TRANSFORMING

ELECTRIC VEHICLE
CHARGING ANXIETY

TO EXCITEMENT

OUR AGENDA

Market Overview & Business Issue

01

Data Background

02
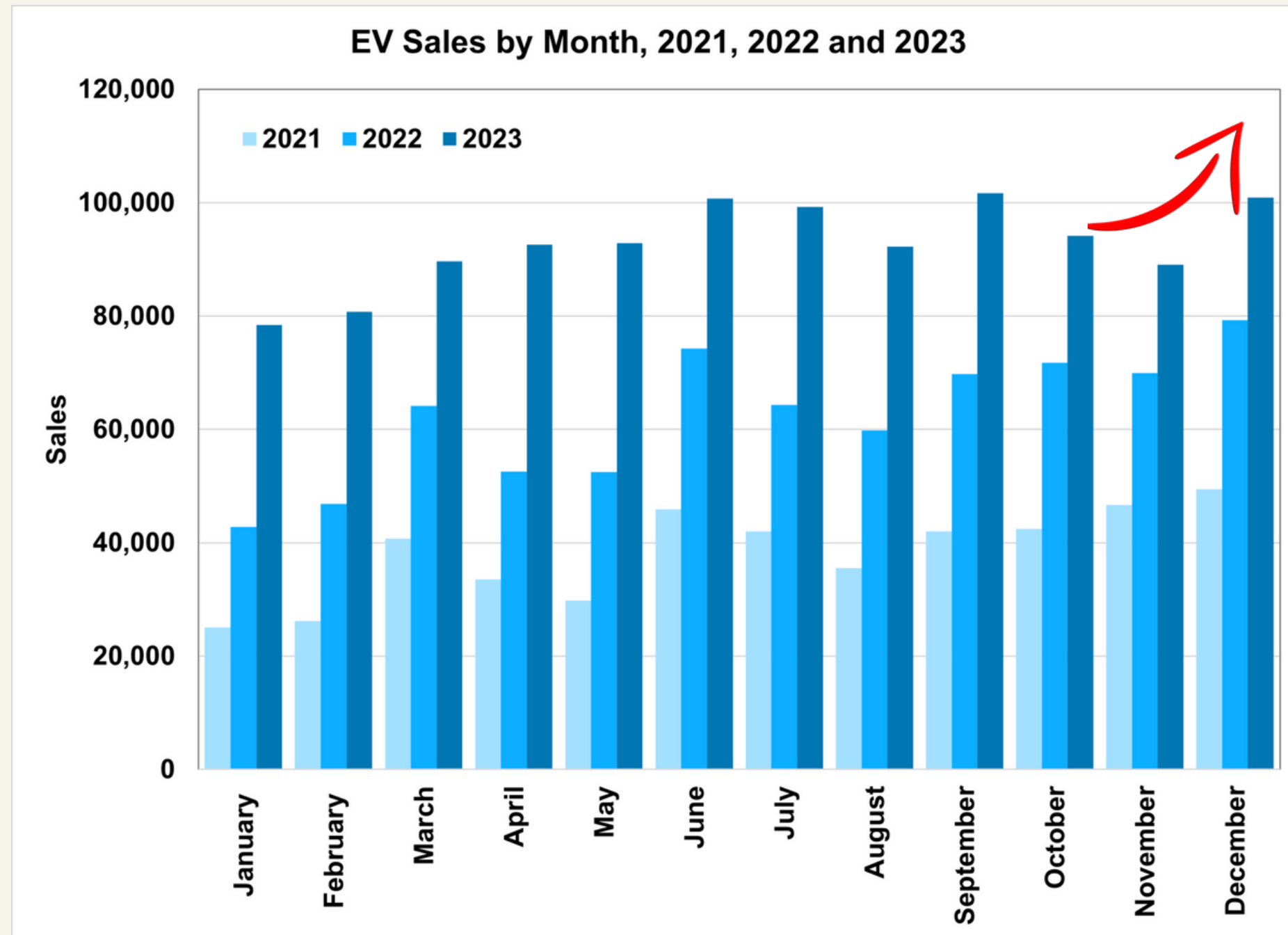
Research Model & Statistics

03

Result & Recommendations

04

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INDUSTRY OVERVIEW

EV Sales by Month, 2021, 2022 and 2023

Electric Vehicles

2.7 millions

EV Company

223

EV Charging Station

160,000

Growth Rate

18.6%

(from forecast period : year 2023 to 2029)
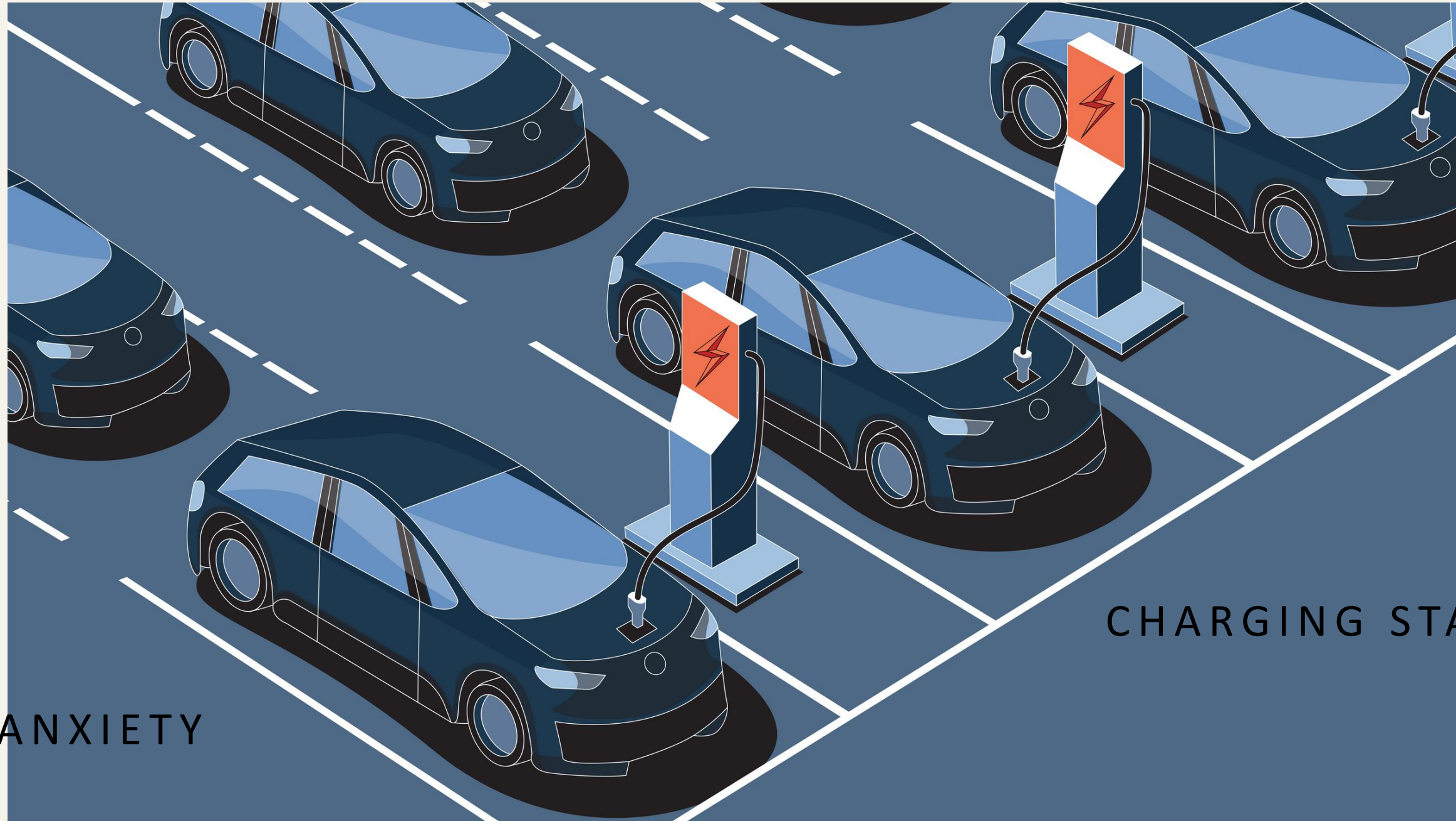
Market Value

107.68 billions

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WHAT MAKES EV CHARGING STATIONS FAIL?

RELIABILITY OF PUBLIC CHARGING NETWORK

CHARGING STATION FAILURES

CHARGING ANXIETY

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BUSINESS ISSUE

" ARE THERE ENOUGH CHARGING STATIONS IN THE FOCUS CITIES? "

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WHICH AREA ARE WE GOING TO FOCUS?

SAN JOSE, CA
-OUR BENCHMARK-

SEATTLE, WA
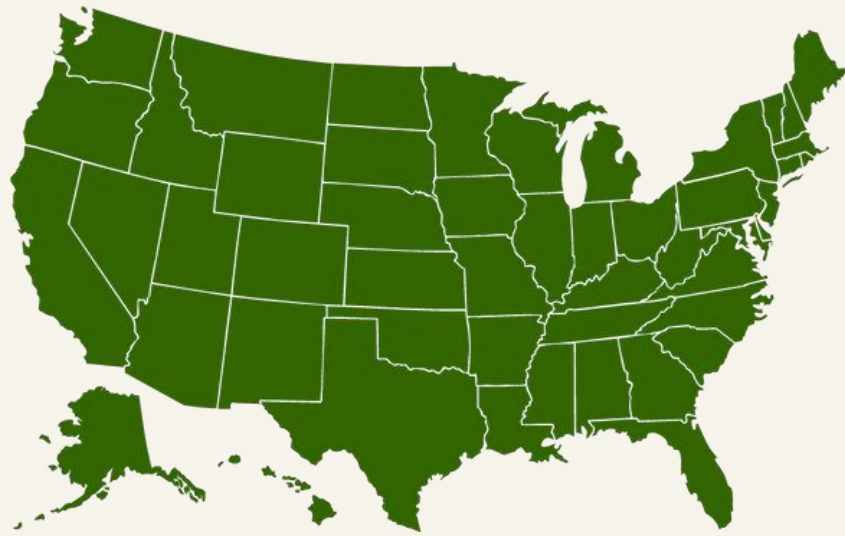
PORTLAND, OR

DATA EXPLORATION

DATASET

- WASHINGTON EV POPULATION

- OREGON EV POPULATION

- ELECTRIC & ALTERNATIVE FUEL CHARGING STATIONS

DATA SOURCE

- DATA.WA.GOV

- DATA.OR.GOV

- KAGGLE.COM

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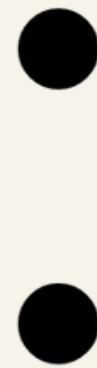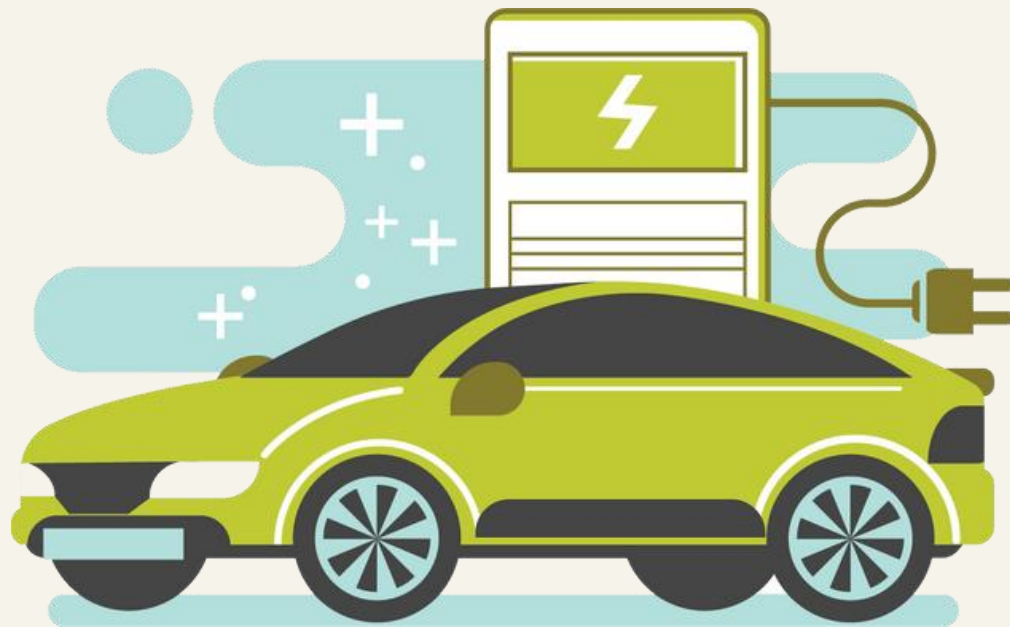
KEY VARIABLES

STATES

CITIES

FUEL TYPES
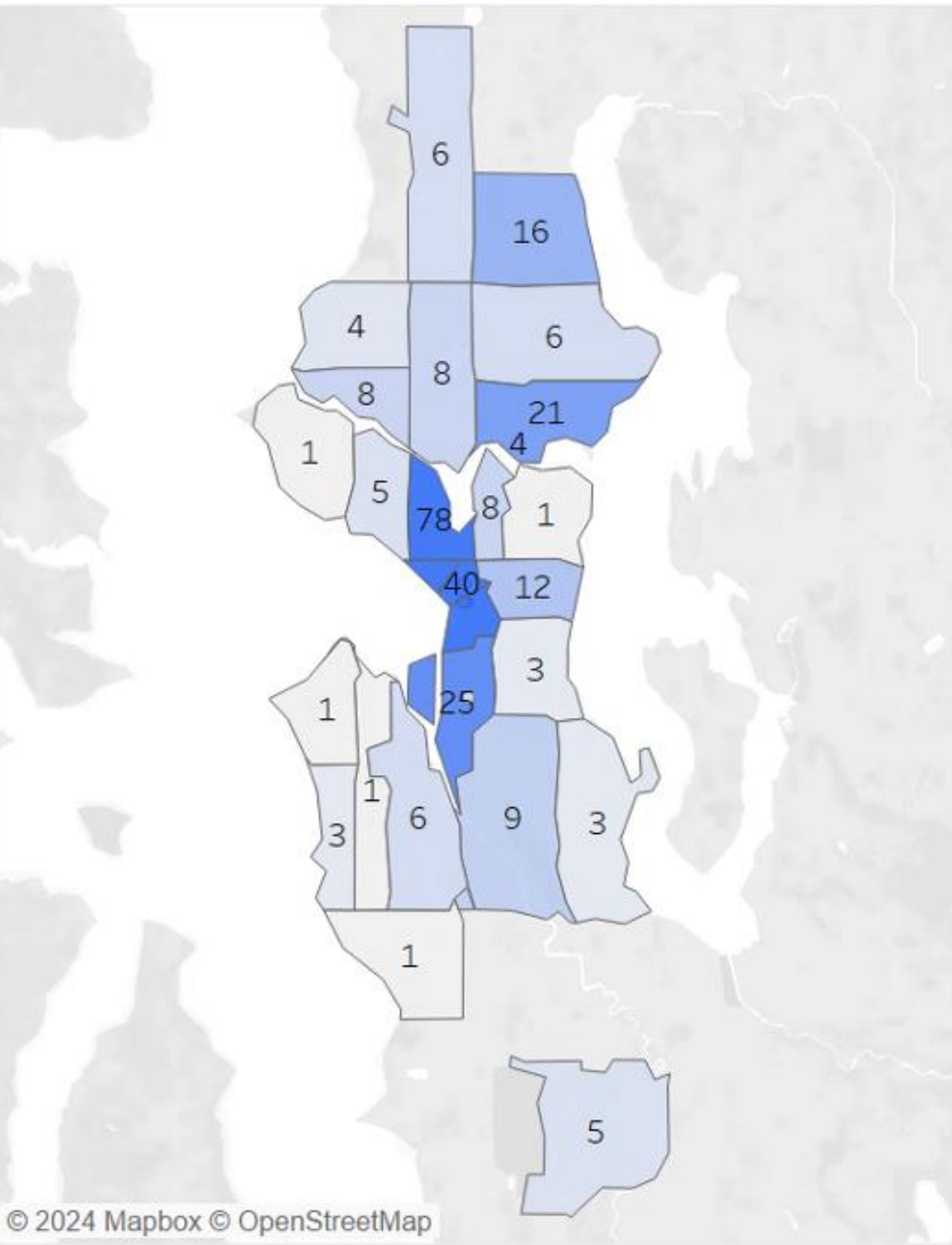

ZIP CODES

ANALYSIS MODEL-TABLEAU

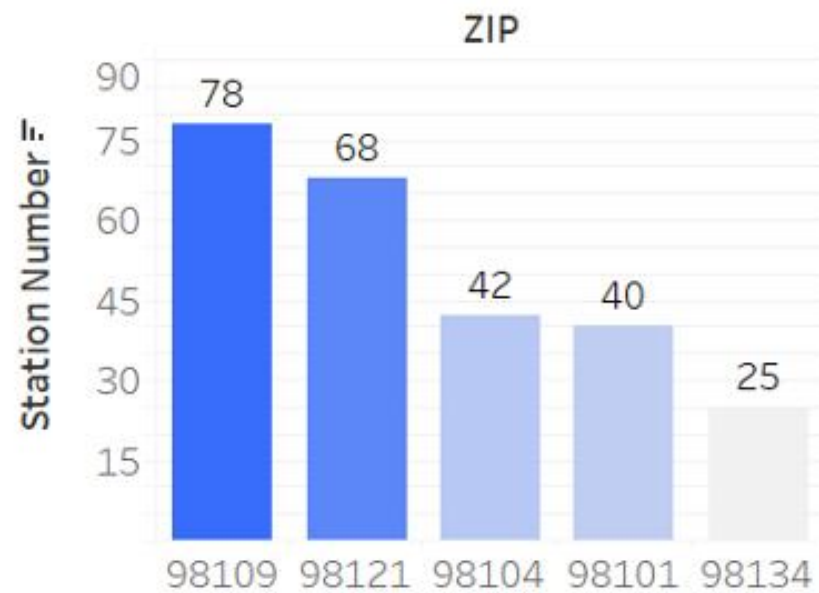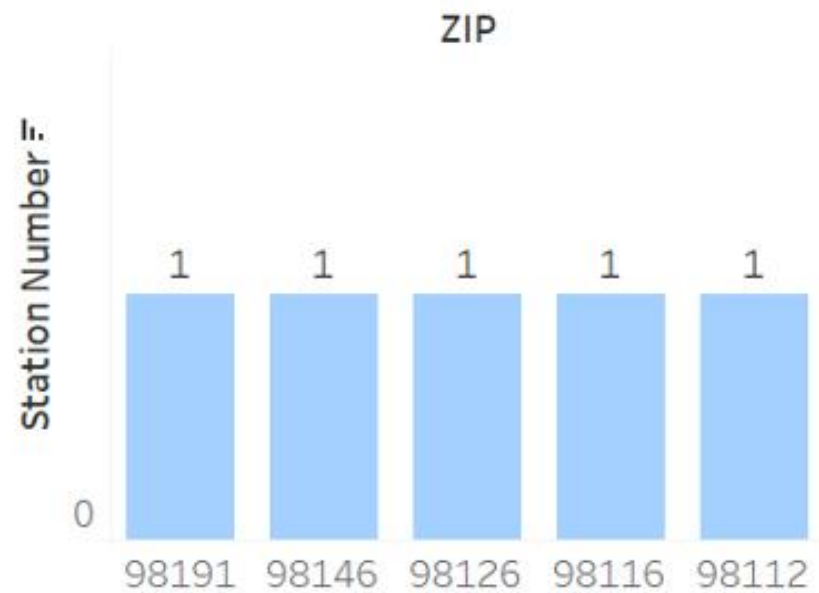## Visualization: Population Map and Bar Chart

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SEATTLE CHARGING STATIONS

Number of Charging Stations in Seattle

Top 5 Number of Charging Station in Seattle

Bottom 5 Number of Charging Station in Seattle
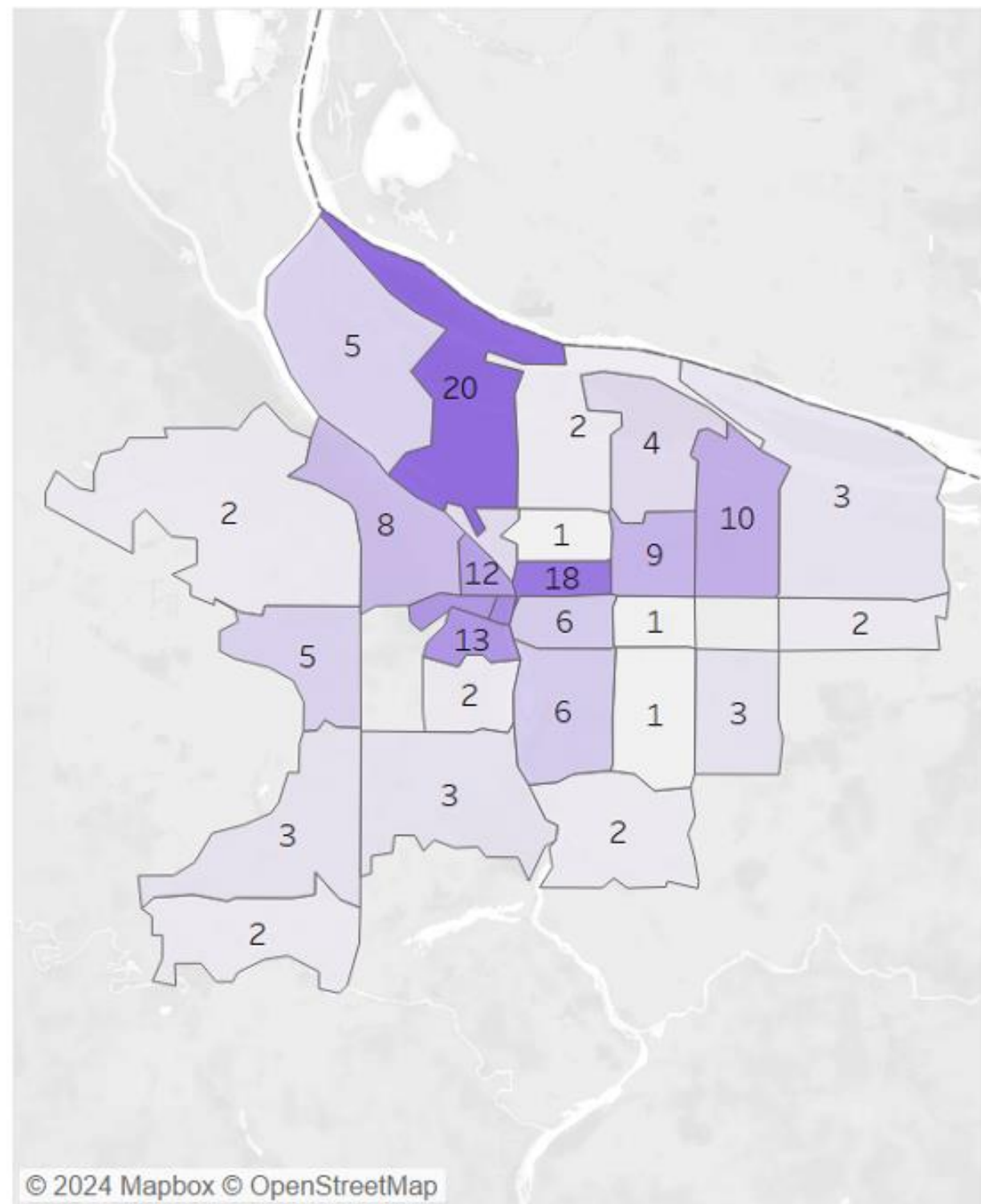
© 2024 Mapbox © OpenStreetMap

Total SEATTLE Charging Stations
403

HIGHEST Station Population
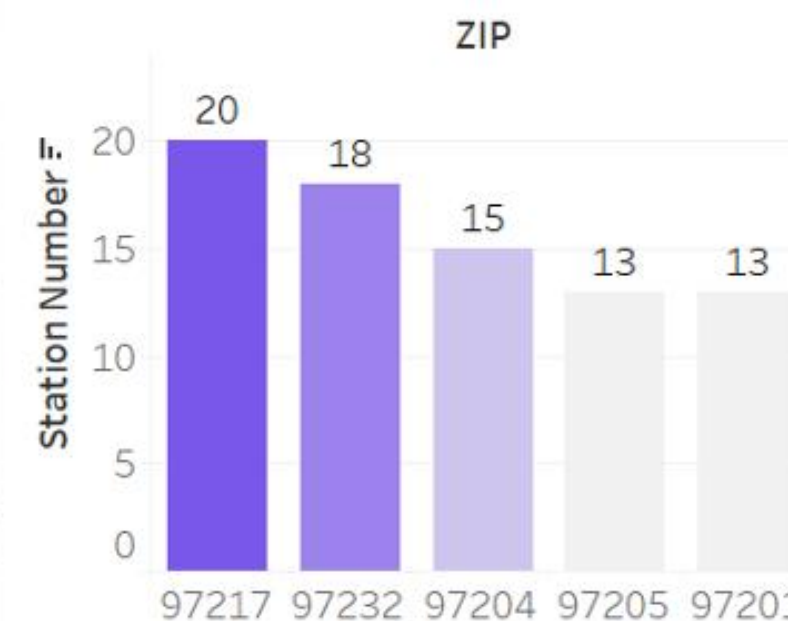**98109, 98121, 98104, 98101, 98134**

LOWEST Station Population
98191, 98146, 98126, 98116, 98112

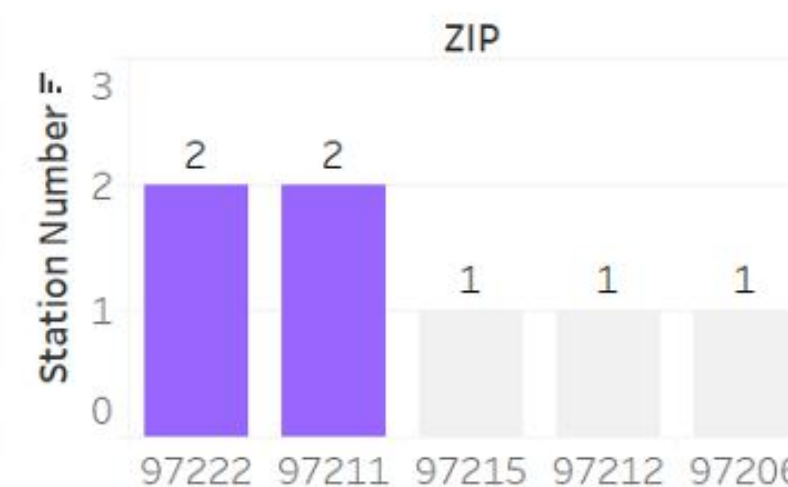**Group 5**

PORTLAND CHARGING STATIONS

Number of Charging Stations in Portland

Top 5 Number of Charging Station in Portland

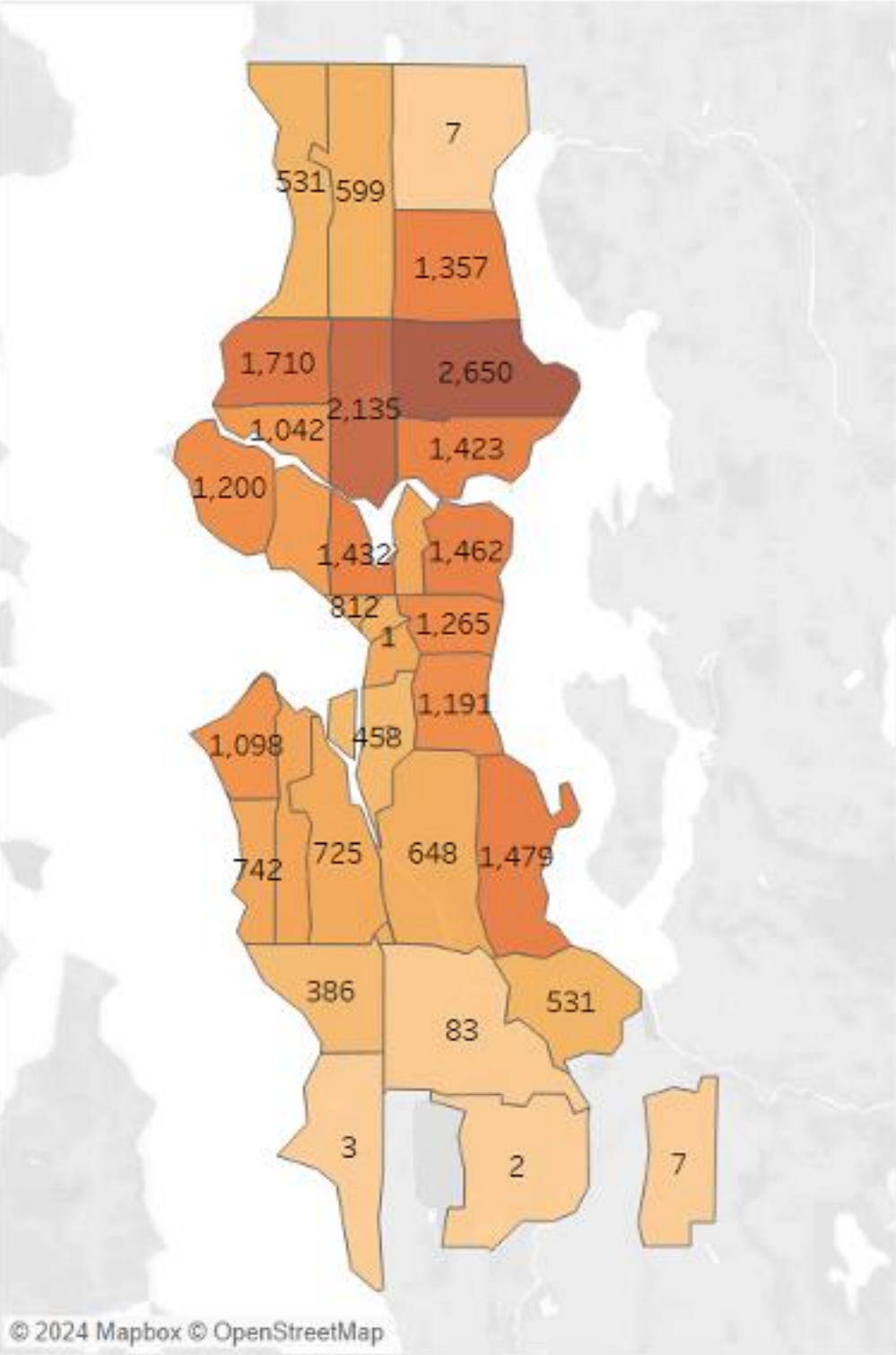Bottom 5 Number of Charging Station in Portland

Total PORTLAND Charging Stations

175
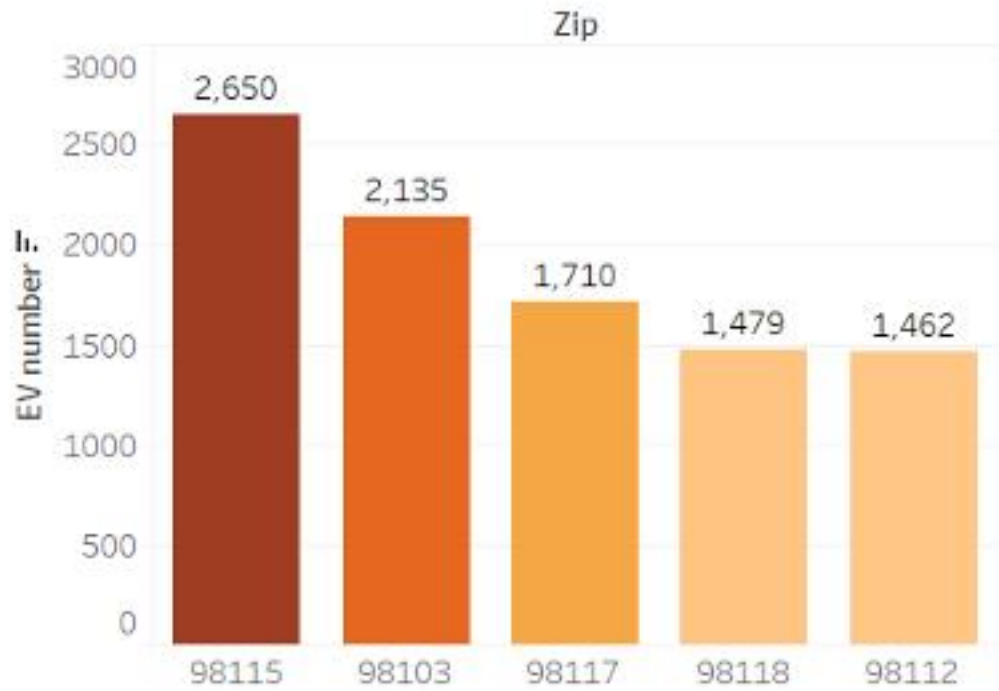
HIGHEST Station Population

97217, 97232, 97204, 97205, 97201

LOWEST Station Population

97206, 97212, 97215, 97211, 97222
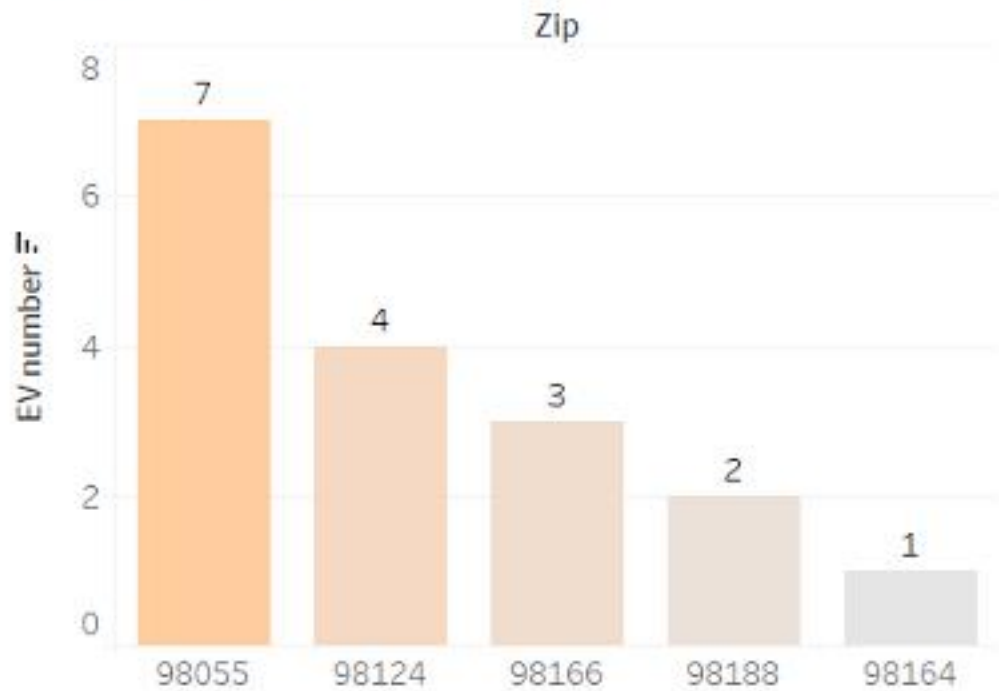
Group 5

SEATTLE EV POPULATION

Number of EV in Seattle

Top 5 Zip in Seattle

Bottom 5 Zip in Seattle

Total SEATTLE EV Population

28,857

HIGHEST EV Population

98115, 98103, 98117, 98118, 98112

LOWEST EV Population

98164, 98188, 98166, 98124, 98055

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PORTLAND EV POPULATION

Number of EV in Portland
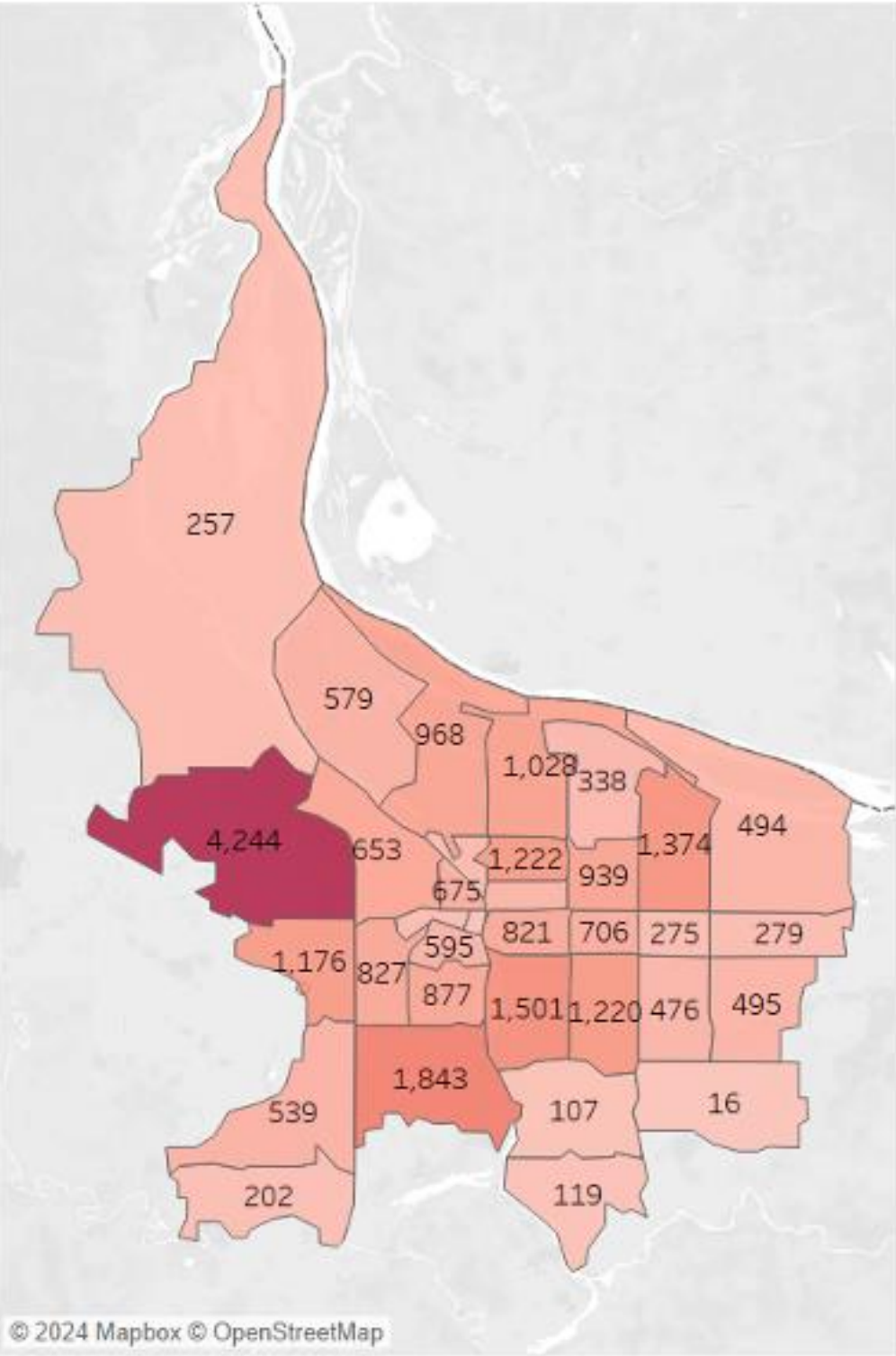
Top 5 Zip in Portland
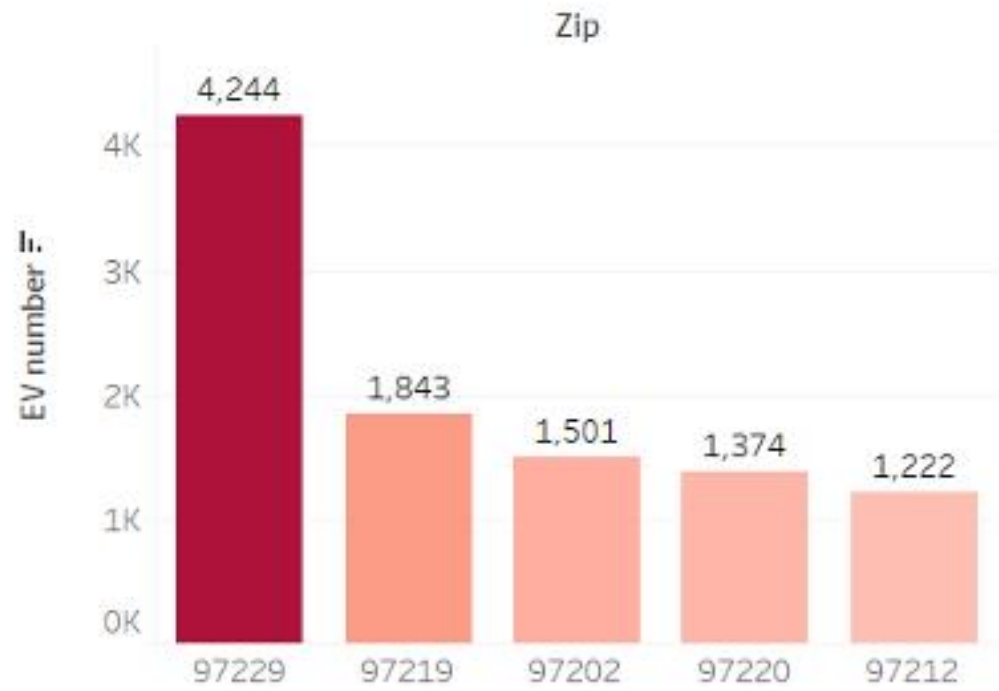
Bottom 5 Zip in Portland

Total PORTLAND EV Population
26,007

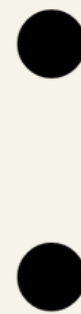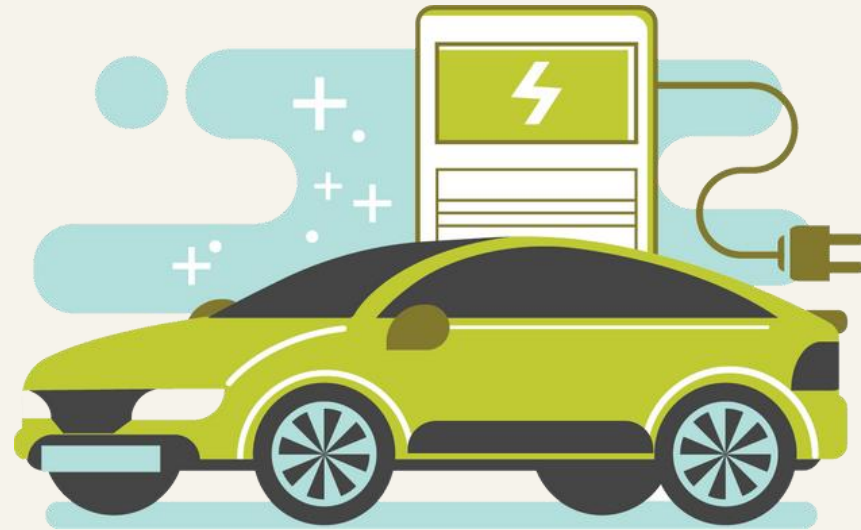**HIGHEST EV Population**
97229, 97219, 97202, 97220, 97212

LOWEST EV Population
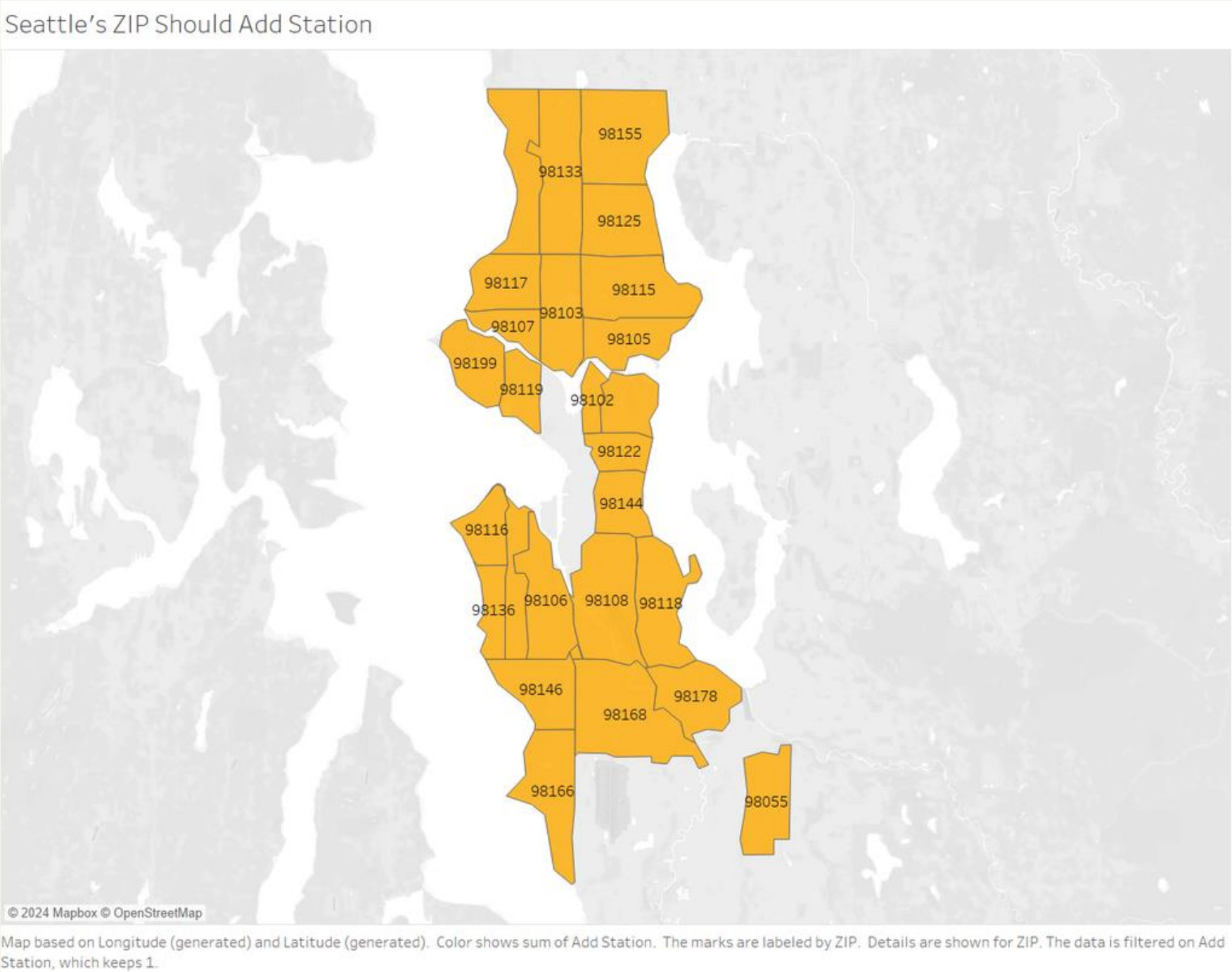**97205, 97210, 97223, 97236, 97266**

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ANALYSIS MODEL

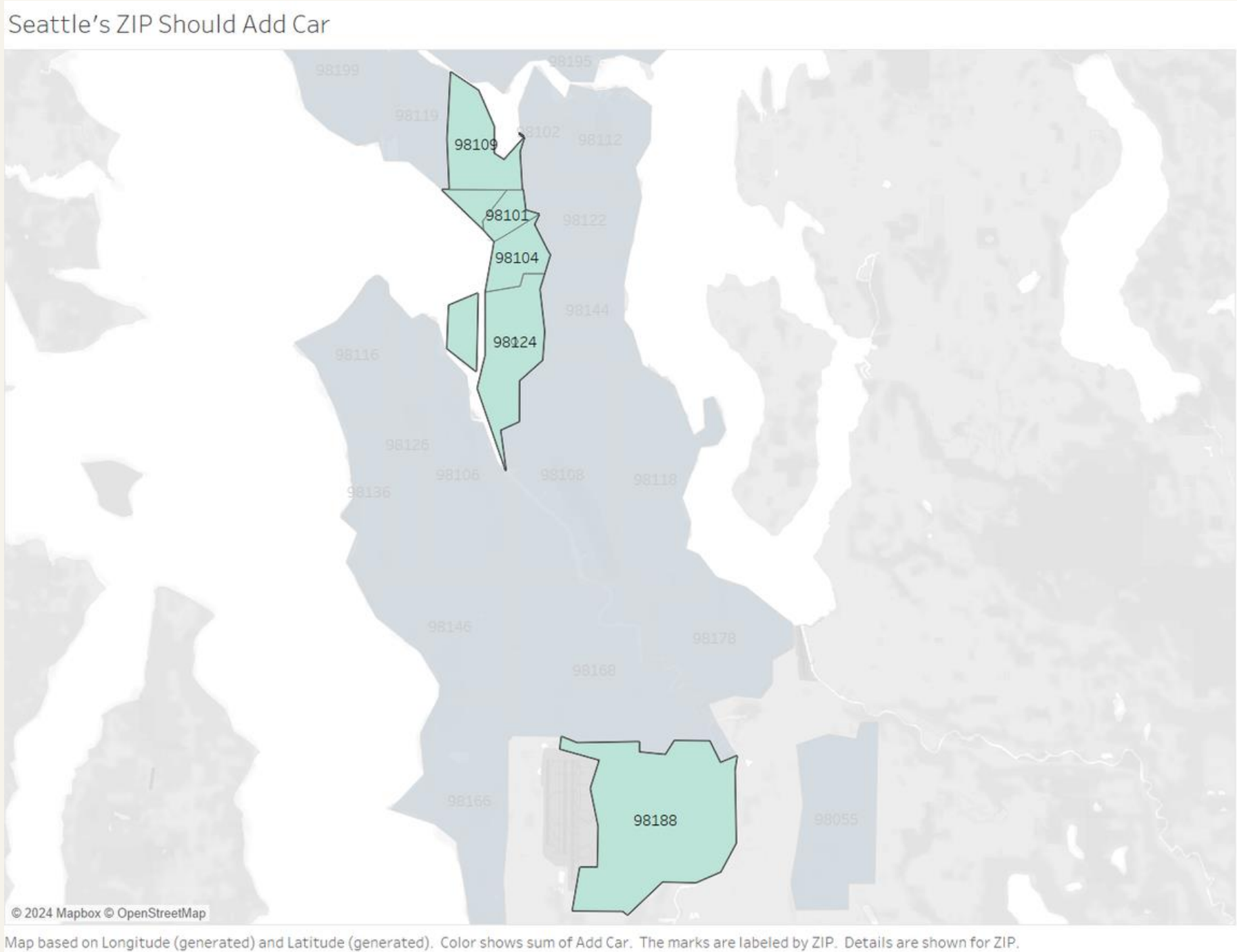**Density of EV Capacity = EV Population Number / EV Charging Station Number = 31 (San Jose)**

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SEATTLE RESULT & VISUALIZATION
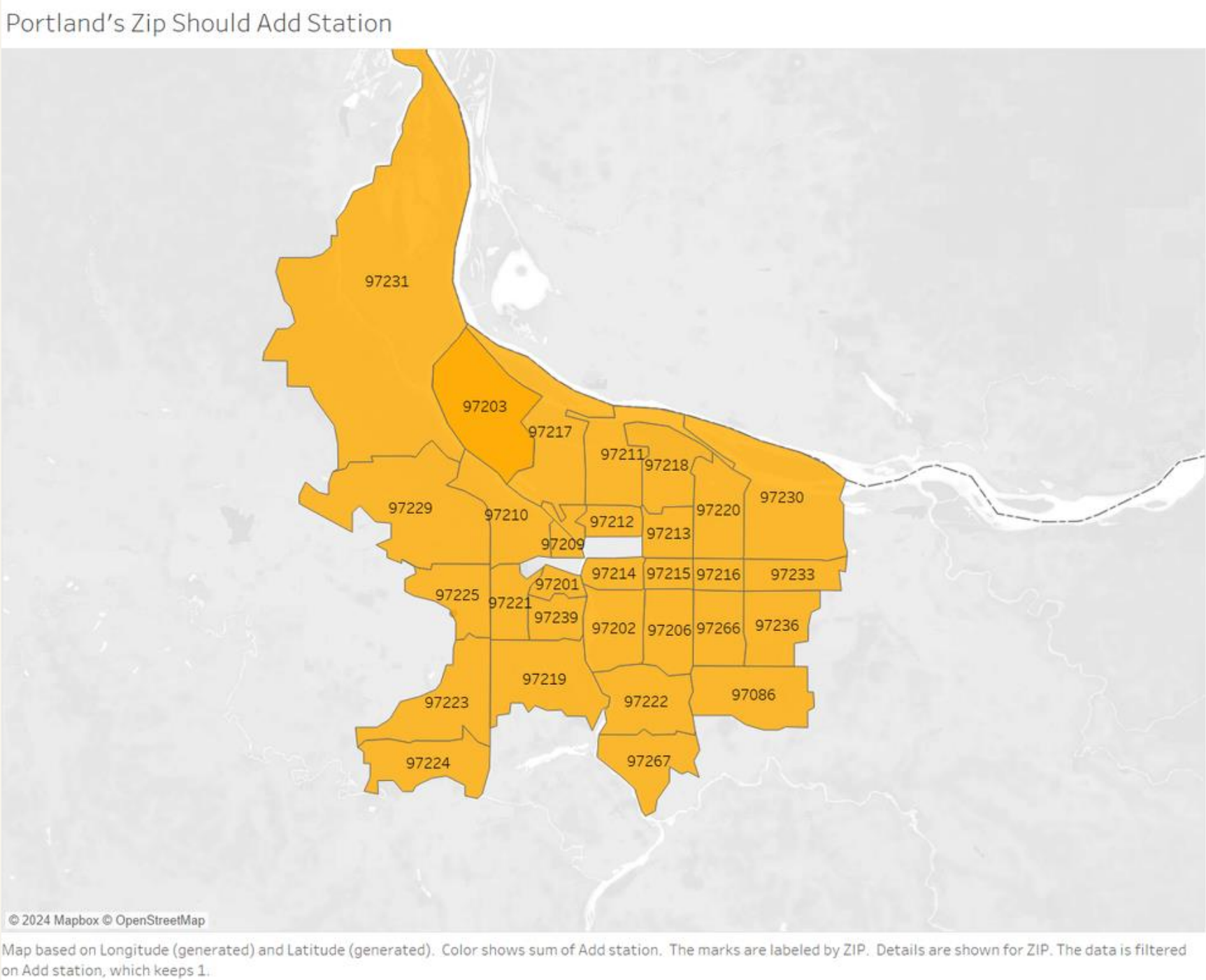
Add Charging Stations (>31)

Seattle's ZIP Should Add Station

98155
98133
98125
98117
98115
98103
98107
98105
98199
98119
98102
98122
98144
98116
98106 98108 98118
98136
98146
98178
98168
98166
98055

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Map based on Longitude (generated) and Latitude (generated). Color shows sum of Add Station. The marks are labeled by ZIP. Details are shown for ZIP. The data is filtered on Add Station, which keeps 1.

Add Electric Vehicle (<31)

Seattle's ZIP Should Add Car

98199
98119
98109
98102
98112
98101
98122
98104
98144
98116
98124
98126
98136
98106
98108
98119
98146
98178
98168
98166
98188
98055

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Map based on Longitude (generated) and Latitude (generated). Color shows sum of Add Car. The marks are labeled by ZIP. Details are shown for ZIP.
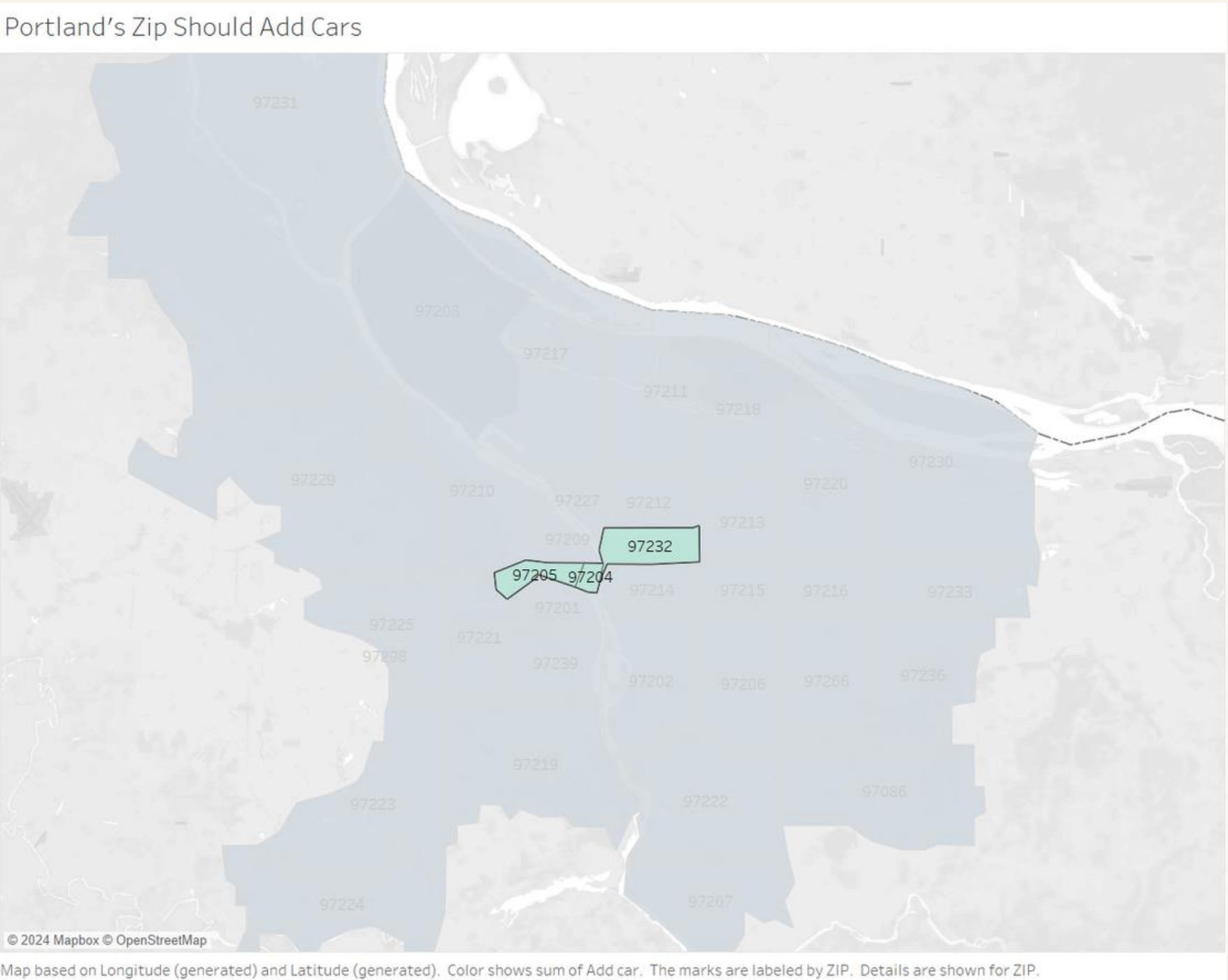
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PORTLAND RESULT & VISUALIZATION

Add Charging Station (>31)

Add Electric Vehicle (<31)

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WHO WILL GET BENEFITS?

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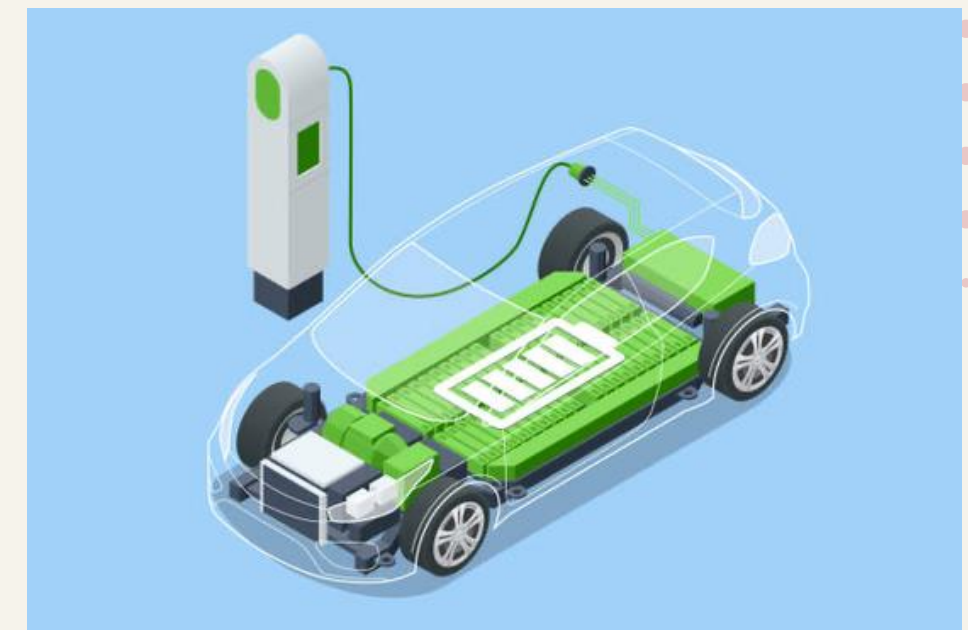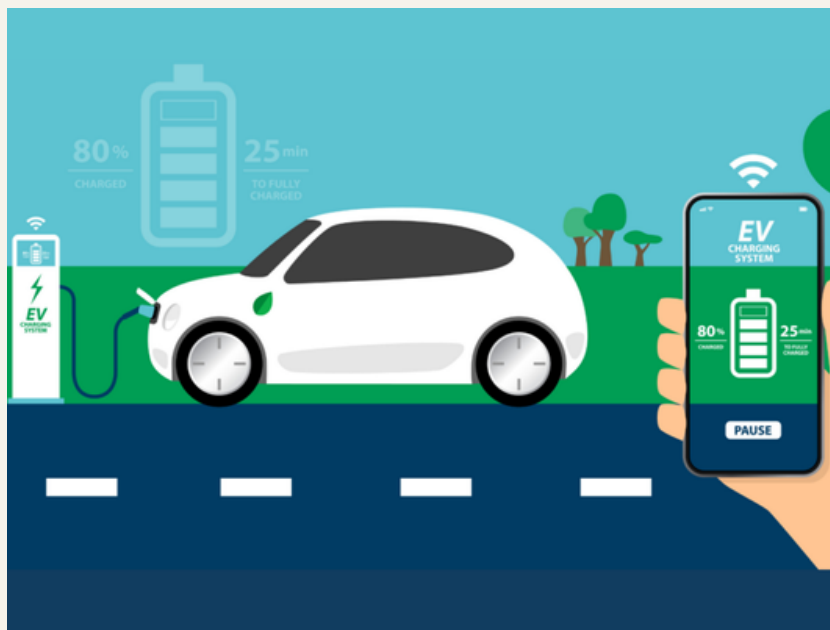**Electric Charging Stations Companies**

EV Companies

City Residents

EV Owners/ Potential Owners

Government

WHAT'S NEXT FOR CHARGING STATIONS

1. **Build More Charging Stations**

2. **Develop Charging Infrastructure**

3. **Maintain Charging Stations**

4. **Enhance User Experience**

WHAT'S NEXT FOR ELECTRIC VEHICLE

1 **Affordability and Incentives**

2 **Improve Battery Technology**

3 **Diversity Models**

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