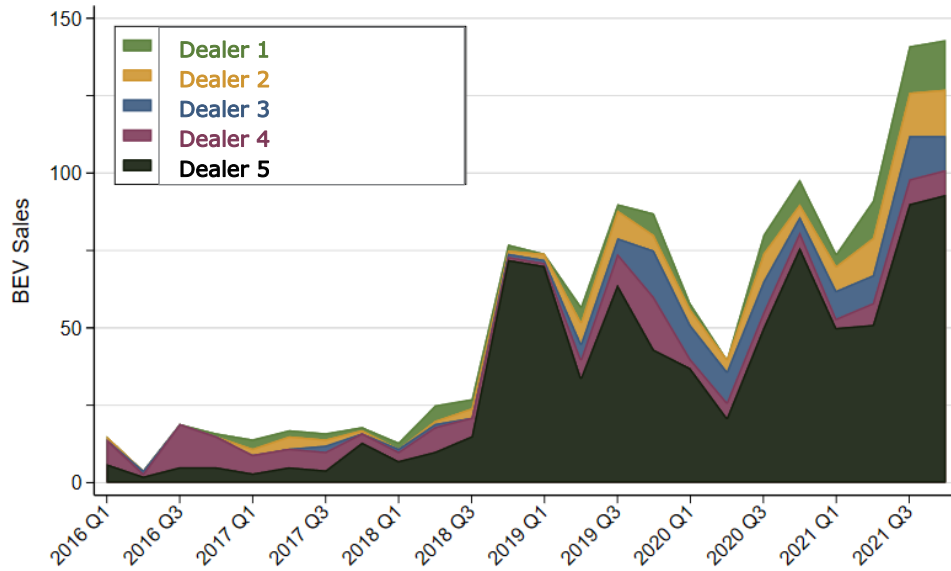


Figure 5-4 presents the top five sellers of BEVs from 2016 through 2021.

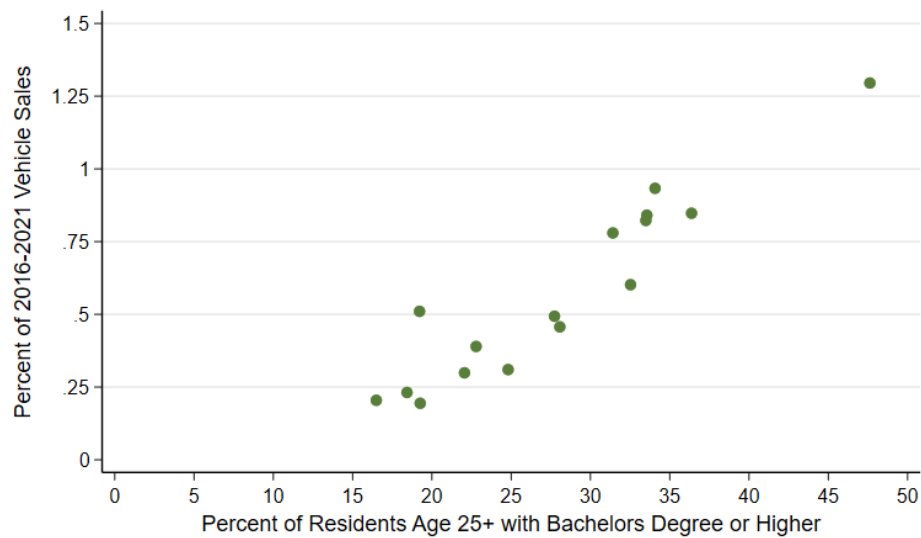
Figure 5-4: BEV Sales – Top 5 Sellers



6. Sales by Customer Demographics

Figure 6-1 summarizes the relationship between educational attainment and EV sales. Each marker represents a county in *YourState*. The figure below shows a strong relationship between educational attainment and alternative fuel vehicle sales. Said differently, counties with higher levels of residents with a bachelor's degree or higher tend to have higher levels of alternative fuel vehicle sales.

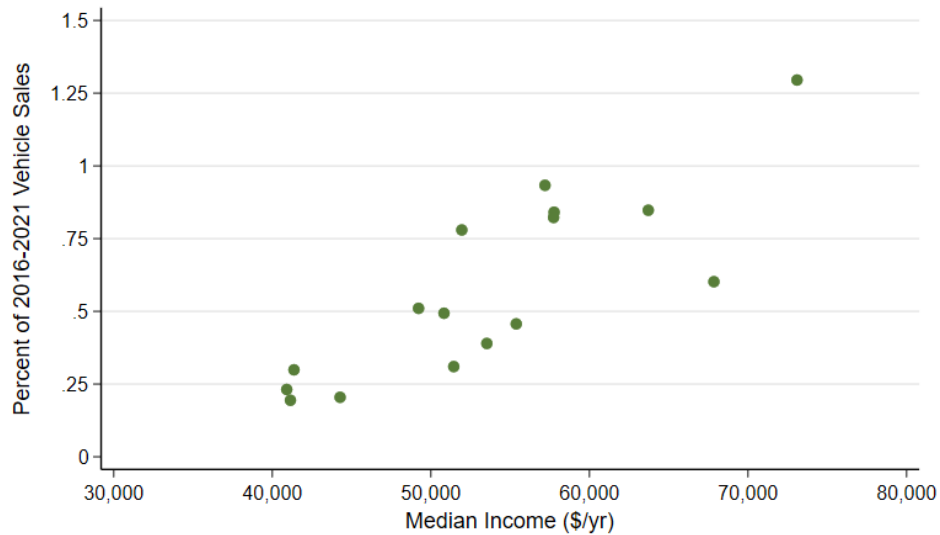
Figure 6-1: BEV and PHEV Sales by Educational Attainment⁴



⁴ Educational attainment and household income data provided by the 2019 American Community Survey (data.census.gov).

Figure 6-2 summarizes the relationship between median income in YourState and EV sales. Each marker represents a county in *YourState*. Similar to the trend observed with education, counties with higher levels of income are associated with higher levels of alternative fuel vehicle sales. Educational attainment and income are typically highly correlated, so this outcome is not surprising.

Figure 6-2: BEV and PHEV Sales by Median Income⁵



⁵ Educational attainment and household income data provided by the 2019 American Community Survey (data.census.gov).

