### Mapping US Census data to electric vehicle adoption

Having recently bought a Tesla Model 3 (not trying to humble brag here), I started to notice what seemed like an absolutely tremendous amount of my vehicle on the road. By my personal anecdote it truly felt like this was the single most popular car in California. Of course at that point I had no data other than gut feeling to back up my claim. Using our group’s US Census data I aimed to get some additional insight into how popular or unpopular my car really was. In order to keep things simple, I aggregated some basic population / demographic data and joined it with categorical vehicle data within California.

**The Basic Bar Chart**

The first step in answering this question was to figure out the total percentage of electric vehicles out there. Using a single groupby statement aggregating around vehicle category, it’s clear to see that when looking at the entire state electric vehicles are still very much in the minority. They make up a small single digit percentage of all cars on the road.

**The Heatmap**

“That can’t be right.” I said to myself. Perhaps my bias is due to location. Afterall, I spend most of my time within San Diego and Orange County. This next visualization takes a geospatial map of California zip codes and joins that data with my existing table. I calculated the sum of electric vehicles versus the sum of total vehicles and mapped a color scale based on that percentage to each zip code. “Amazing!” There does in fact seem to be a larger percentage where the population centers are.

**Donuts**

Out of curiosity I wanted to see how much of a local effect there was on this data. The next visualizations created a donut chart showing total EV adoption throughout the state and for San Diego County specifically. Sure enough there are nearly 5x as many EVs here compared to the state average. Story ended… right?

**The Scatter Plots**

I took a few more data points and compared them to EV adoption just to confirm what I had seen previously. Turns out this “San Diego” effect isn’t as closely tied to population as I had guessed. There are a fair amount of high population zip codes that don’t have proportionally high EV adoption rates. Naturally, I pulled a few more data columns out of my dataframe and attempted to make some correlations. As the data shows, factors like household income and educational attainment are better predictors of EV adoption, but not the best. Within the available data the strongest correlation appears to be with home values (thanks Zillow!), specifically single family homes. This makes some intuitive sense as it is logistically a tough sell to buy an EV without a reliably cheap place to charge it.