



Tesla - EV Charging



Use Case

California approves \$1.9B in funding for building EV infrastructure

California is one of the most EV friendly states, and has the most EV owners in the country

In alignment with the California Energy Commission's (CEC) stance, Tesla wants to:

- Further increase EV adoption & boost sales**
- Locate gaps in charging infrastructure and optimize locations for new chargers**

User Persona



NAME: JOSEPH

AGE: 40 YEARS

OCCUPATION: REAL ESTATE

Potential EV USER (CA)

QUERIES

- How much charge do I need to reach my destination?
- Where is the nearest EV charging station?
- Show me a map of all available charging stations along my route.
- How much will it cost to fully charge my EV?
- Is there a cheaper charging option available right now?
- What's the optimal charging level for battery health?
- How far can I go with the remaining charge?
- Suggest the best time to charge based on my schedule.
- Create a charging plan for my road trip next weekend.

PAIN POINTS

- Insufficient Charging Infrastructure
- Charging Speed and Wait Times
- Payment and Billing Issues
- Charging Malfunction and Maintenance
- Range Anxiety

BENEFITS

- Forecast Demand
- Efficiency Optimization
- Maintenance Prediction
- User Experience
- Environmental Impact

SCENARIO

- A full day, booked with appointment and open house.
- Looking to plan ahead and avoid high demand on charging stations.
- Would like to avoid having a range of less than 100 miles

STAKEHOLDERS

- **POWER DISTRIBUTION COMPANIES (3000 Companies)**
 - These are companies that manage the local electricity distribution network, ensuring that the charging infrastructures is accessible, functional and reliable.
- **CHARGING SOLUTION PROVIDERS (30 Companies)**
 - These companies manage the electrical grid and supply electricity to the charging stations.
- **EV MANUFACTURES (223 Companies)**
 - Companies that design, produce and market electric vehicles.
- **BATTERY SUPPLIERS (470 Companies)**
 - Companies that design, produce, and market batteries.
- **REGULATORS (100 Agencies)**
 - Government agencies and regulatory bodies that set standards, incentives, and regulations related to EV charging.
- **EV USERS (3 million)**
 - EV owners that advocate for user-friendly charging experiences.



Benefit Case

Government Perspective

- 01 Efficiency:** Streamlined decision-making process for site selection, reducing time and cost.
- 02 Compliance:** Ensure adherence to regulatory requirement, facilitating access to financial incentives.
- 03 Community Development:** Equitable distribution of charging infrastructure, also economic growth of related business and services.

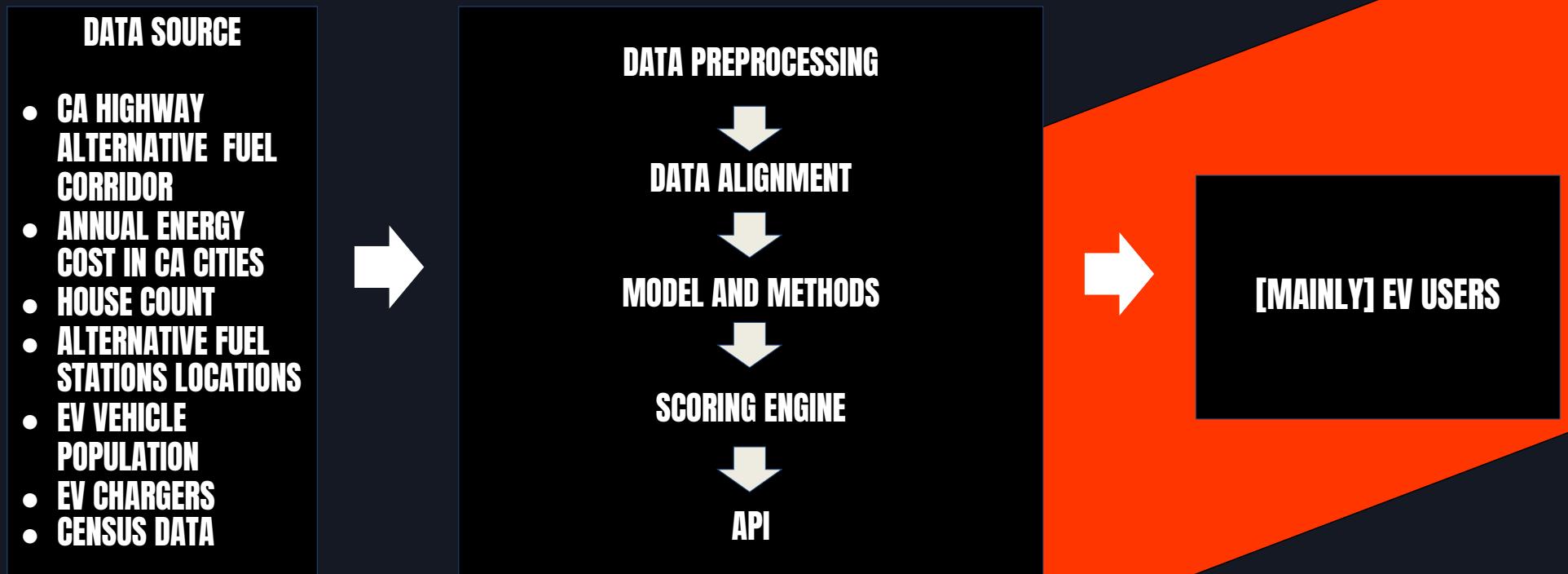
Monetization Framework

Grants and Subsidies, Tax Credits, Revenue sharing, collaboration, Charging fees, Subscription fees.

Data Sources

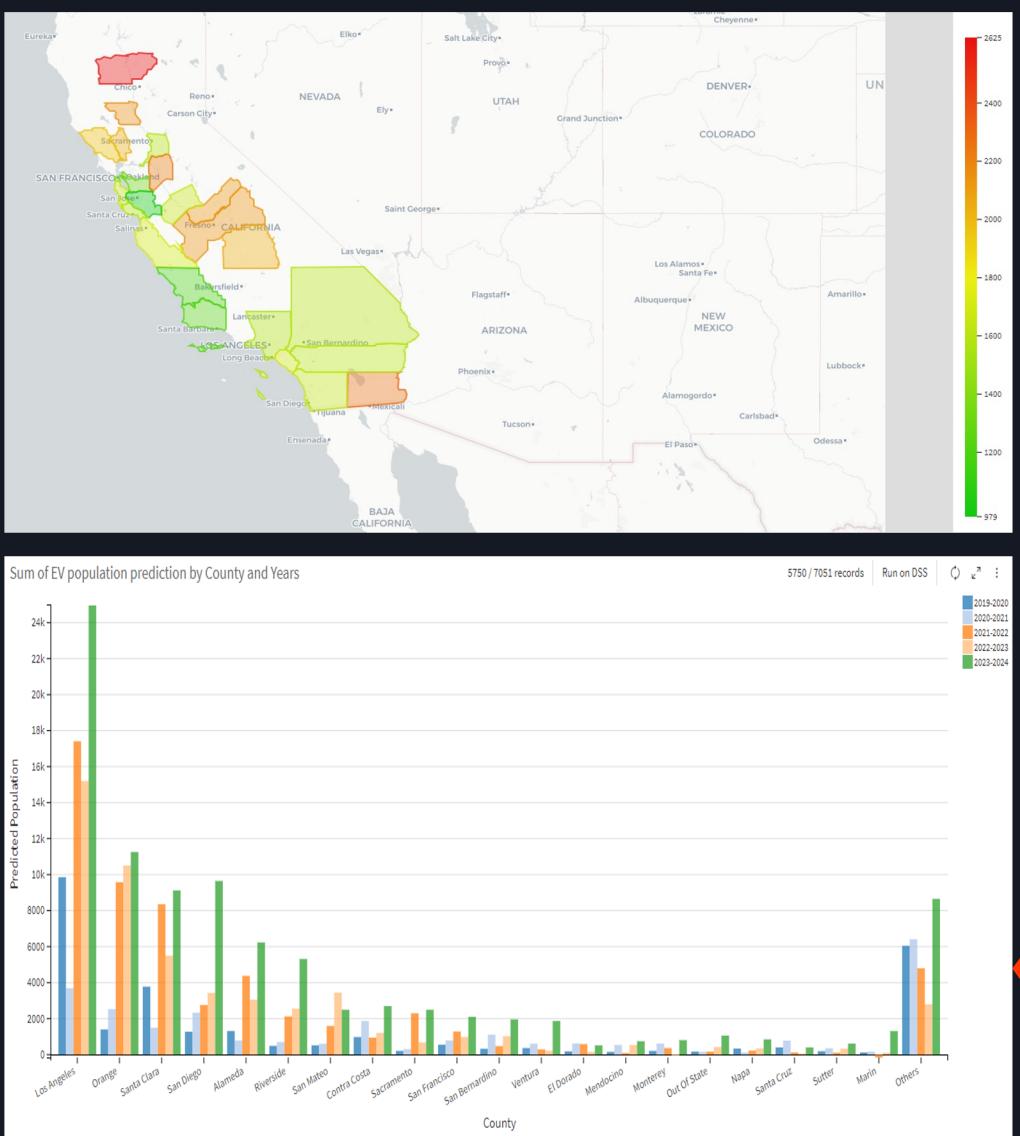
No.	Data Source	Content	Size	Frequency of Data
1	CA HIGHWAY ALTERNATIVE FUEL CORRIDOR	PRIMARY_NA, ROAD TYPE, AFC NUMBER, LOCAL NAME, ELECTRICEV, LENGTH	<350	ON GOING - EVERY YEAR
2	ANNUAL ENERGY COST IN CA	NAME OF CITY, AVG, ANNUAL ENERGY COST	<500	ON GOING - EVERY YEAR
3	HOUSE COUNT	GEOGRAPHIC ID, NAME, HOUSING COUNTS	<500	ON GOING - EVERY YEAR
4	ALTERNATIVE FUEL STATION	FUEL TYPE, ACCESS CODE, FACILITY TYPE, ADDRESS	<16000	ON GOING - EVERY YEAR
5	EV POPULATION	YEAR, MAKE, MODEL, COUNTY, NUMBER OF VEHICLES	<17500	ON GOING - EVERY YEAR
6	EV CHARGERS	COUNTY, TOTAL	<70	ON GOING - EVERY YEAR
7	CENSUS DATA	RACE, NUMBER OF VEHICLES, TRAVEL TIME, EDUCATION LEVEL, HOUSEHOLD SIZE	<2000	ON GOING - EVERY YEAR

SOLUTION ARCHITECTURE



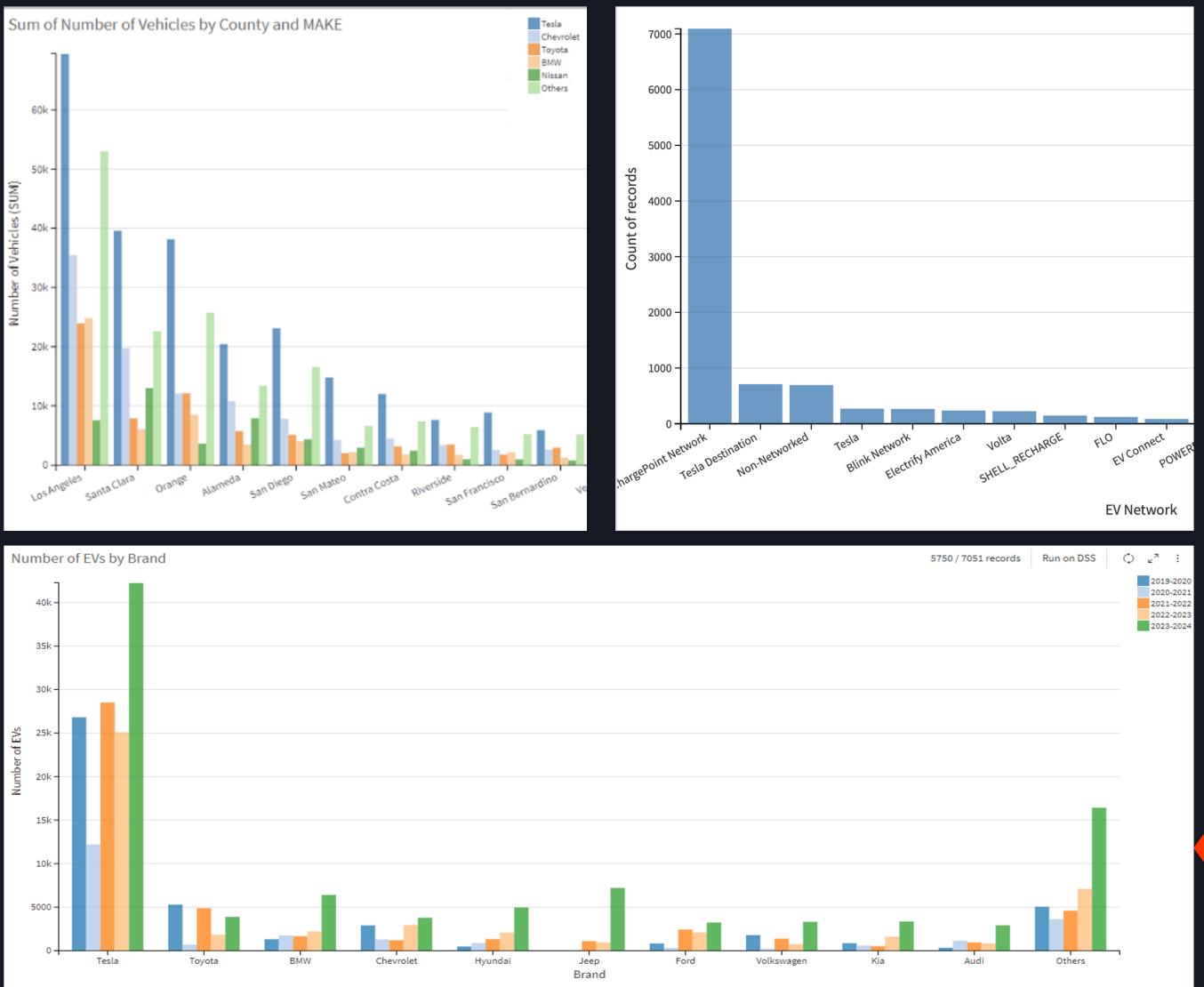
Data Visualizations / Dashboards

- Varying energy costs, with northern and central counties having notably higher energy costs than southern counties
- While there may be benefits to building more charging infrastructure in these areas, there are more EV owners in areas with lower energy costs.



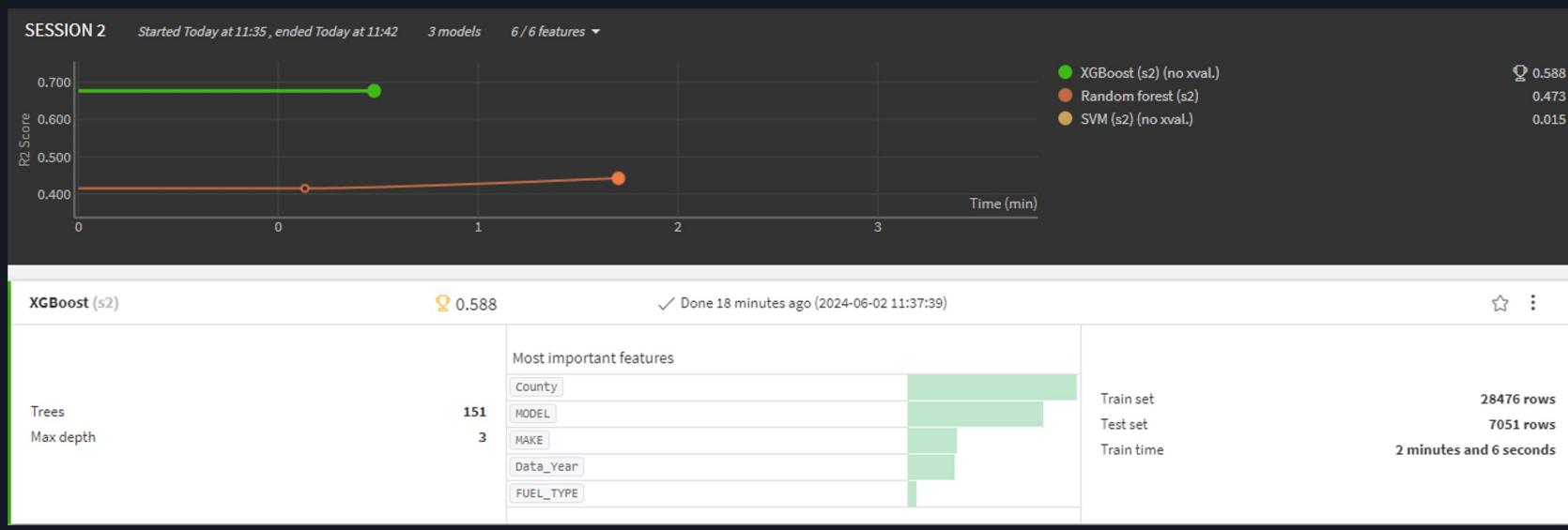
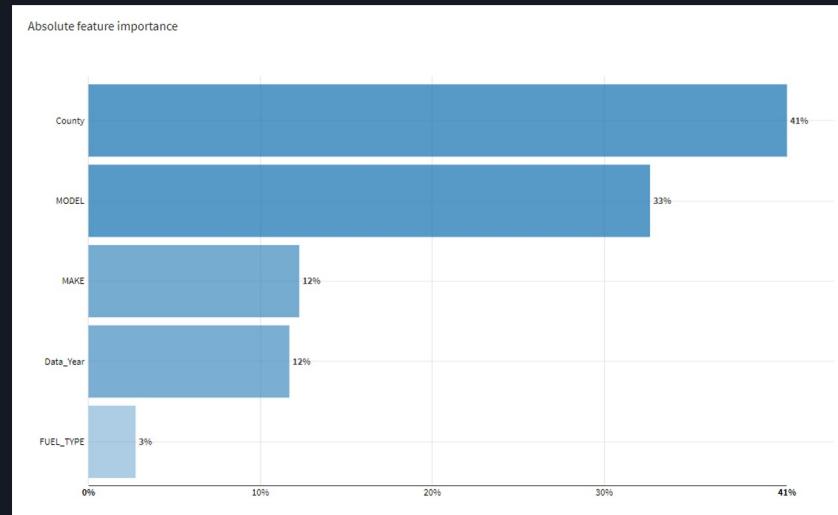
Data Visualizations / Dashboards

- Tesla is the industry leader in California, with the most sales compared to other makers in nearly every county
- On the other hand, Tesla is far behind ChargePoint in number of EV charging stations set up

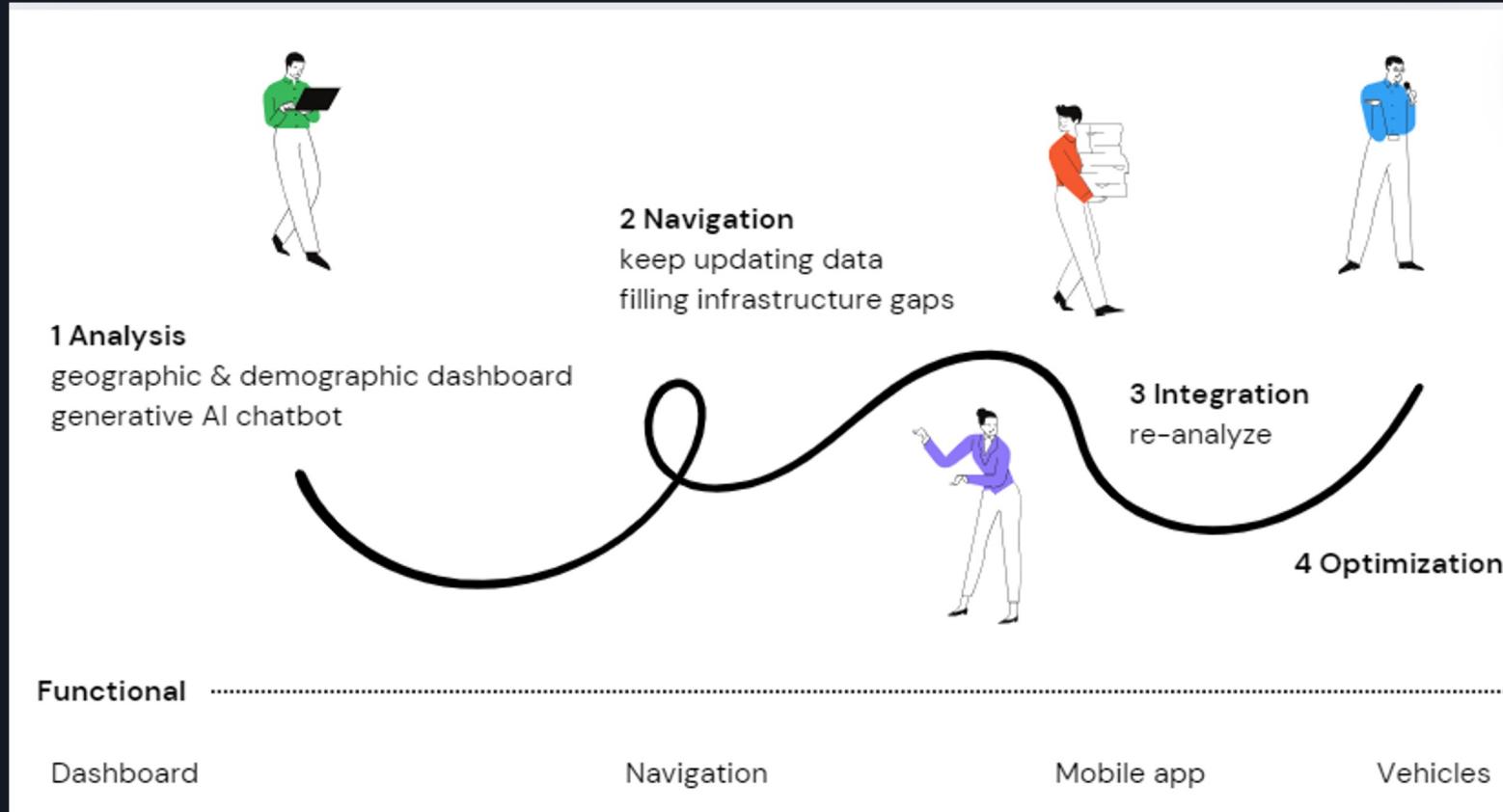


Modeling + Feature Importance

- The most important features in predicting EV purchase seem to be county, followed by model and make



Journey Map (Phasing + MVP)



Day in the Life/Demo

Joseph's Car Breaks Down	Joseph Opens Google	Joseph Clicks on the Tool	The Tool Worked/Failed	Tesla Tries to Sell Power Accessories	Tesla Gathers Data
He is looking to purchase a vehicle and has heard about EV incentives but is skeptical if there is benefit for him.	He searches for cars and then EV cars.	He interacts with the tool, and it asks him questions about her commute, location, and other factors.	He schedules a test drive and consultation with Tesla. / He Chooses to exit the platform.	He views the information on cost-saving and the benefits for her area for Tesla Battery/Powerwall.	Tesla asks for brief survey at purchase or exiting.
He does not know where to start, so he starts Googling.	Through digital advertising, our Tesla tool reaches him.	He has positive interactions with the tool after the algorithm optimizes his product needs and sends her to a specific Tesla Model.	He purchased a Tesla and claimed his tax credits and other incentives. / The tool asks for feedback to add to the data.	He purchases / He declines purchasing.	Tesla improves model metrics using sales data.



Day in the Life/Demo Queries on “Google”

You
My car just died, and I am looking to purchase a new car. I have heard about incentives for EVs. What can you give me?

Copilot
I'm sorry to hear about your car. When it comes to purchasing a new electric vehicle (EV), there are indeed incentives available that can make the transition easier on your wallet. Here's a summary of the incentives for EVs:

- Federal Tax Credit:** For new clean vehicles purchased in 2023 or after, you may qualify for a [clean vehicle tax credit](#). The credit amount can be up to \$7,500 for new, qualified plug-in EVs or fuel cell electric vehicles (FCVs). This is part of the Inflation Reduction Act of 2022, which has specific requirements for vehicles purchased from 2023 to 2032¹.
- Income Limits:** To qualify for the federal tax credit, your modified adjusted gross income (AGI) must not exceed:
 - \$300,000 for married couples filing jointly or a surviving spouse
 - \$225,000 for heads of households
 - \$150,000 for all other filers. You can use your modified AGI from the year you take delivery of the vehicle or the year before, whichever is less¹.
- Credit Transfer:** Starting in 2024, consumers can opt to transfer the credit to an eligible dealer for an immediate discount on the vehicle at the point of sale².
- State and Local Incentives:** Some states offer additional tax credits, rebates, and other incentives that can be combined with the federal tax credit. For example, certain states provide a potential tax

You
Can you give me some EV brands for me? I am in Southern California?

Copilot
Certainly! Southern California is a hotspot for electric vehicle (EV) innovation and sales. Here are some of the prominent EV brands and manufacturers you can consider:

- Tesla:** Known for its high-performance electric cars, Tesla has a strong presence in California. The [Tesla Model 3](#) and [Model Y](#) are among the top-selling vehicles in the state¹.
- Rivian:** An American automaker that specializes in electric trucks and SUVs. [Rivian has facilities in Irvine](#), contributing to the area's reputation as an EV hub².
- Karma Automotive:** Based in Irvine, Karma Automotive offers luxury electric vehicles and is known for its sleek designs².



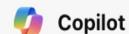
Day in the Life/Demo Queries on “Tool”



To help determine which Tesla model would best suit your needs, I'd ask you the following questions:

1. **Usage:** What will be the primary use of your Tesla? (e.g., daily commuting, long-distance travel, family outings)
2. **Distance:** How many miles do you typically drive in a day or week?
3. **Charging:** Do you have access to home charging or public charging stations near your home or workplace?
4. **Budget:** What is your budget for a new vehicle?
5. **Performance:** Are you looking for high performance and acceleration, or is efficiency more important to you?
6. **Space:** How much passenger and cargo space do you need?
7. **Features:** Are there specific features or technologies you're interested in? (e.g., Autopilot, Full Self-Driving Capability)
8. **Environment:** Do you live in an area with extreme weather conditions that would require all-wheel drive (AWD)?
9. **Ownership:** Is this your first electric vehicle, or have you owned one before?

Your answers to these questions will help narrow down the options and find a Tesla model that aligns with your preferences and lifestyle.



Based on your requirements, the **Tesla Model 3** appears to be the best fit for you. It's the most affordable option in the Tesla lineup, with the Rear-Wheel Drive version starting at **\$38,990¹**. As your first EV, the Model 3 offers a balance of range, performance, and features that can make the transition to electric driving smooth and enjoyable.

In Southern California, you'll benefit from a well-established network of Tesla Superchargers, making long-distance travel convenient if needed. Plus, the mild climate is favorable for electric vehicle battery efficiency and longevity.

Remember, owning an EV also means considering the total cost of ownership, which includes savings on fuel and maintenance compared to traditional gasoline vehicles. With your commute in mind, the Model 3's range and charging options should serve you well, ensuring you have a reliable and cost-effective ride.

If you're ready to explore further, you can customize and order your Tesla Model 3 directly from Tesla's website².



Explore

Day in the Life/Demo Queries on “Tool”



Copilot

Yes, Tesla offers a variety of home charging accessories that can complement your Model 3 and home setup:

- Wall Connector:** This is the fastest way to charge at home, providing up to 44 miles of range per hour charged. It's suitable for indoor or outdoor installation [①](#).
- Mobile Connector:** A versatile option that allows you to charge from different types of power outlets at a slower speed, which is still adequate for overnight charging [②](#).
- Universal Wall Connector:** Compatible with other electric vehicles, it provides a convenient solution if you have different EVs or plan to switch cars in the future [③](#).



For energy storage, the **Tesla Powerwall** is a home battery that stores solar energy for backup protection and helps you maintain a sustainable energy supply. The latest version, Powerwall 3, is compatible with all major solar inverter brands and can support various existing system sizes, making it a suitable addition to your home energy system [④](#). It's designed to offer whole-home backup, energy independence, and can be monitored and managed using the Tesla app.

These accessories can provide a seamless integration of your Tesla Model 3 into your home's energy ecosystem, ensuring that you have reliable charging and energy storage solutions. Remember to consult with a certified installer to determine the best setup for your specific needs and to ensure proper installation.

Certainly! Here are some solar panel companies that are known to be compatible with the Tesla Powerwall:

1. **SunPower:** They have announced that they will begin offering the Tesla Powerwall 3 through their residential dealer network. SunPower is known for its high-quality solar panels and has expanded its financing options to include the Tesla Powerwall [⑤](#).



2. **ADT Solar:** Formerly known as Sunpro Solar, they offer installation services for the Tesla Powerwall and are recognized for their customer service and comprehensive warranty [⑥](#).

3. **Sunrun:** This company is a major residential solar panel provider that also offers Tesla Powerwall installation services. They provide customized solar solutions and are one of the largest solar installers in the U.S. [⑦](#).



These companies offer a range of solar solutions that can work well with the Tesla Powerwall, providing you with a seamless transition to solar energy. It's always a good idea to contact the companies directly to discuss your specific needs and ensure compatibility with your Tesla Model 3 and home setup.

Impact Analysis

- **2 Pronged Impact Tesla Financial vs. Community:**
 - **Monetization Framework:**
 1. Increased sales in Tesla EV for target markets
 2. Increased sales in Tesla Powerwall/Battery accessories/solar
 3. Customers can be paid for surplus power/have no electricity cost for EV/home
 - **Grid Sustainability Benefit:**
 1. Grid optimization (Watts/Volts) are in equilibrium with supply and demand staying steady with each other
 2. Lower costs for the community
 3. Reduction/Extinction of blackouts
 - **Gov. Facing Benefit:**
 4. Incentives can be utilized
 5. Legislation can track impact of regulations/laws
 6. Aids in tandem with city planning/population growth



THANK YOU

Q&A

