Modeling dynamic processes in the California ZEV market (2014-2016) Dataset

Dataset available at: https://doi.org/10.25338/B8RK86

(This dataset supports report **Plug-In Electric Vehicle Diffusion in California: Role of Exposure to New Technology at Home and Work,** http://doi.org/10.7922/G2H993G0)

This U.S. Department of Transportation-funded dataset is preserved by the University of California in the digital repository Dryad (https://datadryad.org), and is available at https://doi.org/10.25338/B8RK86

The related final report **Plug-In Electric Vehicle Diffusion in California: Role of Exposure to New Technology at Home and Work**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/60299

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Abstract:
The market for plug-in electric vehicles (PEVs) that primarily include battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHEVs) has been rapidly growing in California for the past few years. Given the targets for PEV penetration in the state, it is important to have a better understanding of the pattern of technology diffusion and the factors that are driving the process. Using spatial analysis and Poisson count models we identify the importance of a neighborhood effect (at home locations) and a peer effect (at commute destinations) in supporting the diffusion of PEV technology in California. In the case of new BEV sales, we find that exposure to one additional BEV or PHEV within a 1-mile radius of a block group centroid is associated with a 0.2% increase in BEV sales in the block group. Interestingly, for new PHEV sales- the neighborhood effect of BEV sales is negative, suggesting that enhanced exposure to this type of technology (which is differentiated in distinctive ways from PHEVs) may impact new PHEV sales through a substitution effect. Specifically, higher BEV concentration in an area can have an overall negative effect on new PHEV sales. While the neighborhood effect at residential locations is important, a peer effect at commute destinations also has a notably important effect on new PEV sales. Both of these effects work in combination with socioeconomic, demographic, policy, and built environment factors in encouraging PEV adoption. These results suggest that policymakers should consider targeted programs and investments that can boost the impact of neighborhood and peer effects on PEV sales.

Methods:
Data on new plug-in vehicle sales are estimated from DMV's vehicle registration data. This vehicle registration data was then combined with data from the American Community survey,

LODES data, and Smart Location Mapping data to account for other sources of dynamics in California's PEV market. The data was processed using STATA 16.

Usage Notes:

The ReadMe sheet in the data file Data_DMV_2014_2016_PEV_new_sales__stock_and_other_variables gives detail of the variables in the datasheet. The dataset uploaded here does not have my identifiable information. Individual vehicle VIN numbers were aggregated to generate the count of EVs in each block group. The ReadMe file gives the information of the spatial unit of measurement for each variable (e.g., block group or census tract).

Funding:

National Center for Sustainable Transportation, U.S. Department of Transportation

Recommended citation:

Chakraborty, Debapriya; Bunch, David; Brownstone, David (2021), Modeling dynamic processes in the California ZEV market (2014-2016), Dryad, Dataset, https://doi.org/10.25338/B8RK86

Dataset description:

This dataset contains 1 .zip file collection described below.

doi_10.25338_B8RK86_v5.zip:

This collection contains 1. Xlsx file and 1 .txt file listed below.

- Data_DMV_2014_2016_PEV_new_sales_stock_and_other_variables.xlsx
- ReadMe_Dryad_data.txt

The .xlsx file type is a Microsoft Excel file, which can be opened with Excel, and other free available software, such as OpenRefine.

The .txt file type is a common text file, which can be opened with a basic text editor. The most common software used to open .txt files are Microsoft Windows Notepad, Sublime Text, Atom, and TextEdit (for more information on .txt files and software, please visit https://www.file-extensions.org/txt-file-extension).

National Transportation Library (NTL) Curation Note:

As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (https://ntl.bts.gov/public-access) Section 7.4.2 Data, the NTL staff has performed NO additional curation actions on this dataset. NTL staff last accessed this dataset at https://doi.org/10.25338/B8RK86 on 2022-02-04. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.