



Exploration of EV Chargers in the United States

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Target Audience: policy-makers and automakers

Agenda

Background Information

Dataset

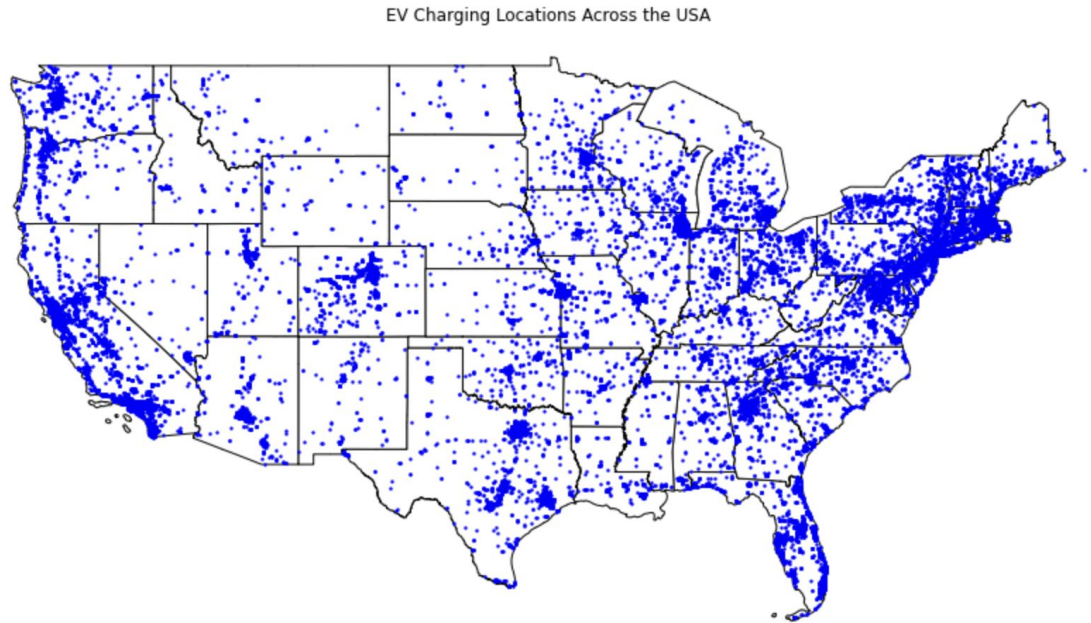
Research Question

Findings

Closing Remarks

Background Information - Topic Overview

- For the automobile industry, electric vehicles (EVs) mark a pivotal industry shift as more consumers demand cars that are environmentally-friendly
- According to the Bureau of Labor Statistics, there are optimistic projections of electric vehicles representing 50% of all light vehicle sales by 2030



Dataset

US Department of Energy - Alternative Fueling Stations

Tracks the number, type, location, and more info about various alternative fueling stations in the USA.

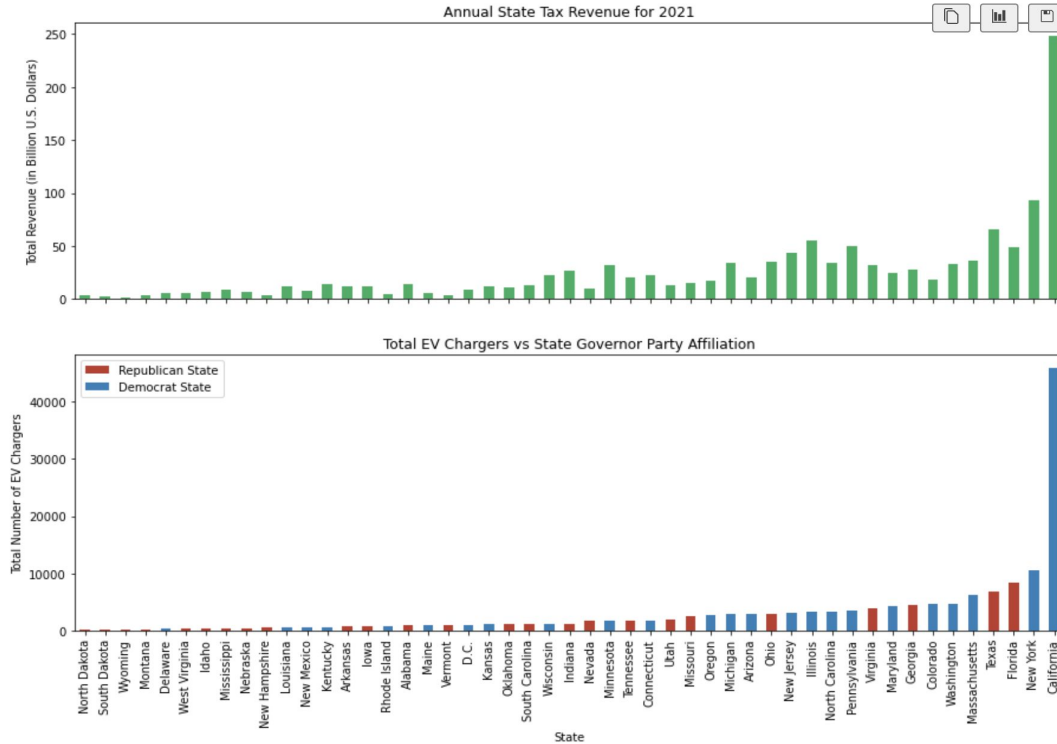
Assumptions:

- The dataset represents the most up-to-date copy of all chargers in the United States and there isn't any inaccuracy in the reporting of stations across all states.

Research Questions

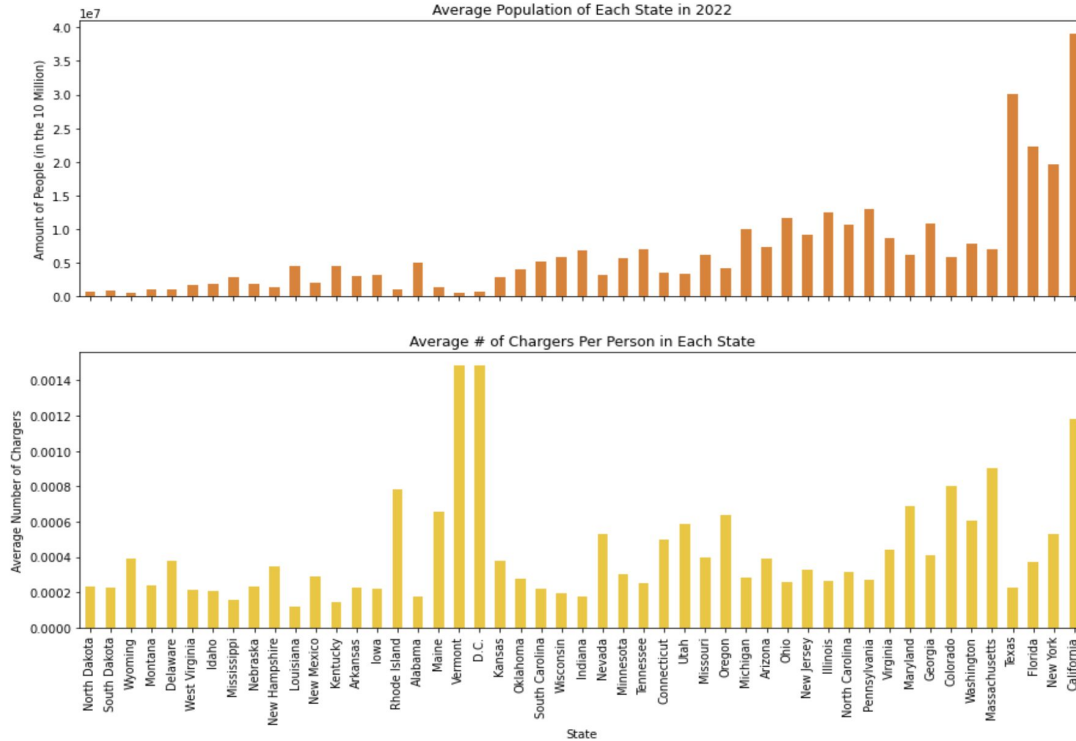
- Are there any regional disparities in where charging stations are placed?
- Which cities are the best at mitigating range anxiety?
- Are chargers distributed consistently amongst population centers?
- Are the types of charging stations being deployed changing over time (e.g. level 1 vs level 2 vs DC fast)?
- Are companies other than Tesla rolling out charging stations in meaningful quantities?

Findings



- Top 10 States = 70% Democrat
- Bottom 10 States = 80% Republican
- **More state tax revenue = More likely to invest in the EV infrastructure**

Findings



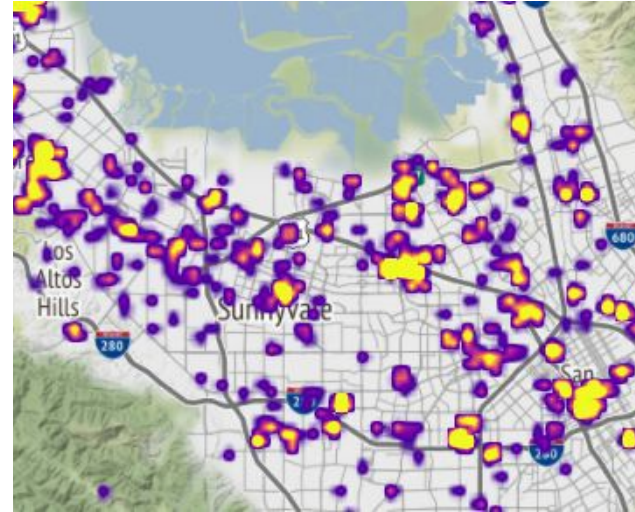
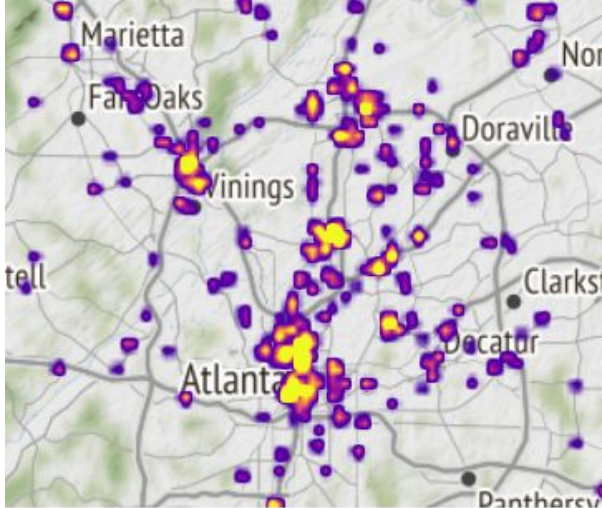
- Charger-to-Person ratio of the top 5 states not that much higher than the other states
- Challenges of the EV infrastructure trying to keep up with the growing populations of the major cities

Findings

	count	land_sq_mi	EV Charger Density
Los Angeles	1644	469.50	3.501597
San Diego	808	325.90	2.479288
Irvine	628	65.60	9.573171
Atlanta	621	133.20	4.662162
Austin	602	319.90	1.881838
San Jose	585	178.20	3.282828
Kansas City	489	314.70	1.553861
San Francisco	487	46.90	10.383795
Seattle	452	84.00	5.380952
Boston	444	48.34	9.184940
Menlo Park	404	9.99	40.440440
New York	377	300.40	1.254993
Washington	363	61.10	5.941080
Sacramento	359	97.70	3.674514
Chicago	349	227.70	1.532718

- Exploring the top 15 cities by number of EV Charging Stations, we can see the Charger Density for some of these neighborhoods
- Neighborhoods like Menlo Park and Boston seems to be great places for owning an electric car given the high density
- One issue here is that there may be regional disparities which we need to dive deeper into

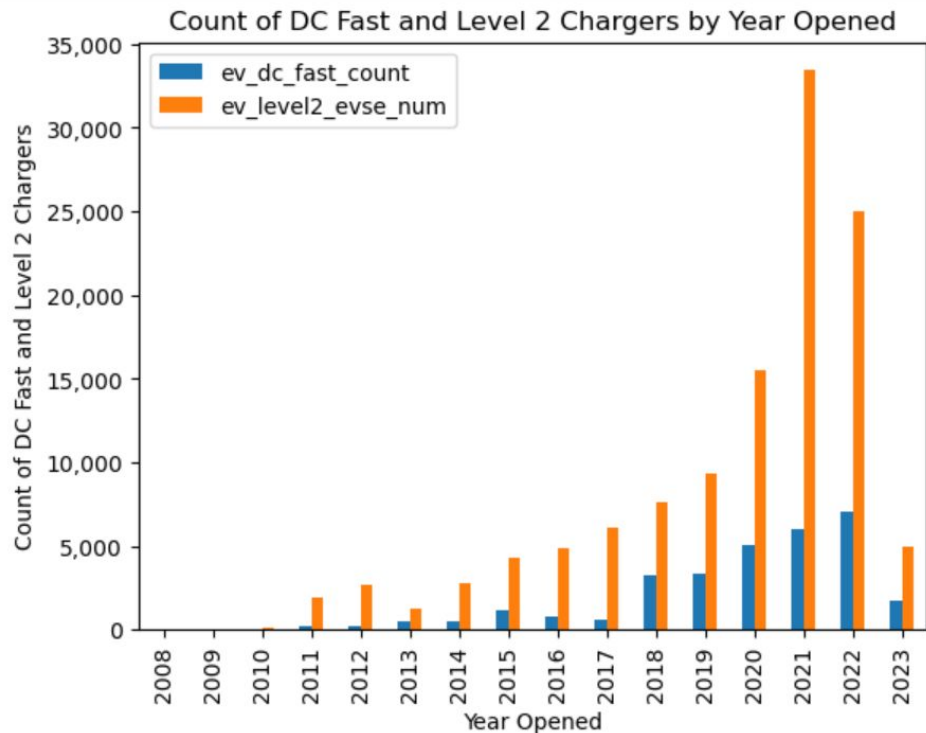
Findings



- Cities like Atlanta have their EV chargers located along the highways whereas areas like San Jose seems to have EV Charging Stations more equally distributed

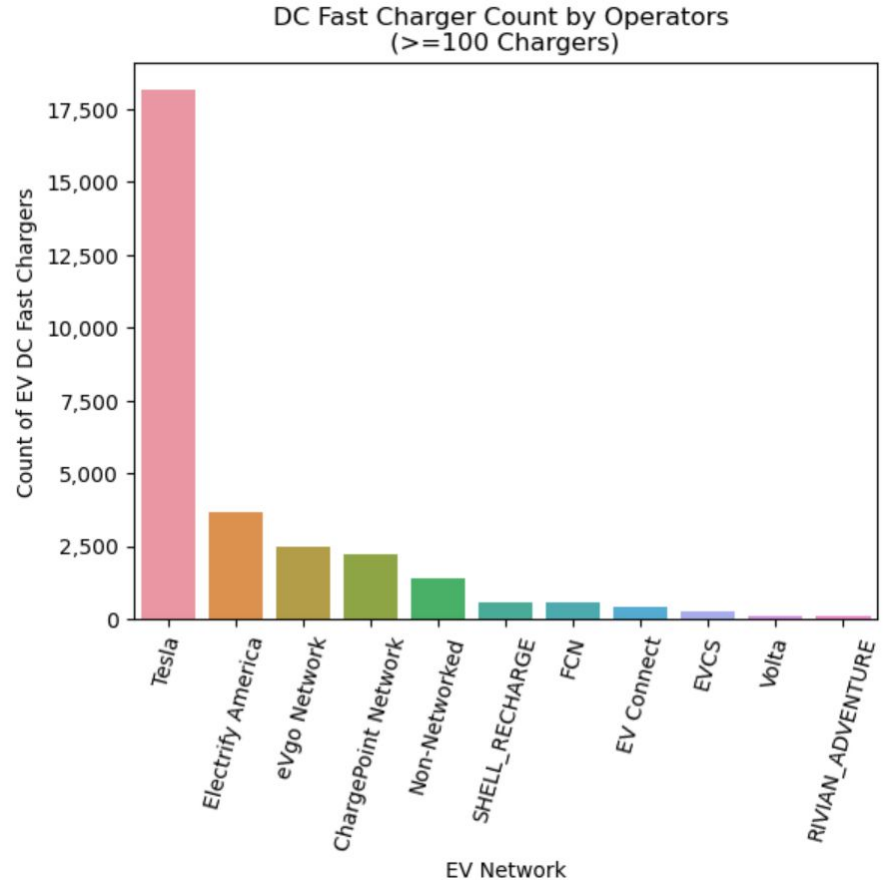
Findings

- Level 2 (orange) charger deployments decreased from 2021 to 2022
- DC fast chargers (blue) continue to increase annually
- Charger deployment growth lags EV registrations from 2021 to 2022 [1]
 - +57% EV registrations
 - +16% DC
 - 25% level 2



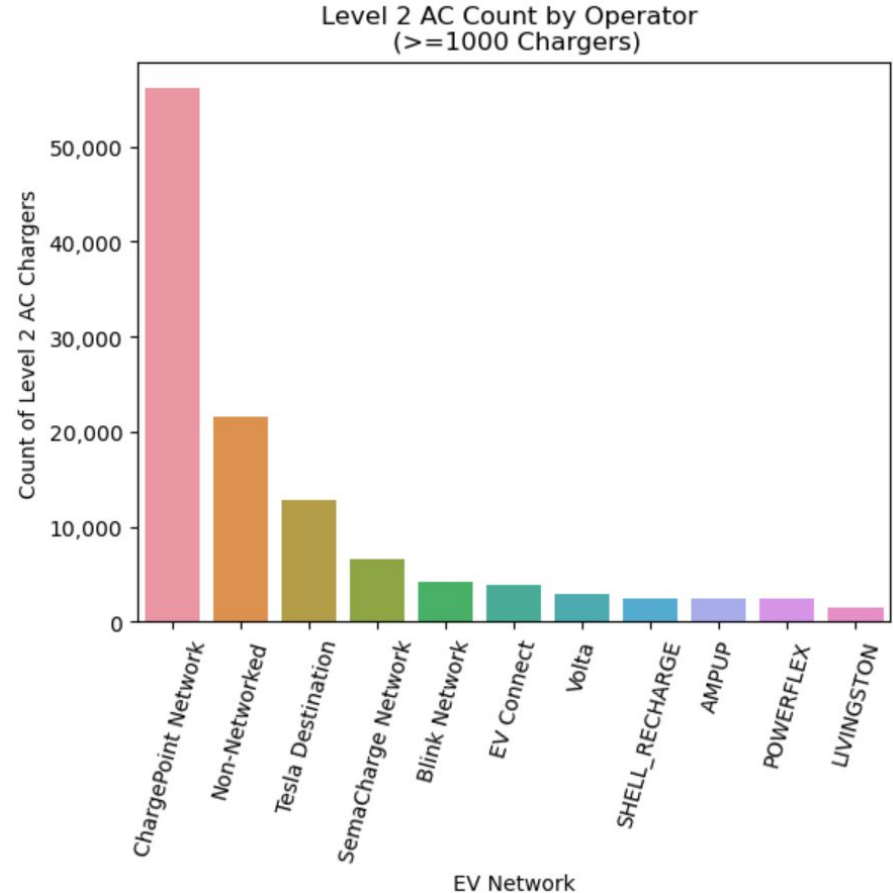
Findings

- Tesla holds a practical monopoly
- Most Tesla chargers are closed to other automakers' vehicles
- In 2022, there were 0.009 DC fast chargers deployed nationally per vehicle sold



Findings

- Chargepoint holds most market share (publicly traded, non-automaker)
- In 2022, there were 0.03 level 2 chargers deployed nationally per vehicle sold



Closing Remarks

- We believe that these findings highlights various perspectives on the accessibility challenge for EV Chargers
- Our exploration demonstrates important room for improvement in the EV Industry, from state-level inequities to the oligopoly of the current EV charging market
- Our research highlights how the development of electric vehicles is outpacing infrastructure deployment. This short-term challenge presents a long-term investment opportunity.

Thank you!