

Electric Vehicle Data Analysis Report

Comprehensive Data Analysis | Washington State EV Market

Dataset: Electric Vehicle Population Data (Washington State)

Total Vehicles: 163,003

Prepared by Kevyn.ai

Distribution of EV types, top model rankings, and adoption trends from 1997 through 2024.

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1. Executive Summary

This report presents a comprehensive analysis of electric vehicle (EV) data for the state of Washington. The dataset covers **163,003 registered electric vehicles**, including both Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs). The analysis examines EV type distribution, identifies the most popular models, and tracks adoption trends over time.

163,003 Total EVs Registered	127,102 BEVs	35,901 PHEVs	78% BEV Market Share
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Key Finding: Battery Electric Vehicles dominate with 78% of all registrations. Tesla holds three of the top five model positions, with the Model Y (31,640) and Model 3 (28,848) leading the market by a wide margin. EV adoption has accelerated dramatically, with 2023 seeing the highest number of new registrations — nearly 47,000 vehicles.

2. Introduction & Objectives

This report delves into the electric vehicle dataset for Washington State, aiming to understand the distribution of EV types, identify the most popular models, and examine the trend in EV adoption over the years. The analysis is intended to provide insights for stakeholders in the EV industry, policymakers, infrastructure planners, and consumers.

Analysis Objectives

1. Quantify the distribution of Battery Electric Vehicles (BEVs) vs. Plug-in Hybrid Electric Vehicles (PHEVs).
2. Identify and rank the top 5 most popular electric vehicle models.
3. Examine the trend in EV adoption by model year to understand growth patterns.
4. Provide actionable insights for industry stakeholders and policymakers.

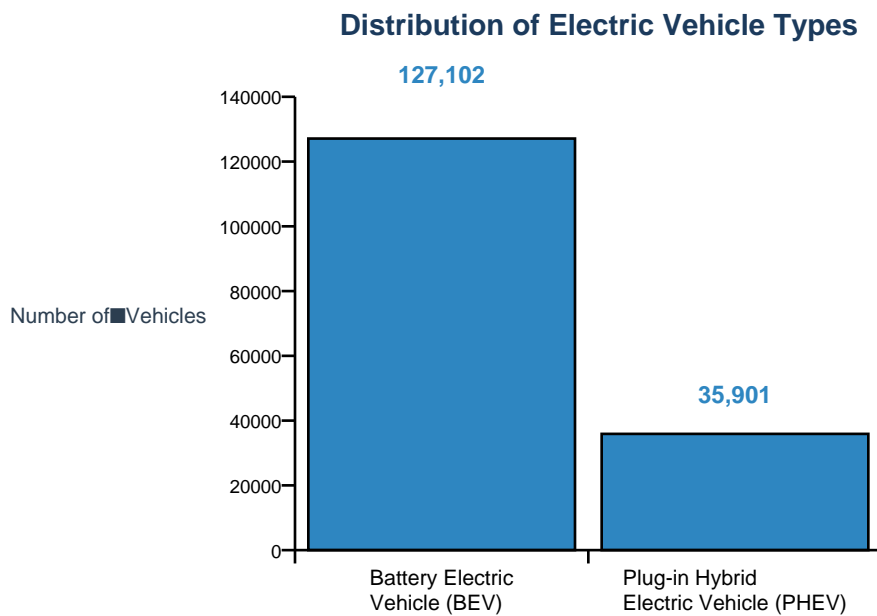
3. Methodology

The analysis was performed using the provided electric vehicle dataset. The methodology covered data cleaning, categorization of EV types, frequency-based ranking of models, and trend analysis of adoption by model year.

Phase	Description
Data Source	Electric vehicle registration dataset for Washington State (163,003 records)
Data Cleaning	Validation, deduplication, and standardization of make/model fields
Categorization	Classification into BEV and PHEV types
Ranking	Frequency-based ranking of vehicle makes and models
Trend Analysis	Year-over-year adoption analysis by model year
Tools	Python (Pandas, Matplotlib) for data processing and visualization

4. Distribution of Electric Vehicle Types

The dataset shows two main categories of electric vehicles: Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs). BEVs are overwhelmingly more prevalent, with a total count of 127,102 compared to 35,901 PHEVs — a ratio of approximately 3.5 to 1.

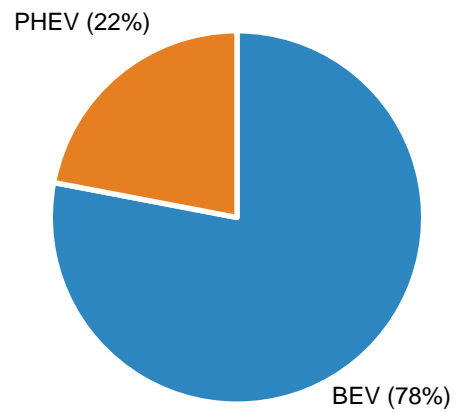


EV Type	Count	Market Share
Battery Electric Vehicle (BEV)	127,102	78.0%
Plug-in Hybrid Electric Vehicle (PHEV)	35,901	22.0%
Total	163,003	100%

BEV vs PHEV Market Share

The pie chart below illustrates the dominant position of Battery Electric Vehicles in Washington's EV market. At 78%, BEVs represent more than three-quarters of all registered electric vehicles, reflecting strong consumer preference for fully electric powertrains.

BEV vs PHEV Market Share

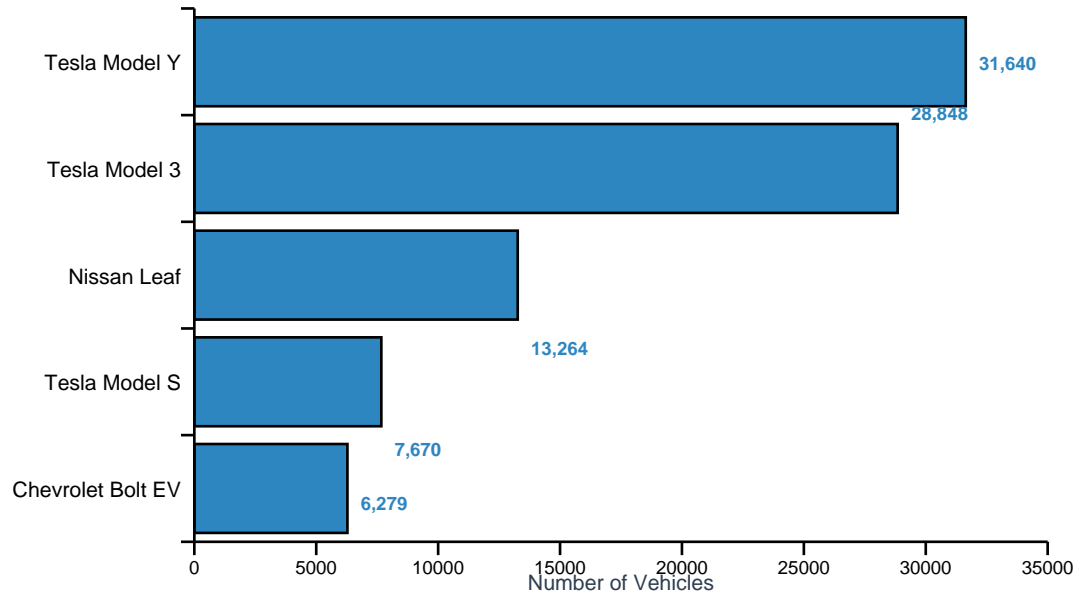


Insight: The 78/22 BEV-to-PHEV split suggests that Washington consumers strongly favor fully electric vehicles over hybrids. This may be driven by the state's relatively robust charging infrastructure, favorable electricity rates, and strong environmental policy incentives.

5. Top 5 Electric Vehicle Models

The top 5 electric vehicles by registration count are Tesla Model Y, Tesla Model 3, Nissan Leaf, Tesla Model S, and Chevrolet Bolt EV. Tesla models dominate the rankings, holding three of the five positions and accounting for 78% of the top-5 registrations.

Top 5 Electric Motor Vehicles

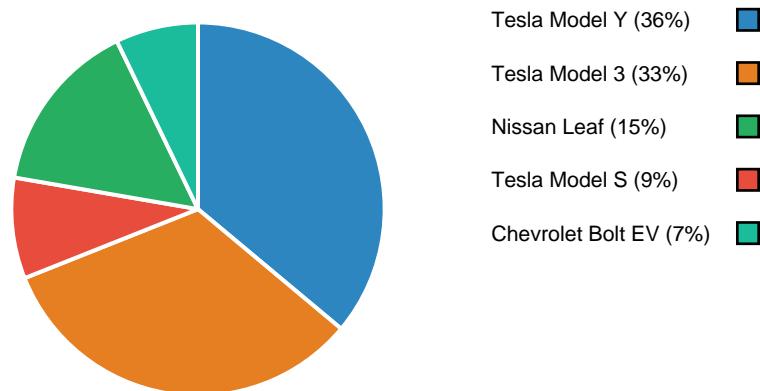


Rank	Make & Model	Registrations	Share of Top 5
1	Tesla Model Y	31,640	36.1%
2	Tesla Model 3	28,848	32.9%
3	Nissan Leaf	13,264	15.1%
4	Tesla Model S	7,670	8.8%
5	Chevrolet Bolt EV	6,279	7.2%

Tesla's Market Dominance

Tesla holds three of the top five positions, with the Model Y and Model 3 alone accounting for 69% of top-5 registrations. The Nissan Leaf, a long-standing EV pioneer, holds third place, while the Chevrolet Bolt EV rounds out the top five.

Tesla Dominance in Top 5 Models

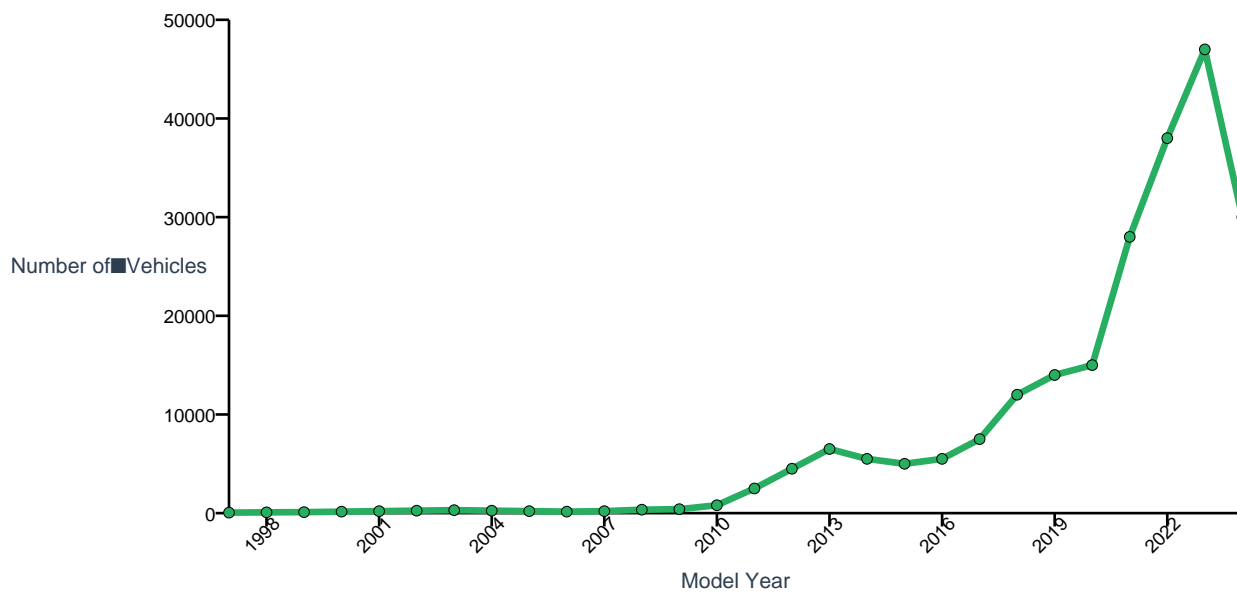


Key Takeaway: Tesla's combined top-5 share of 78% (Model Y + Model 3 + Model S) demonstrates extraordinary brand dominance in the Washington EV market. The Nissan Leaf's third-place position reflects its long history as one of the first mass-market EVs.

6. EV Adoption Trends by Model Year

There is a clear and accelerating growth trend in EV adoption. From minimal registrations in the late 1990s and early 2000s, adoption remained modest through 2017 before entering a period of exponential growth. The year 2023 saw the highest number of EV registrations at approximately 47,000 vehicles — a nearly 4x increase from 2018.

Electric Vehicle Adoption by Model Year

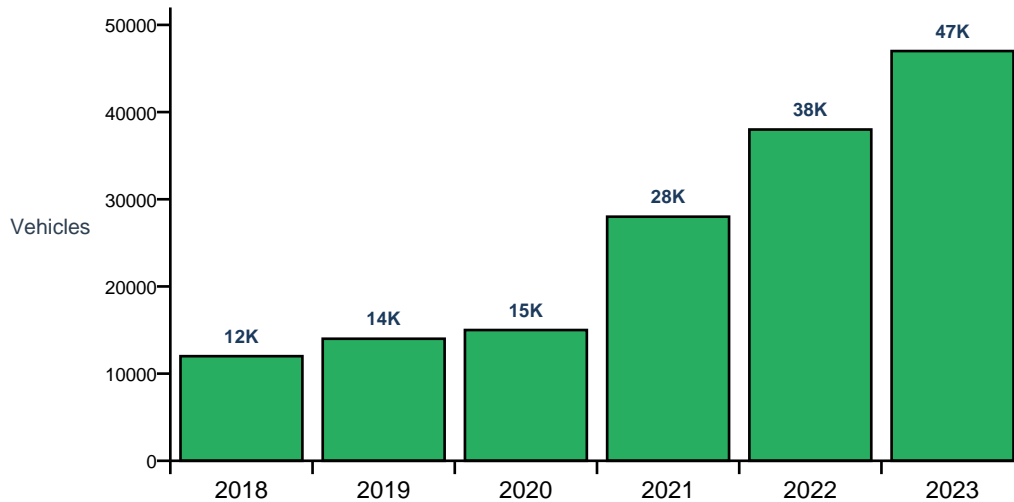


Period	Approximate Registrations/Year	Growth Phase
1997–2010	< 1,000	Early Adopters
2011–2014	2,500 – 6,500	Initial Growth
2015–2017	5,000 – 7,500	Steady Growth
2018–2020	12,000 – 15,000	Acceleration
2021–2023	28,000 – 47,000	Exponential Growth
2024 (partial)	~30,000	Continued Momentum

Recent Growth Acceleration

The bar chart below focuses on the 2018–2023 window, showing the dramatic acceleration in EV registrations. Growth averaged approximately 30% year-over-year, with the most significant jump occurring between 2020 and 2021 — likely driven by new model launches and increasing consumer awareness.

EV Registrations: Recent Growth (2018–2023)



Growth Highlight: EV registrations nearly quadrupled from 2018 (12K) to 2023 (47K). The 2020-to-2021 jump of 87% was the single largest year-over-year increase, coinciding with the launch of the Tesla Model Y and expanded EV offerings from multiple manufacturers.

7. Key Findings

Finding 1: BEVs Dominate the Market

Battery Electric Vehicles account for 78% of all registered EVs (127,102 out of 163,003). PHEVs make up the remaining 22%, suggesting strong consumer preference for fully electric powertrains.

Finding 2: Tesla Commands the Top Rankings

Tesla holds three of the top five model positions. The Model Y (31,640) and Model 3 (28,848) together account for 69% of top-5 registrations. Tesla's combined share of the top 5 is 78%.

Finding 3: Exponential Adoption Growth

EV adoption has accelerated dramatically, with 2023 seeing approximately 47,000 new registrations — nearly 4x the 2018 level. Year-over-year growth averaged ~30% during the 2018–2023 period.

Finding 4: 2020–2021 Was the Inflection Point

The single largest year-over-year jump (87%) occurred between 2020 and 2021, coinciding with the Tesla Model Y launch and expanding EV model availability across manufacturers.

8. Results & Discussion

The findings provide valuable insights into the current state of the EV market in Washington. The dominance of BEVs and specific models like Tesla's indicates clear market preferences and consumer trends. The increasing adoption rate in recent years suggests growing acceptance and significant potential for continued growth in the EV sector.

Implications for Stakeholders

Charging Infrastructure: The 78% BEV share means DC fast-charging infrastructure is critical. Continued investment in Level 3 charging stations will be needed to support the growing fleet.

Policy & Incentives: Current incentive structures appear effective in driving BEV adoption. Maintaining or expanding these programs could sustain the growth trajectory.

Manufacturer Competition: While Tesla dominates today, the entry of new models from legacy automakers may diversify the market in coming years.

Grid Planning: Utilities and grid operators need to plan for increasing electricity demand from the rapidly growing EV fleet.

9. Conclusion & Next Steps

This report highlights the significant trends in Washington's electric vehicle market: the prevalence of BEVs, Tesla's dominant market position, and the accelerating pace of EV adoption. These insights are crucial for stakeholders making informed decisions and strategies in the evolving landscape of electric mobility.

Bottom Line: Washington's EV market is in a period of rapid, accelerating growth. With BEVs accounting for 78% of registrations and adoption nearly quadrupling since 2018, the state is well-positioned as a leader in electric vehicle adoption. The key challenge ahead is ensuring infrastructure keeps pace with demand.

Suggested Next Steps

1. Geographic Analysis

Map EV registrations by county to identify adoption hotspots and charging infrastructure gaps.

2. Price & Range Correlation

Analyze whether vehicle price point and electric range correlate with adoption rates.

3. Manufacturer Diversification

Track whether new entrants (Rivian, Hyundai/Kia, Ford) are eroding Tesla's market share over time.

4. Charging Infrastructure Mapping

Overlay EV registration density with charging station locations to identify underserved areas.

This report was prepared by Kevyn.ai for electric vehicle market analysis and strategic planning.

For Data Analysis Services

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