

Porsche Electric Vehicle Offering Analysis

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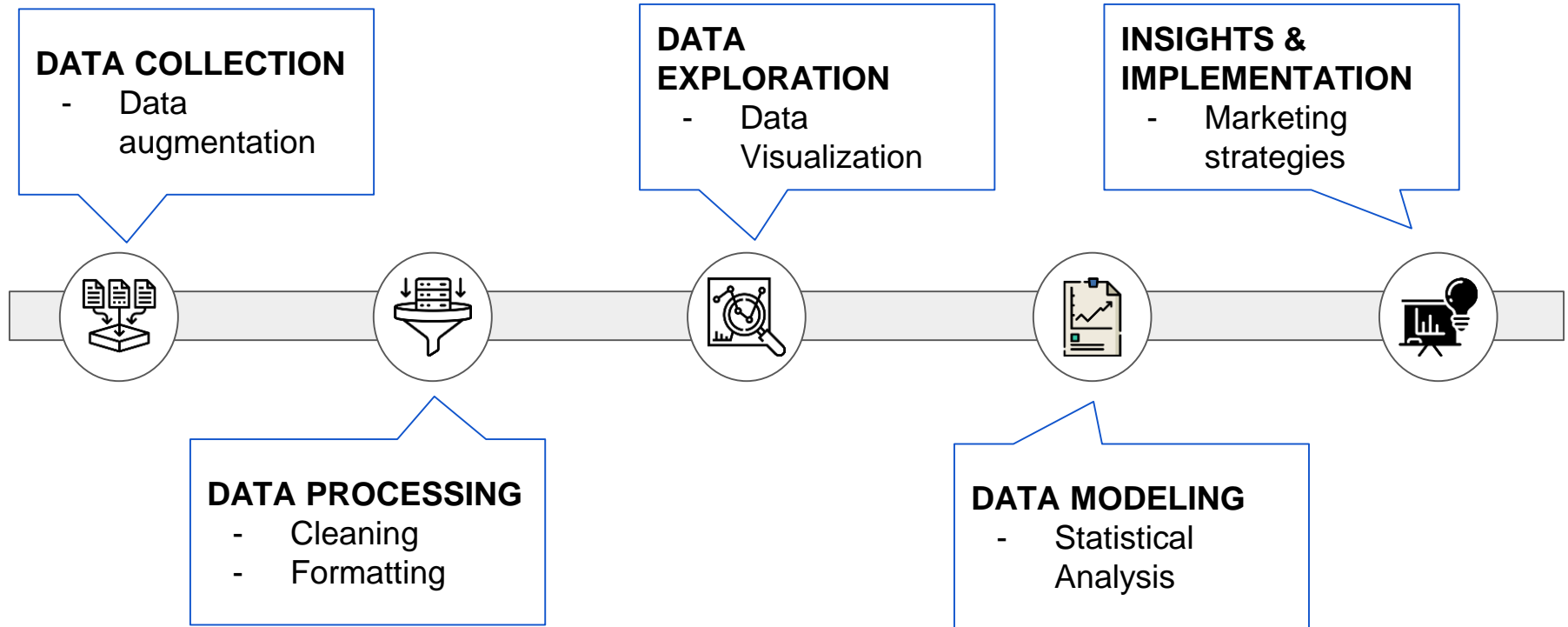
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Recap - Phase I



Business Need: Convert existing U.S. Porsche customers and the target market to the EV model, in order to increase revenue and reduce greenhouse gas emissions.

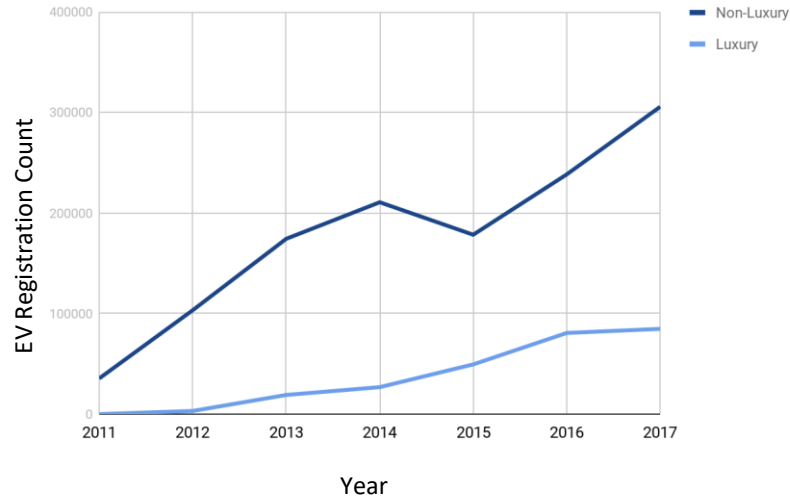
Phase II - Methodology



Market Overview

Luxury EV sales are increasing as more options emerge in the market.

Luxury EV sales have been steadily increasing since their introduction in 2011.



Tesla and BMW are dominating the EV market (as of 2017).

Porsche's current market share of all vehicles is 0.33%; its market share of EVs is 0.81%.

Vehicle	Luxury	Type	2011	2012	2013	2014	2015	2016	2017	TOTAL
Tesla Model S	1.0	EV	0	2171	19000	16750	26200	30200	26500	120821
Tesla Model X	1.0	EV	0	0	0	0	208	19600	21700	41508
BMW i3	1.0	EV	0	0	0	6092	11004	7625	6276	30997
BMW X5	1.0	PHEV	0	0	0	0	774	5995	5349	12118
BMW 3 Series Plug In	1.0	PHEV	0	0	0	0	54	851	4141	5046
BMW 5 Series Plug In	1.0	PHEV	0	0	0	0	0	0	3759	3759
VW e-Golf	1.0	EV	0	0	0	357	4232	3937	3534	12060
Audi A3 Plug In	1.0	PHEV	0	0	0	0	0	4280	2877	7157
Volvo XC90	1.0	PHEV	0	0	0	0	86	2015	2196	4297
Tesla Model 3	1.0	EV	0	0	0	0	0	0	1770	1770
Porsche Cayenne S E-Hybrid	1.0	PHEV	0	0	0	112	1163	2111	1574	4960

Target Consumer - Get to Know the Current EV Market

To understand the target consumer, we asked:

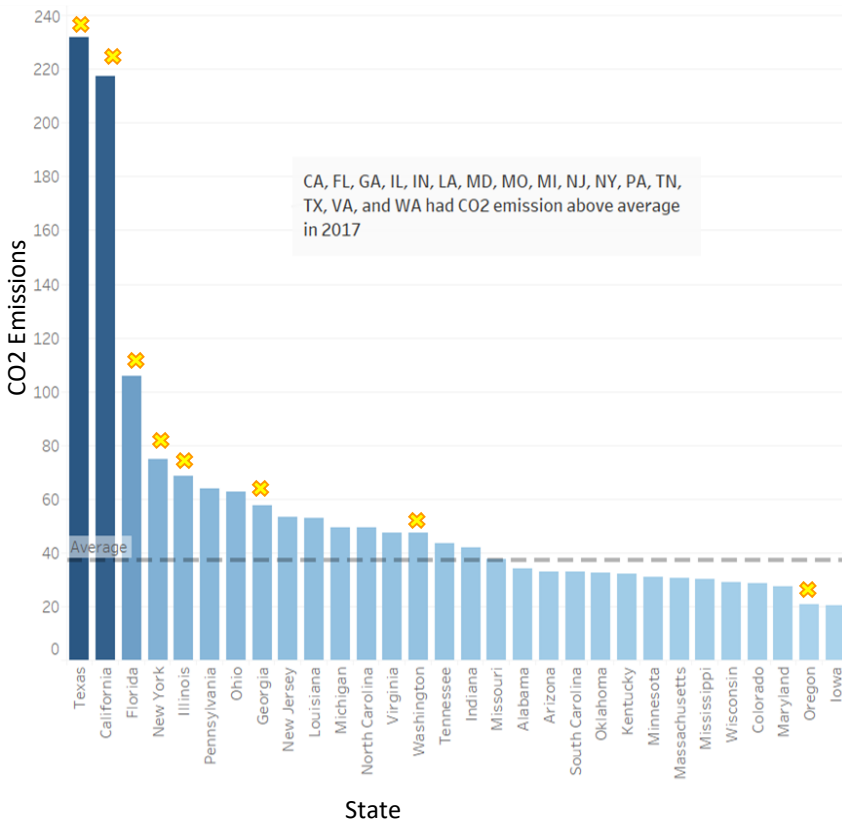
- What geographical regions have the highest EV sales, and why?
- What local factors might impact EV sales?
- Who is buying (luxury) EVs?
- What are the current trends in automobile sales?

Target Consumer - Geographical Area

EV Registration by State (2017)

State	Count	% Market
California 🇺🇸	179600	48.9%
Washington 🇺🇸	19900	5.4%
Florida 🇺🇸	16600	4.5%
Texas 🇺🇸	14390	3.9%
Georgia 🇺🇸	13530	3.7%
New York 🇺🇸	10940	3.0%
Arizona	9820	2.7%
Oregon	9550	2.8%
Illinois 🇺🇸	7950	2.2%

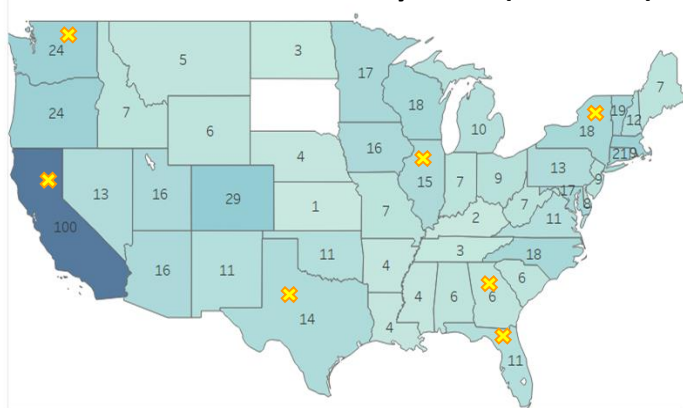
The top 6 states for EV registrations had above-average CO2 emissions in 2017.



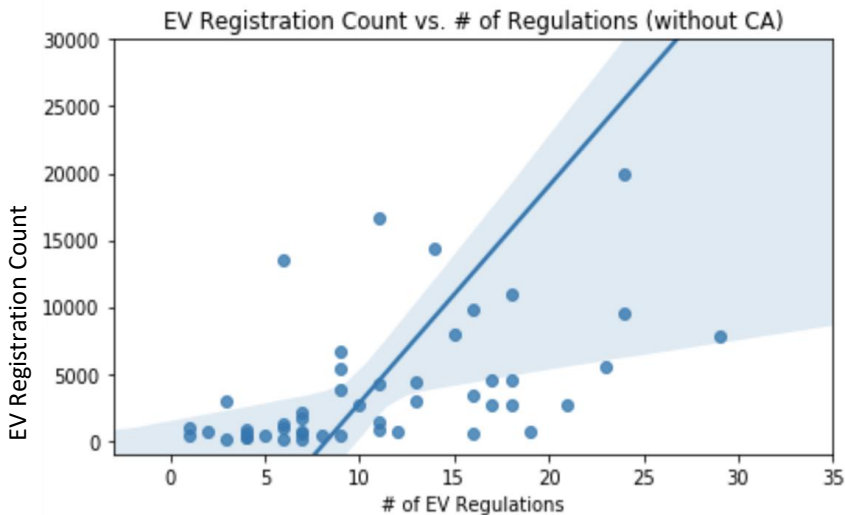
Target Consumer - Geographical Area

There does seem to be a correlation between a state's EV regulations and incentives and its EV sales. The more EV regulations and incentives in a state, the more EV registrations there are.

EV Laws and incentives, by State (Dec 2019)



✕ Denotes state with top EV registrations



Regulations and Incentives - NLP

Processing Regulations Text

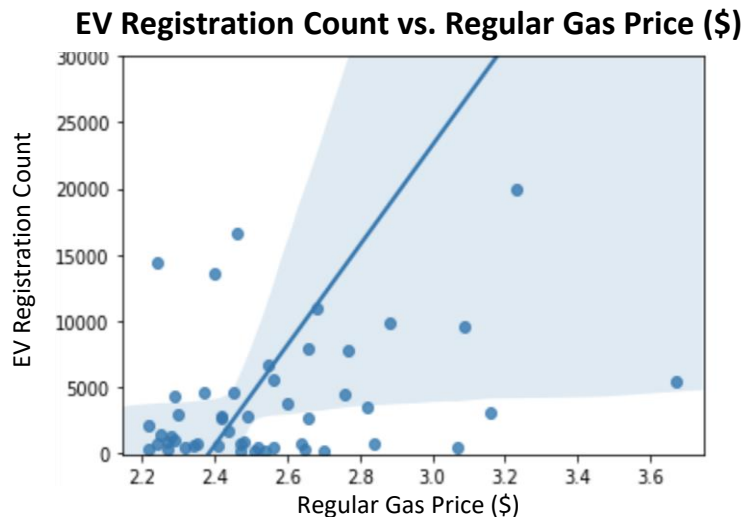
- Grouped popular Regulations and Incentives to 100 components using LSA.
- Total Regulations: 665
- n_Components Truncated: 100
- Variance captured by all components:
63.8%

The Most Popular Regulations:

1. Rebates for purchasing plug-in vehicles
1. Rebates for installing charging stations (both residential and commercial)
1. Grant for environmental related projects
ex) "The Wyoming Department of Environmental Quality (DEQ) is accepting grant applications for nitrogen oxide emissions reduction projects."
1. Rebates for mid- to heavy duty vehicles to replace alternative fuel vehicles
1. Task Force to increase EV infrastructures (Joint-state Initiatives)

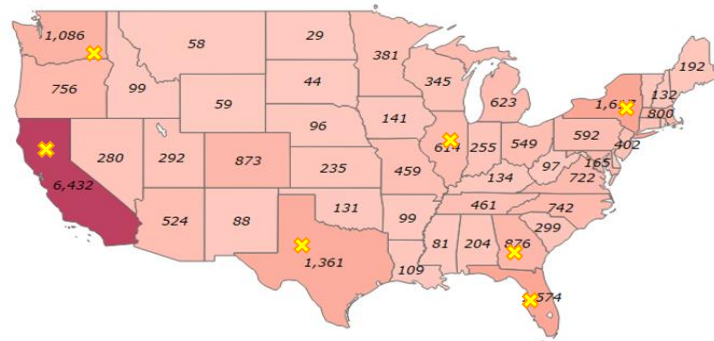
Target Consumer - Geographical Area

There is also a correlation between a state's regular gas price and EV sales - the higher the price of gas, the more EV registrations there are.



Finally, there is a correlation between EV registrations and the # of EV charging stations in a given state. Unfortunately, we don't know which came first.

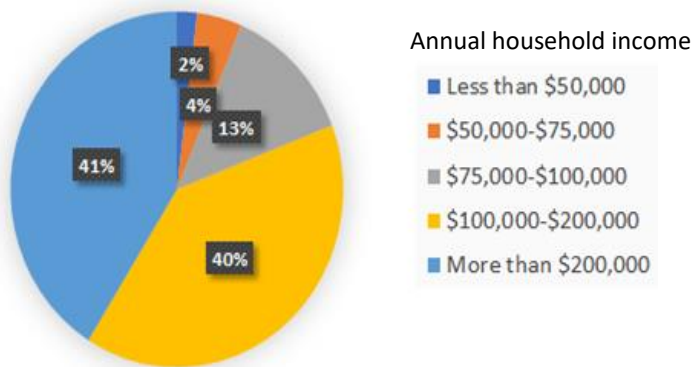
EV Charging Station count, by State (Dec 2019)



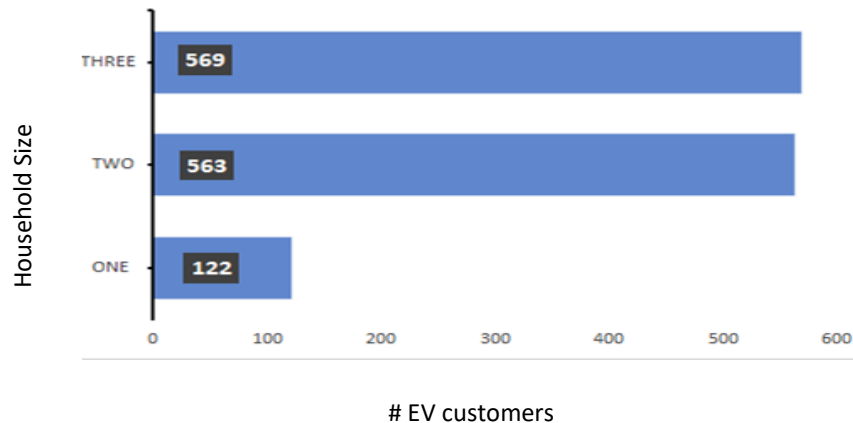
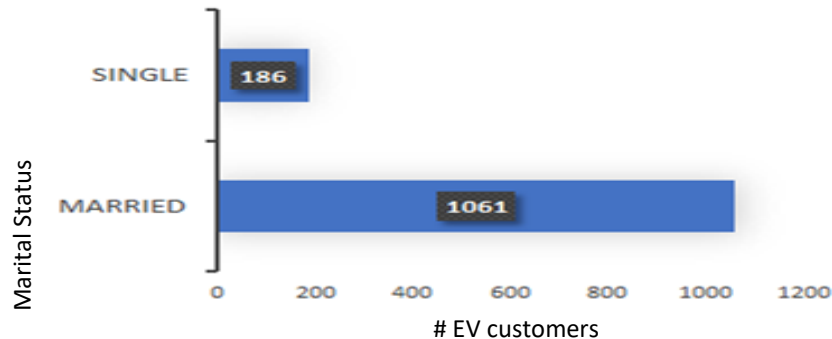
✕ Denotes state with top EV registrations

Target Consumer - Demographics

People with an annual income of >\$100,000 are more likely to buy EVs.



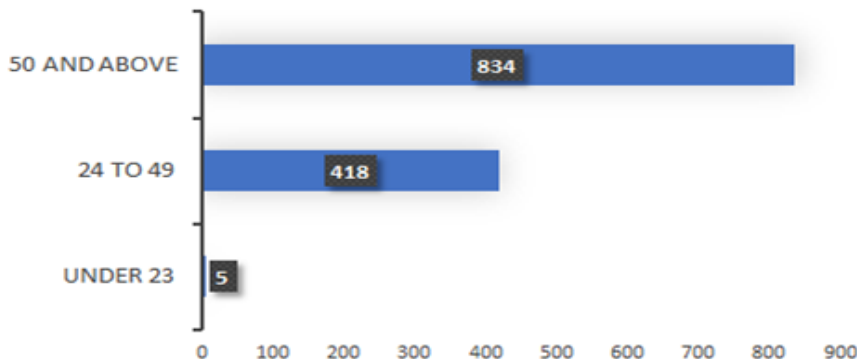
Approximately 80% of the EV customers in Maryland are married, and 45% have 3+ household members.



This data is from research performed on a sample of US - Maryland

Target Consumer - Demographics

Currently, the majority of EV customers are aged 50 and above.



But, studies show that millennials have been increasing significantly among the EV customer base ([AAA](#)).

This data is consistent with the demographics of both Chevy Bolt and Tesla Model 3 consumers.

Chevy Bolt	Tesla Model 3
52% male, 48% female	65% male
Millennials 18-34	Millennials 18-34
53% married	71% married
Mean HHI is \$67,630	Mean HHI is \$102,040

Women account for 62% of new car sales

- Audi's Q3 (SUV) - 40% women, 65% of Q3 sales

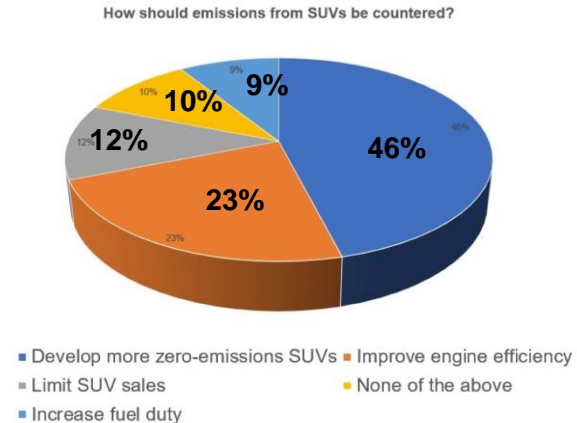
*To optimize the market strategy we recommend collecting demographic data on Porsche consumers and the target market.

Market Trends - SUVs

SUV sales have been on the rise over the last 5 years



SUVs emit 25% more CO₂ than a mid-sized car, and 46% of consumers believe the solution is to develop more zero-emissions SUVs.



Target Consumer - Recommendations

SUV

Offer new models that reflect market trends such as SUV, crossover, or hatchback EV.



Incentives & Regulation

Focus on consumers in **states with incentives and regulations** that support EV sales*



Gas Prices

Focus on areas with **higher average gas prices**, and create messaging around average cost savings in gas



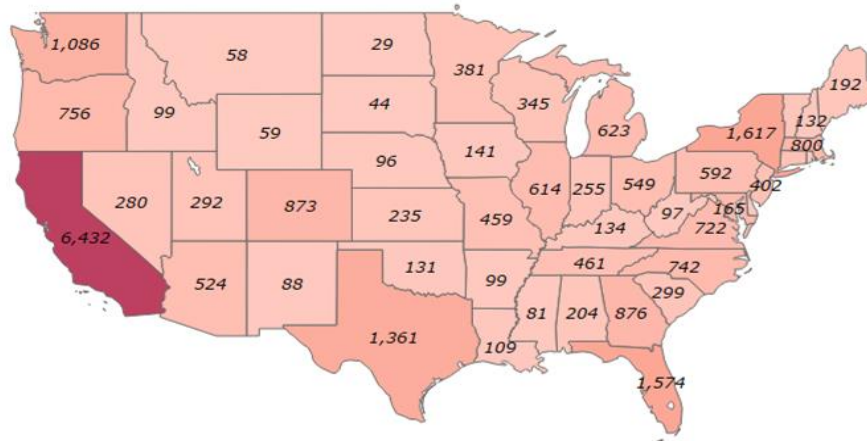
Target Consumers

Target millennials, family and women customers in current luxury vehicle market, emphasizing on comfort, safety, and environmental effects.

EV Charging Network

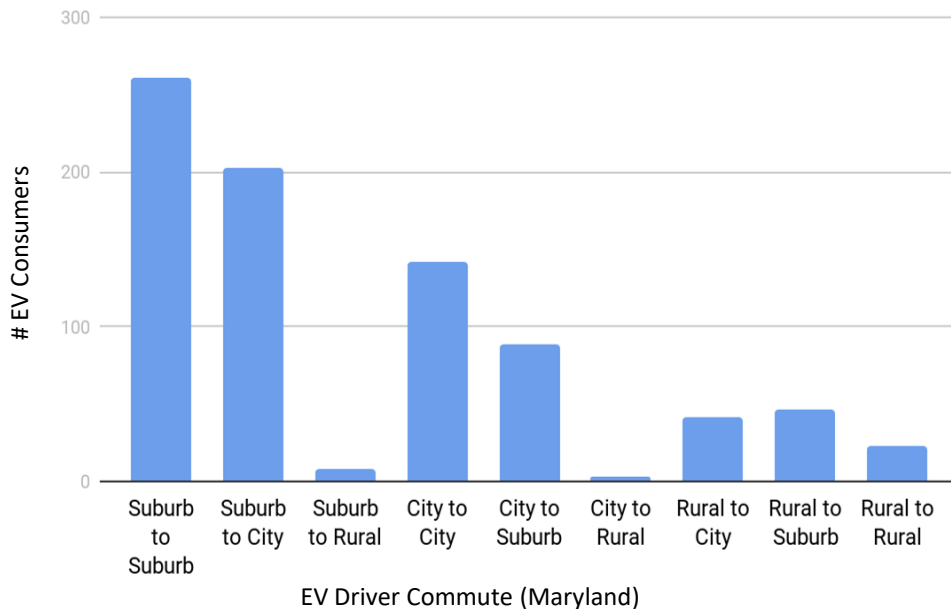
- When deciding to purchase an EV, consumers worry about the available charging network ([AAA](#)). 75% of adults aged 55+ are less likely to buy an EV due to range anxiety ([KPMG](#))
 - The average age of Porsche's current consumer is >40, so it's important for Porsche to address this concern.

EV Charging Station count, by State (Dec 2019)



EV Charging Network

Most EV drivers commute in and between cities and suburban areas.



Studies show that 80% of EV charging happens at home.

As such, Porsche should consider offering rebates on home installation of Level 1 and Level 2 EVSE chargers for Porsche buyers.

Charging Network - Recommendations

Offer non-proprietary chargers to reduce cost and tap into existing charging networks

+

Install new chargers in states with increasing EV sales that don't yet have robust charging networks

+

Consider free or discounted home charging installation to gain new buyers

Marketing Strategy

01

Customer Profile I
Current Luxury Car Owners

- General luxury car owners
- Porsche's white glove service to install charging stations at home
- Keywords: design, convenience, and innovation

02

Customer Profile II
Family & Women

- Family and women drivers
- Zero-emission SUV that comes with comfort, safety, and style
- Keywords: comfort, safety, environmentally friendly

03

Customer Profile III
Millennials

- Millennials with income higher than \$100,000
- Versatile SUV that you can drive anywhere, equipped with innovation and comes with zero-emission
- Keywords: innovation, environmentally friendly, versatility

04

Customer Profile IV:
Geo-specific Customers

- Luxury car owners in key states with high incentives for EV
- Emphasize rebate (reward) and convenience that comes with improved infrastructures
- Keywords: future, convenience, reward

Summary

To maximize both earnings and environmental impact, Porsche should:

1. Offer an SUV electric vehicle, which is an increasingly popular model and emits 25% more CO₂ than a mid-size car
1. Target consumers in states that have incentives and regulations that support EV sales
 - a. Especially rebates for vehicles or charging station installation
 - b. In emerging market states that don't offer these incentives, Porsche should consider offering them independently
1. Target states with higher average gas prices, and create messaging around lifetime cost savings
1. Market to millennials, especially families and women - place emphasis on safety, comfort, and environmental impact
1. Offer nonproprietary chargers to maximize consumer ease and reduce Porsche cost
1. Install new chargers in emerging market states that don't yet have a robust charging network
 - a. Especially in urban and suburban areas

Thank you!

Sources:

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