How to Drive Recurring EV Ownership

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Problem Statement

Forto Motor Company wants to understand Electric Vehicle (EV) ownership and discontinuance drivers to better position the sales process and deliver impactful features for an upcoming vehicle platform.

A population of EV owners from California are used to study and model the features that impact ownership behaviors.

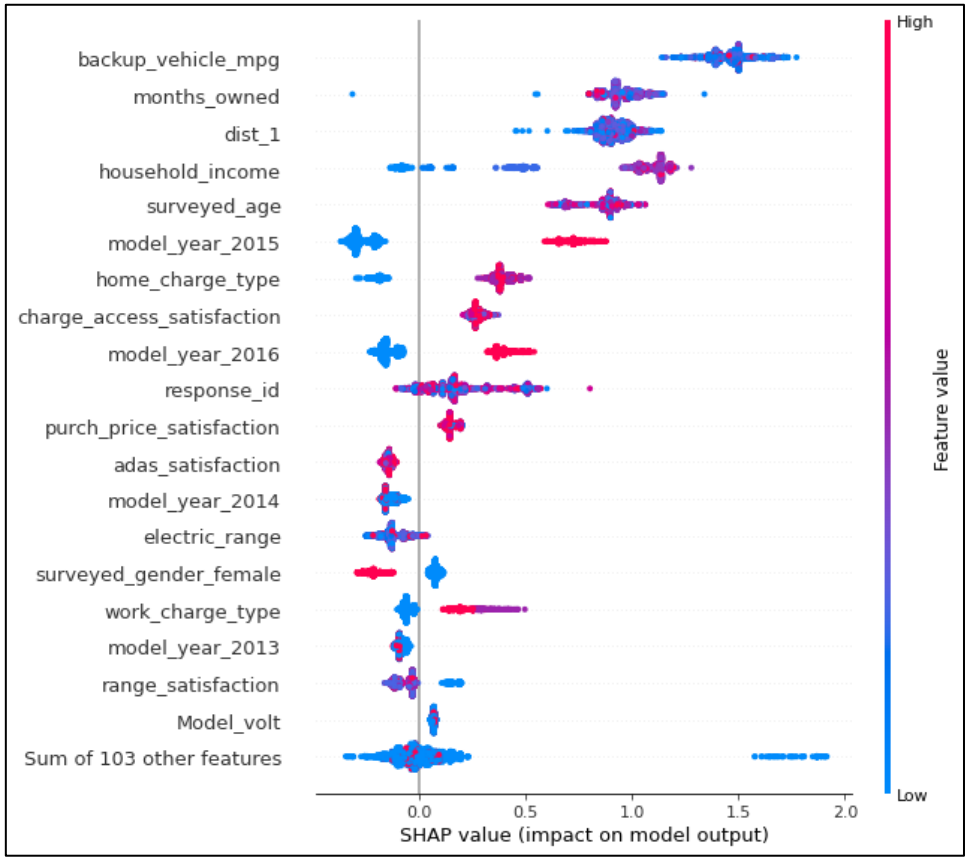
Raw Data Source

Dataset provided by : Scott Hardman, U.C Davis

Key Findings

Most Impactful Features – Model Output

Feature	Finding
Fuel Economy of Backup Vehicle	When the backup vehicle MPG is low, the surveyed population tends to continue owning an EV
Commute Distance	When the commute distance is shorter, the surveyed population tends to continue EV ownership
Household Income	Families with higher household income tend to continue owning EV's
Home Charge Type	Higher power charging leads to increased EV ownership

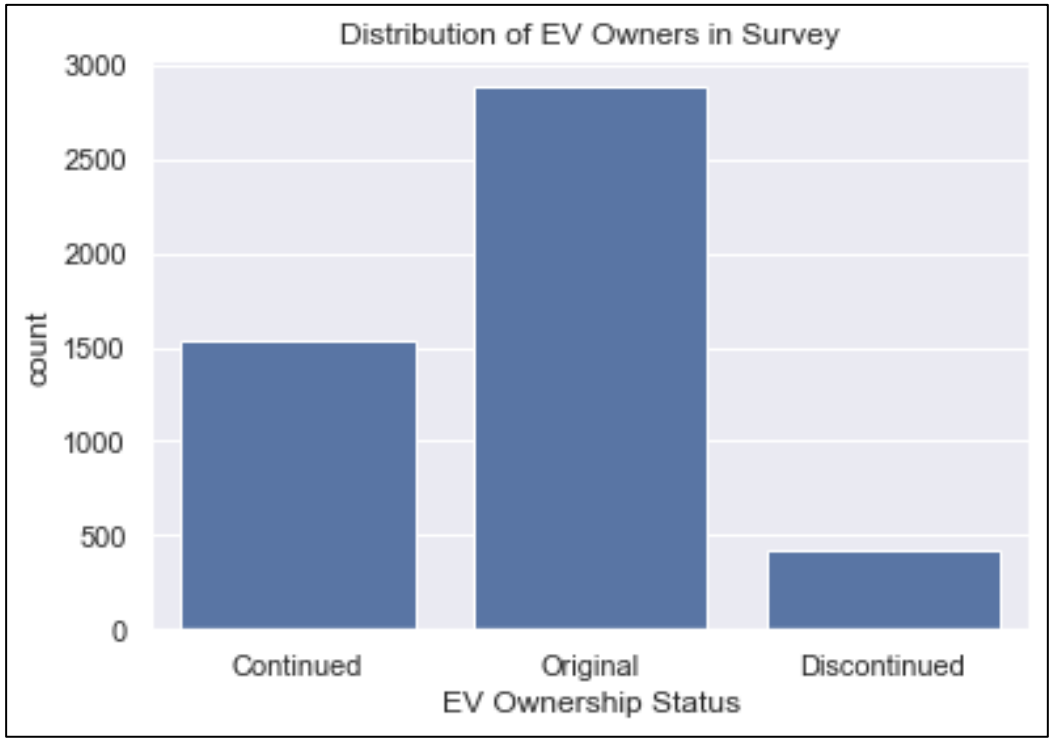


What Can We Do?

- Meet our customers where they are and learn about their lifestyle
- Advise them on setting up Level 2 charging, drives continued EV ownership
- Don’t need to focus on commute distance on marketing material, not a strong driver
- Ask about their work charging situation, higher is better
- Men are repurchasing EV’s
- Utilize model to predict if owners will repurchase EV’s

Overview of Surveyed Population

- Respondent's cover spectrum of demographic categories
  - Income
  - Gender
  - Age
  - EV Type (Hybrid, Battery Electric)
- Original owner class removed during modeling as behavior cannot be classified.



Models Evaluated

Random Forest provided the best performance of the models tested

Model	Class	Precision	Recall	F1 Score
Grad Boost Classifier	Continue	0.81	0.77	0.79
Grad Boost Classifier	Discontinue	0.75	0.80	0.77

Model	Class	Precision	Recall	F1 Score
XGBoost	Continue	0.87	0.85	0.85
XGBoost	Discontinue	0.84	0.86	0.85

Model	Class	Precision	Recall	F1 Score
Logistic Regression	Continue	0.81	0.77	0.79
Logistic Regression	Discontinue	0.75	0.80	0.77

Model	Class	Precision	Recall	F1 Score
Random Forest	Continue	0.88	0.91	0.89
Random Forest	Discontinue	0.89	0.86	0.87