Where to put the next Tesla Dealership

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Metis Business Fundamentals
23 Feb 2022

Electric vehicles are coming…

$500 billion[1]

Planned auto industry investments

$5 billion[2]

National electric vehicle infrastructure

1. Ewing, J. & Boudette, N.E. (2022, Feb 8). Why this could be a critical year for electric cars. *New York Times*. URL
2. Werschkul, B. (2022, Feb 10). White House details plan to make a 'truly national system' of EV charging stations. *Yahoo! Finance*. URL

Global sales and market share of electric cars

million registrations

Others   China   United States   Europe   Global market share
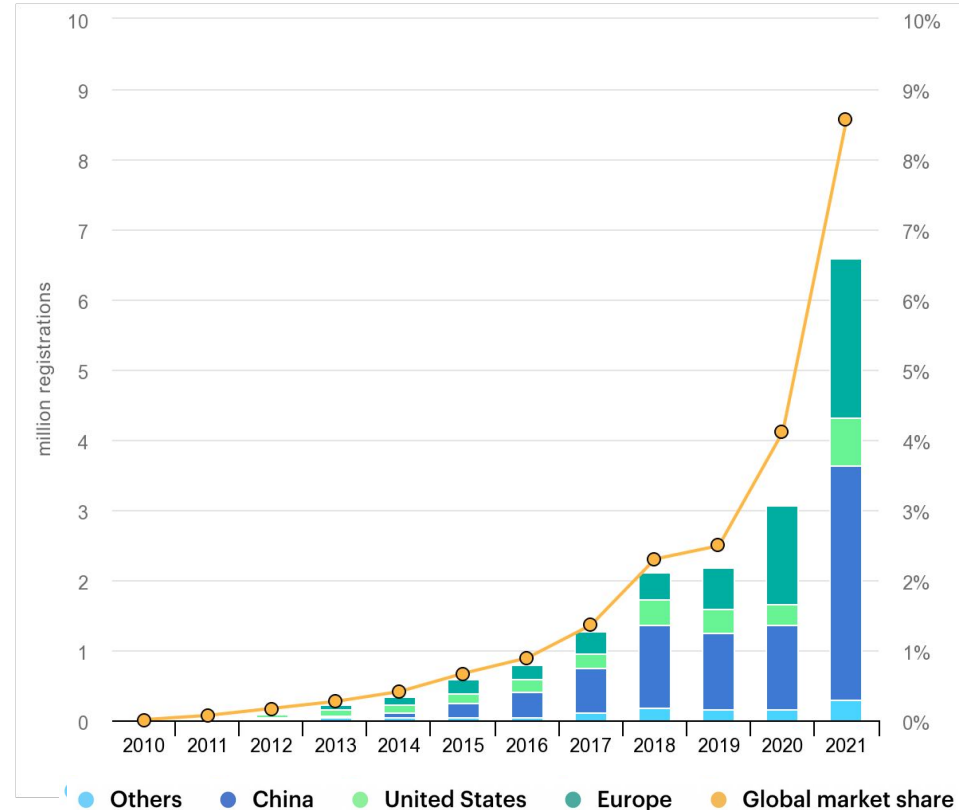
Business Goal

Maximize ROI by identifying best areas for new dealership locations and target demographic

Proposed solution pathway

Modeling goals

Find common characteristics for areas with **strong EV demand**
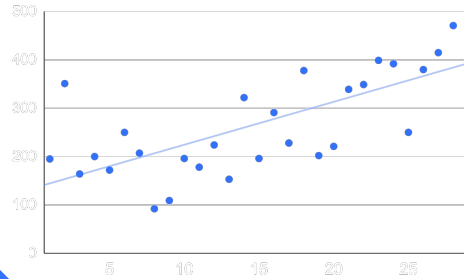- Population density
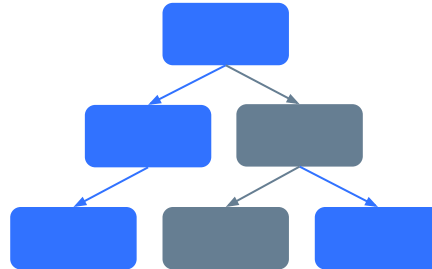- Household income
- Age
- Political attitudes
- …

Find areas with **low EV demand**
- Potential untapped markets

Linear regression

Random Forest

Business goals

Correct for ease of doing business
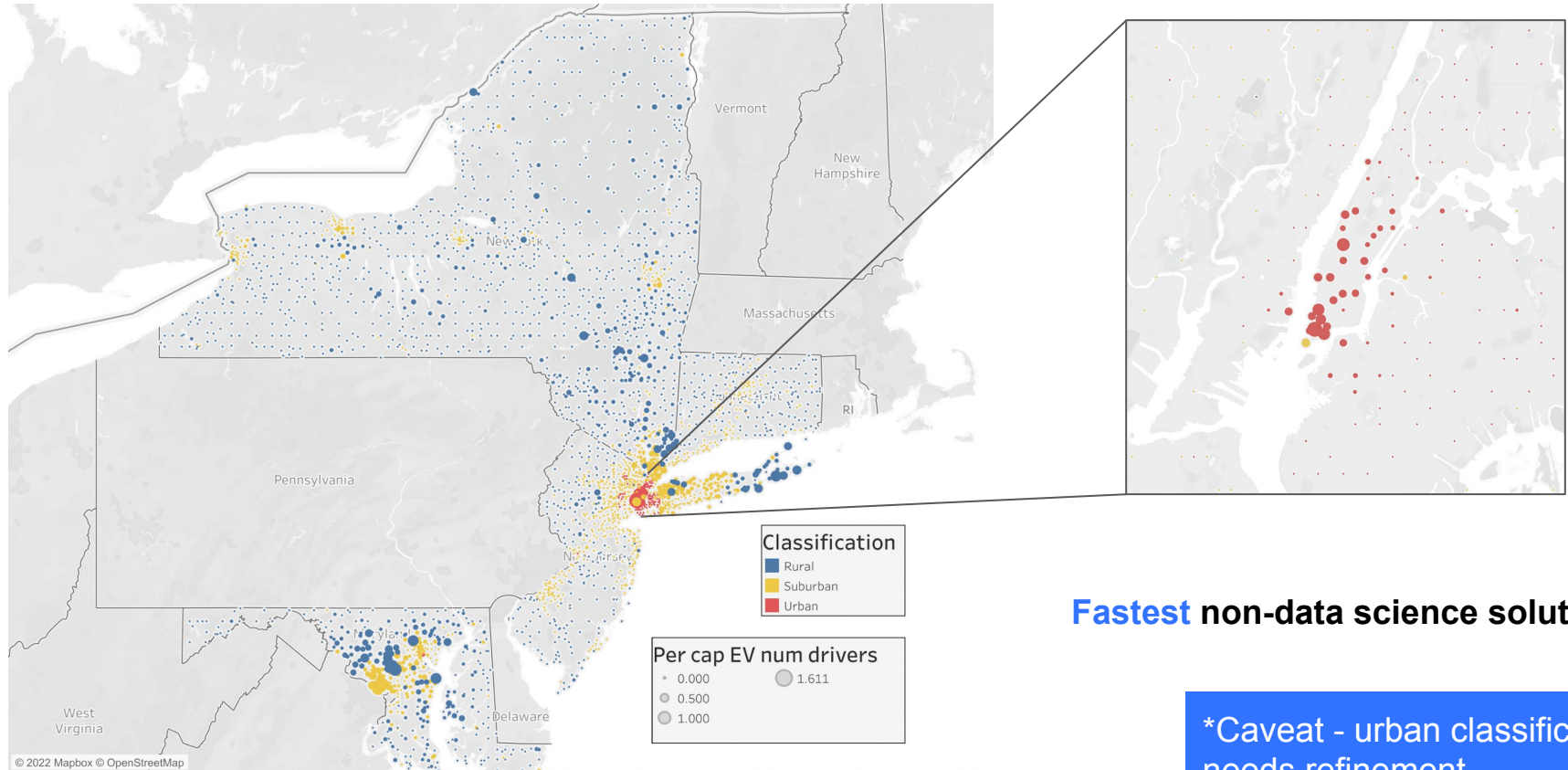- Regulations
- Salaries
- Rent
- …

Open new dealerships

Success

Maximize profits

Urban areas have highest rates of EV adoption

Classification
- Rural
- Suburban
- Urban

Per cap EV num drivers
- 0.000
- 0.500
- 1.000
- 1.611

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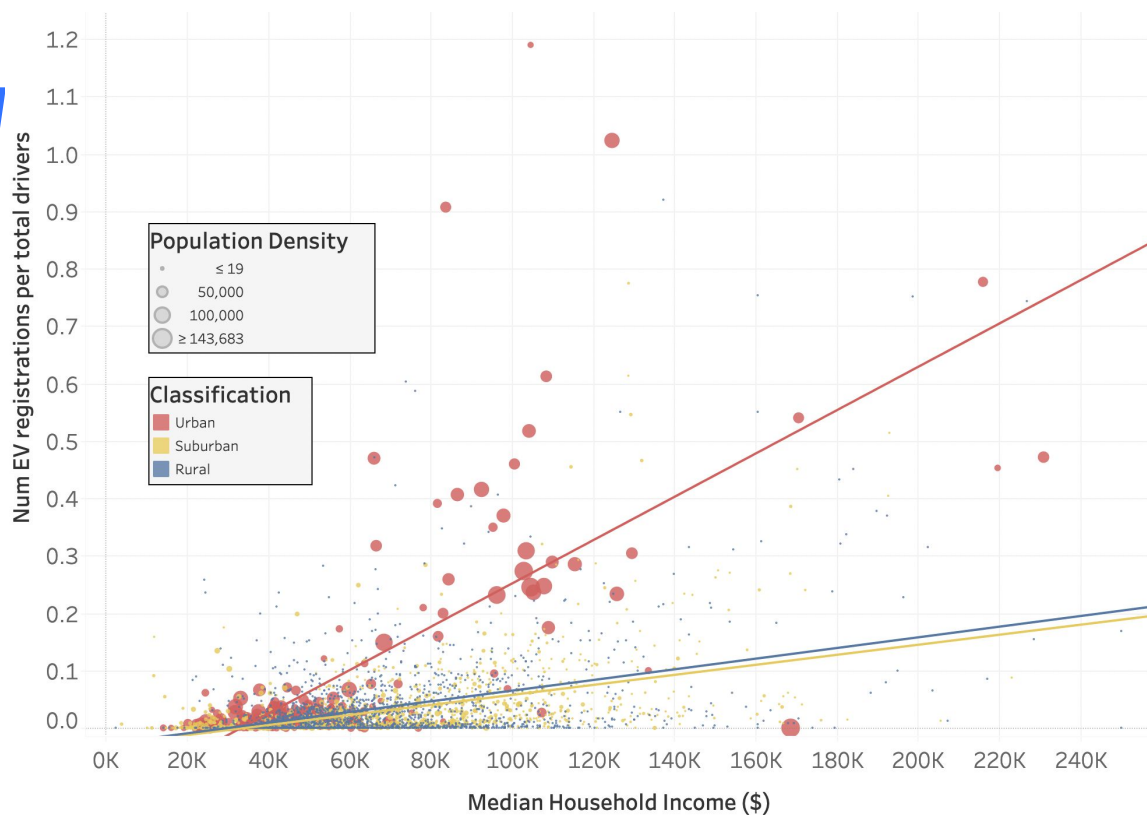
Fastest non-data science solution

*Caveat - urban classification needs refinement

EV adoption depends on income AND population density

Urban areas have other factors that affect EV adoption

EVs in cities have reduced
- Range anxiety
- Motor wear and tear
- Pollution

*Caveat - most red dots are Manhattan

Population Density
- ≤ 19
- 50,000
- 100,000
- ≥ 143,683

Classification
- Urban
- Suburban
- Rural

Num EV registrations per total drivers

Median Household Income ($)

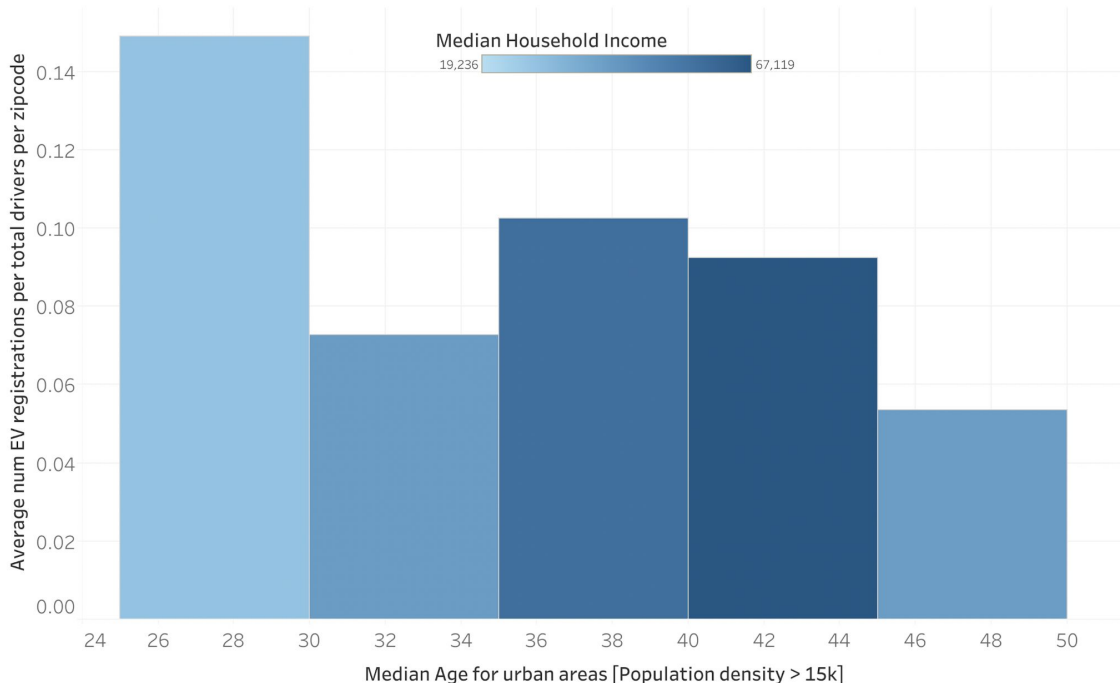# High income young people most likely to buy EVs

EVs more popular among younger demographic despite lower income.

EV adoption scales with income

Suggests **high income young people** buy EVs disproportionately

Median Household Income

19,236 — 67,119

Average num EV registrations per total drivers per zipcode

Median Age for urban areas [Population density > 15k]

*Caveat - lack of data on young people

Conclusions

- Electric vehicle demand affected by age, income, population density
- More accurate data needed

Future Work

Additional refinements

Better area classifications	Use [Rural-Urban Continuum Codes](#) to characterize area category

Political attitudes	Quantify with political scores of Congressional representatives

Thanks!

Lack of data on young people

- EV adoption among young people more sensitive to income
- Few zip codes with high income AND median age < 30