

Plug-in Electric Vehicle Multi-State Market and Charging Survey

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EVS29



454,547

US PHEV + BEV Sales Since December 2010
Through June 1st, 2016

400,000

Approximate # of preorders of the Tesla Model 3 in
one month

Study Questions

What is the role of utilities in the electric vehicle market?

Who buys EVs?

What are their charging behaviors?

How to the states differ from each other?

What do EV buyer think the utility should do?

Presentation Outline

- Current Market State
- Survey Logistics
- Participant Information
- Incentives
- Driving Behavior
- Charging Behavior
- The Utility Role
- Conclusions

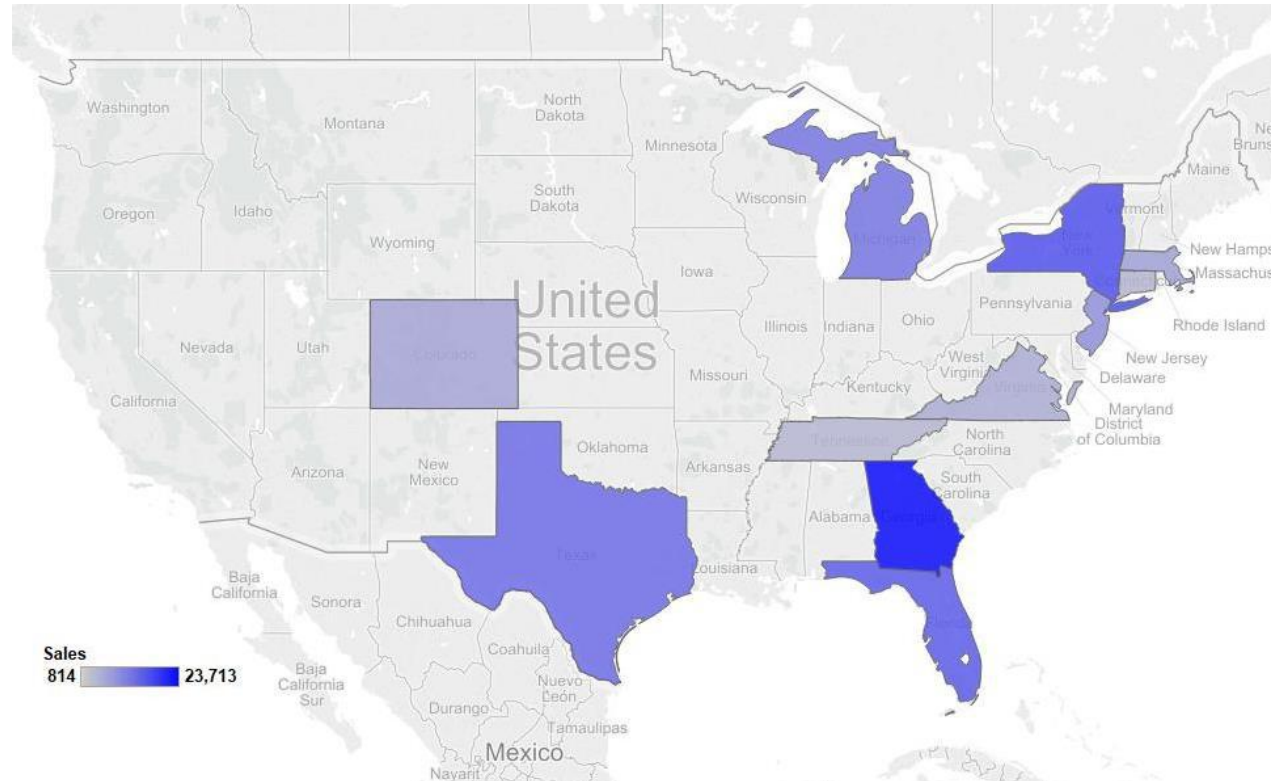


Survey Logistics

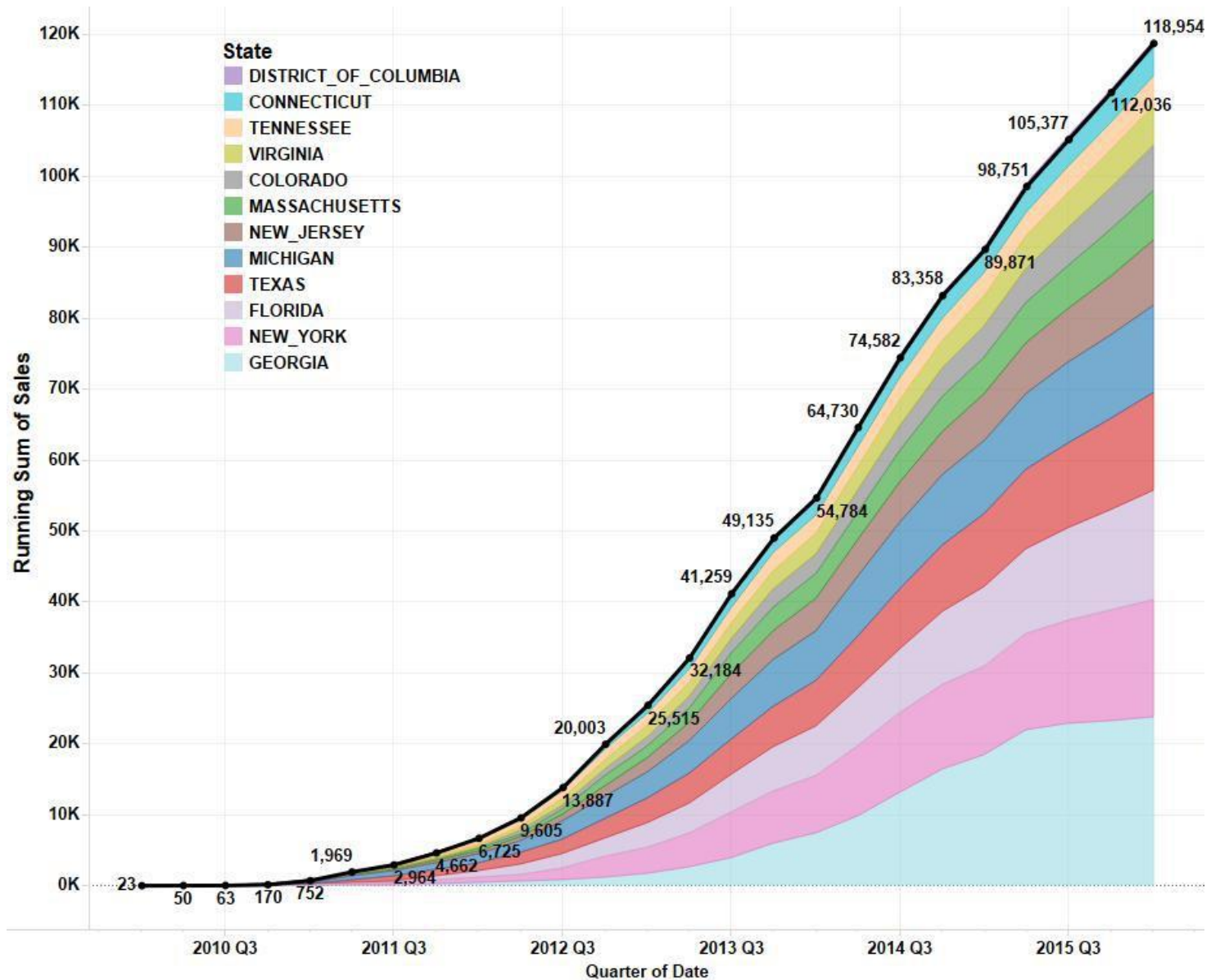
States Surveyed

12-region survey: 4,396 people surveyed

- District of Columbia
- Colorado,
- Connecticut,
- Florida,
- Georgia,
- Massachusetts,
- Michigan,
- New Jersey,
- New York,
- Tennessee,
- Texas,
- Virginia.



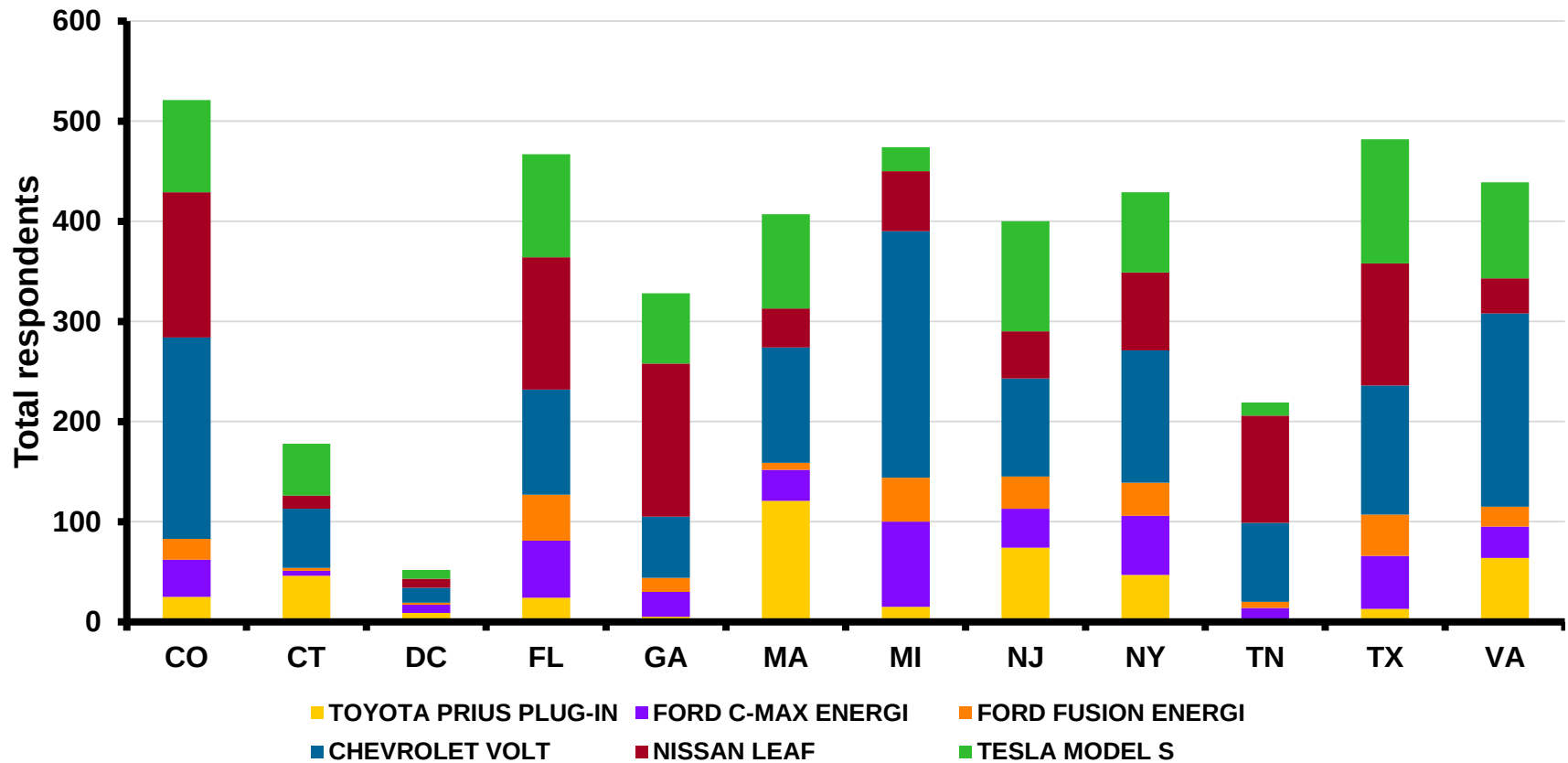
Current Market State



Survey Logistics

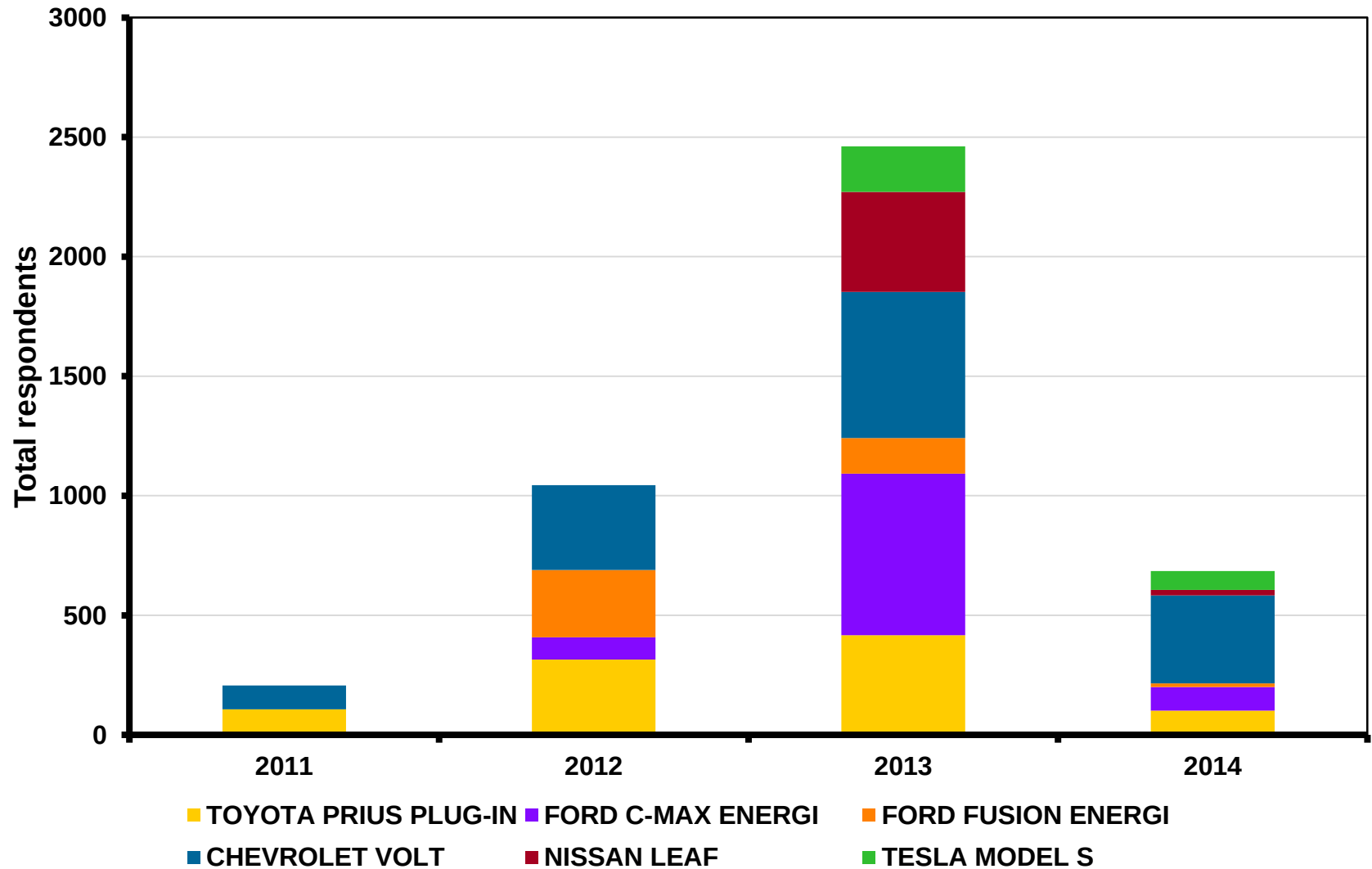
State and Vehicle Response

- Web based
- 17,171 home addresses purchased from IHS Automotive (16,985 were valid), 25.8% completed the survey (which took 25 minutes).



Survey Logistics

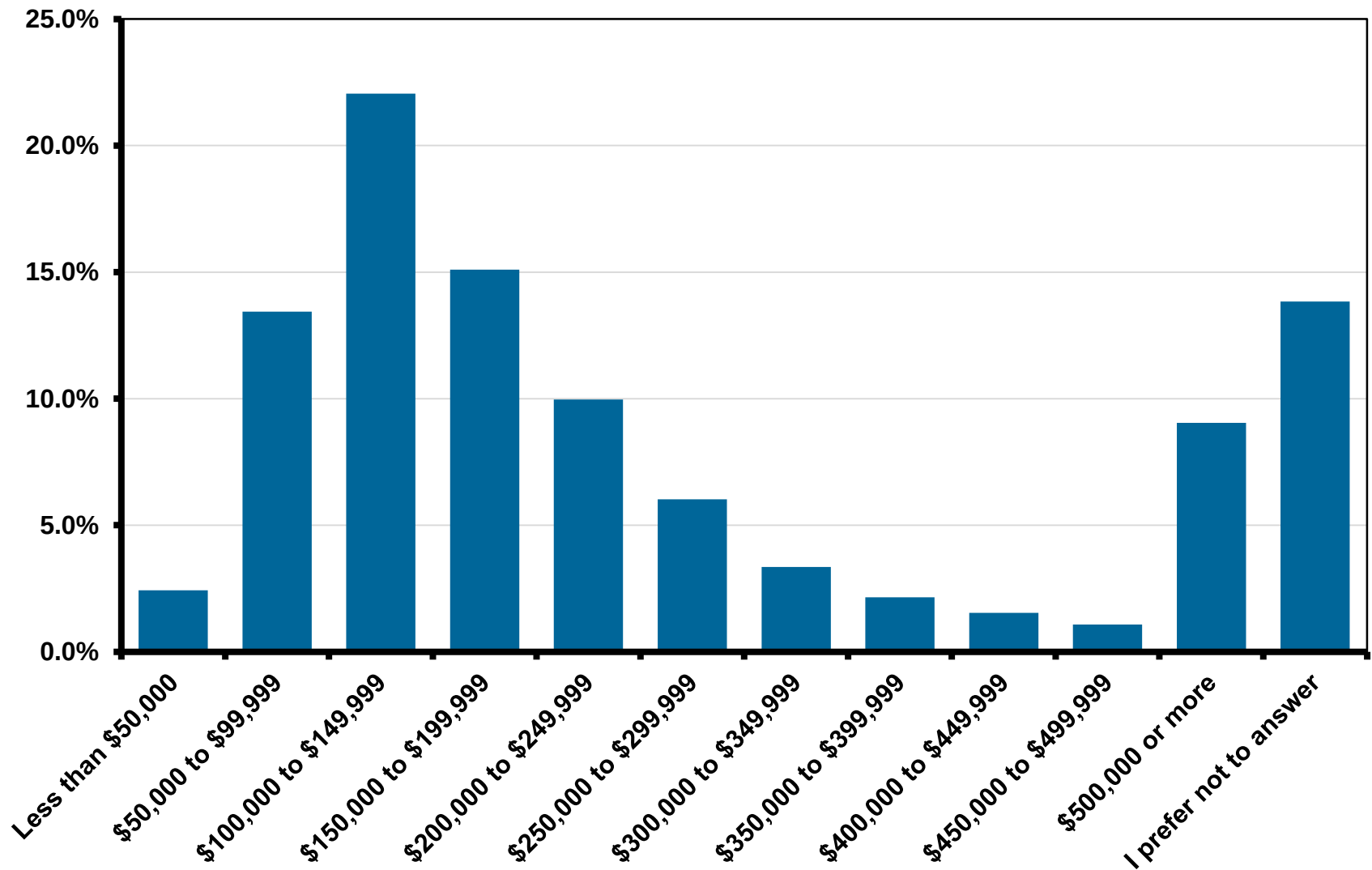
Vehicle Year Response



Participant Information

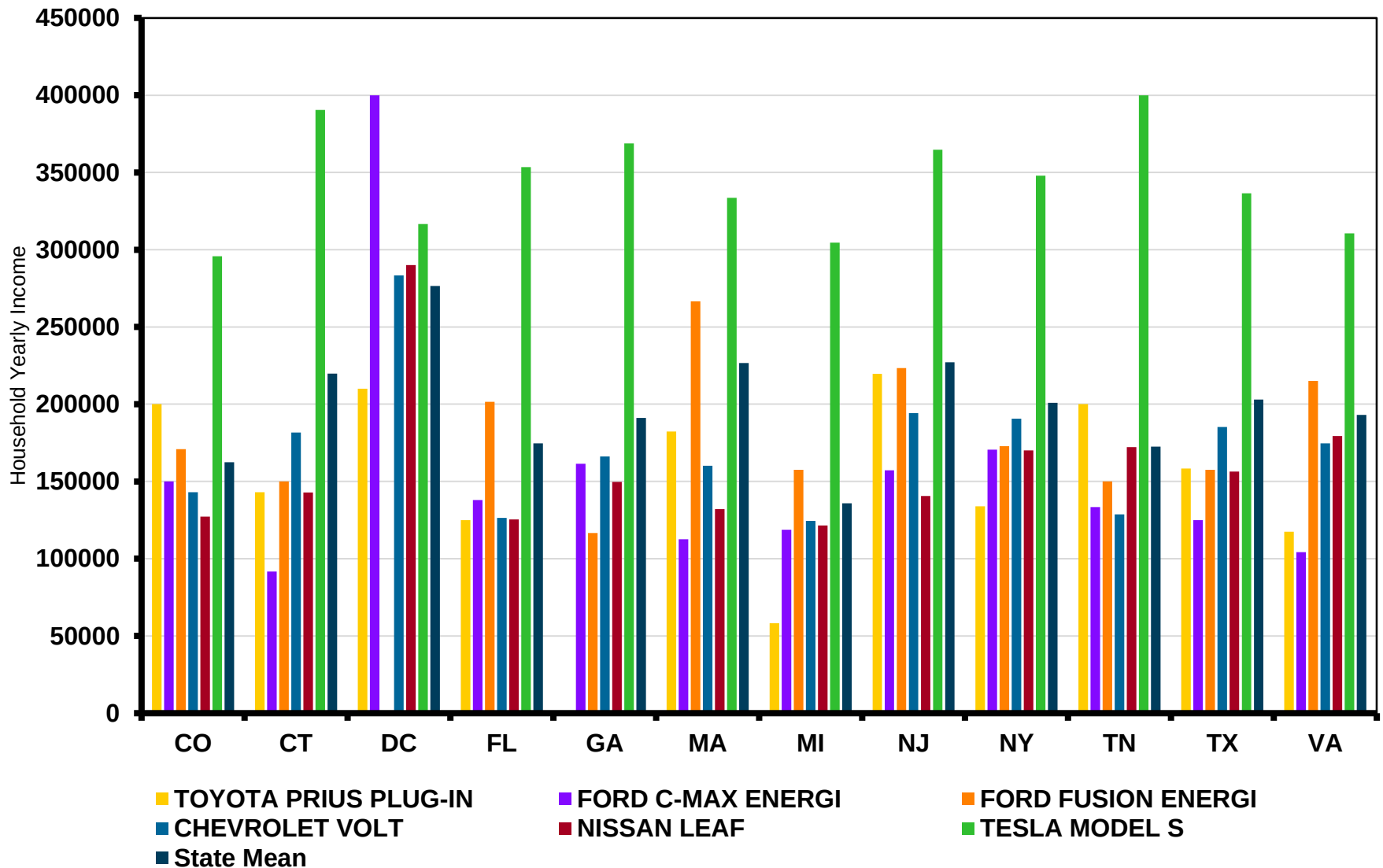
Participant Information

Household income



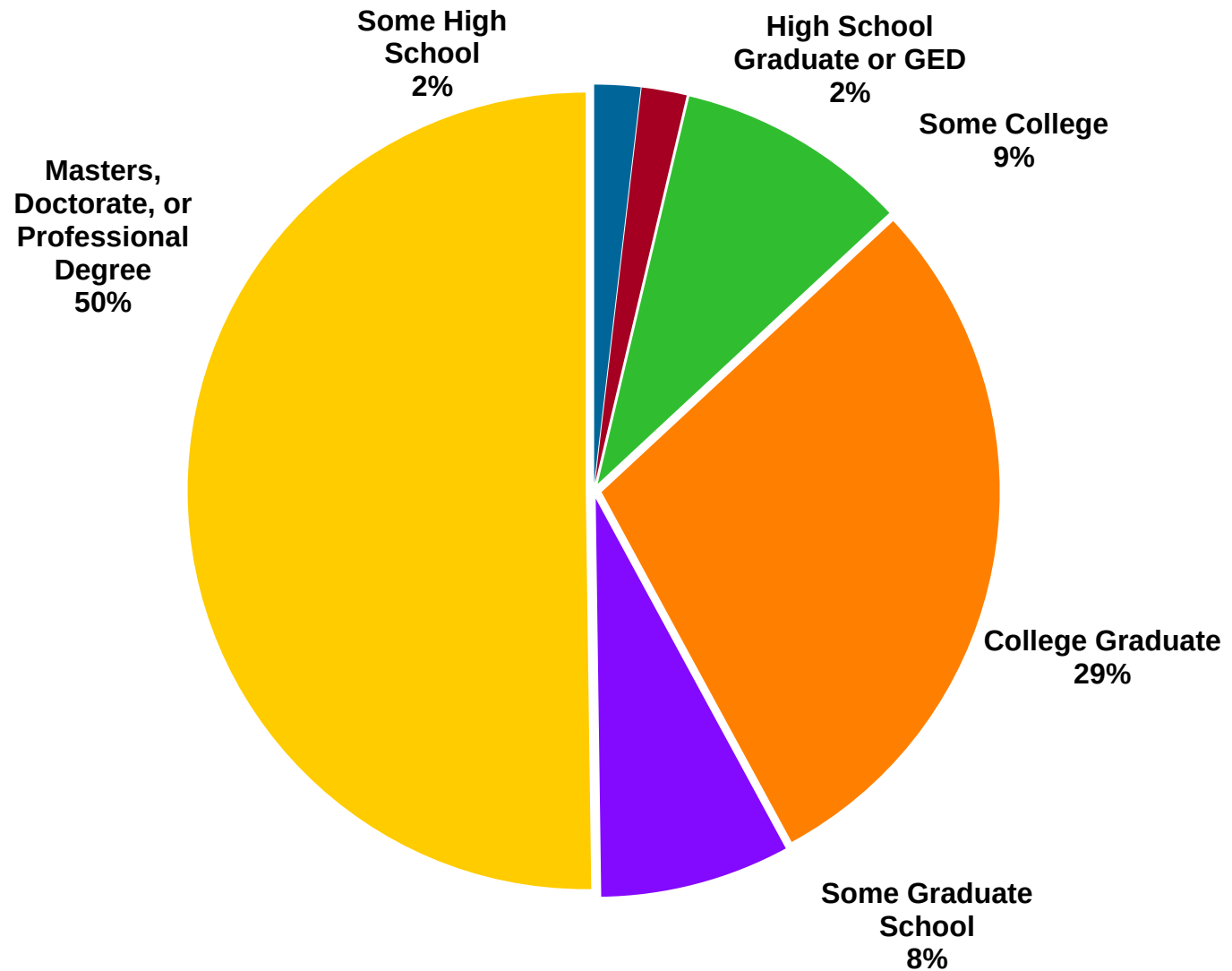
Participant Information

Household yearly income by vehicle and state



Participant Information

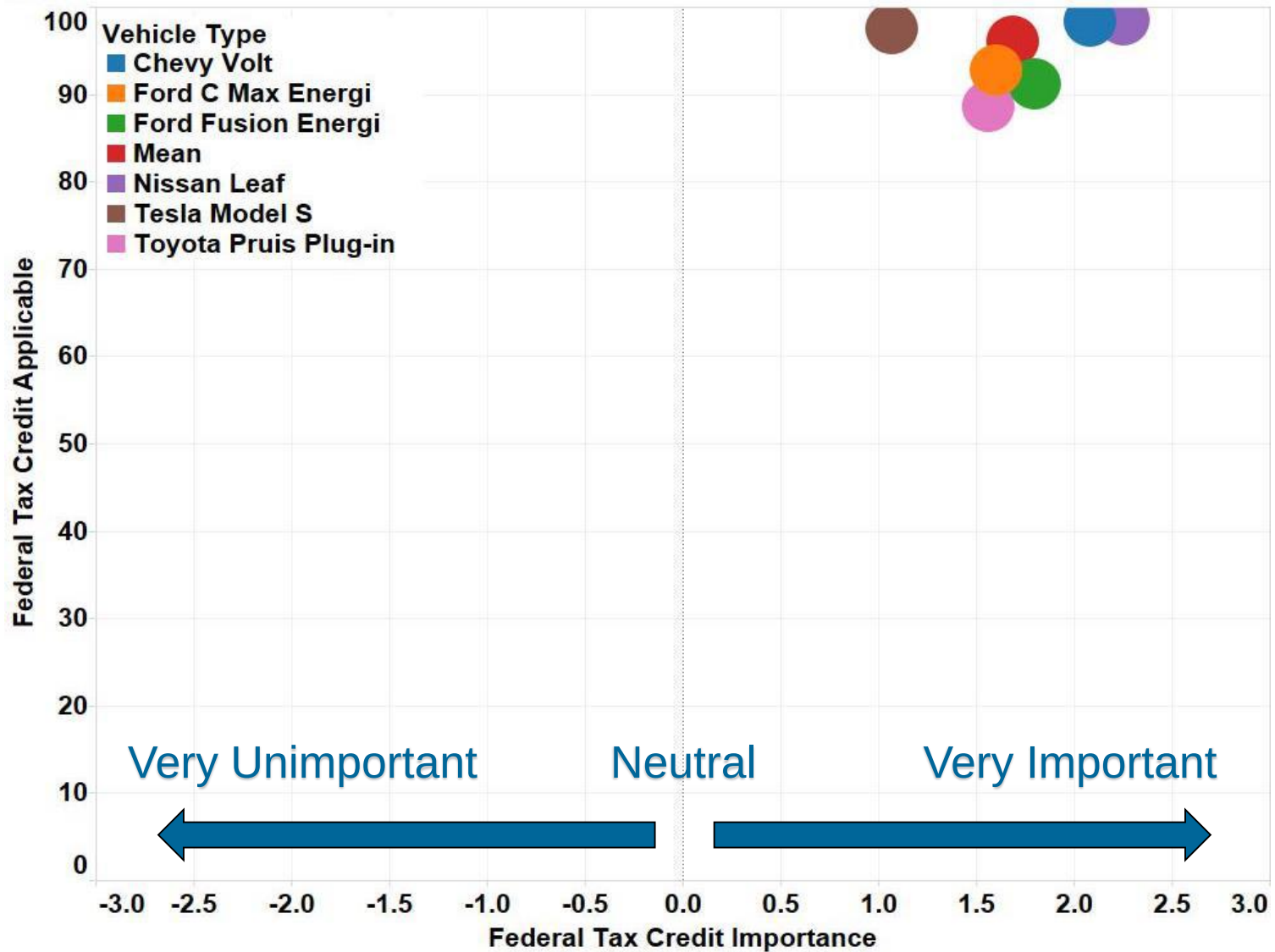
Education Level



Incentives

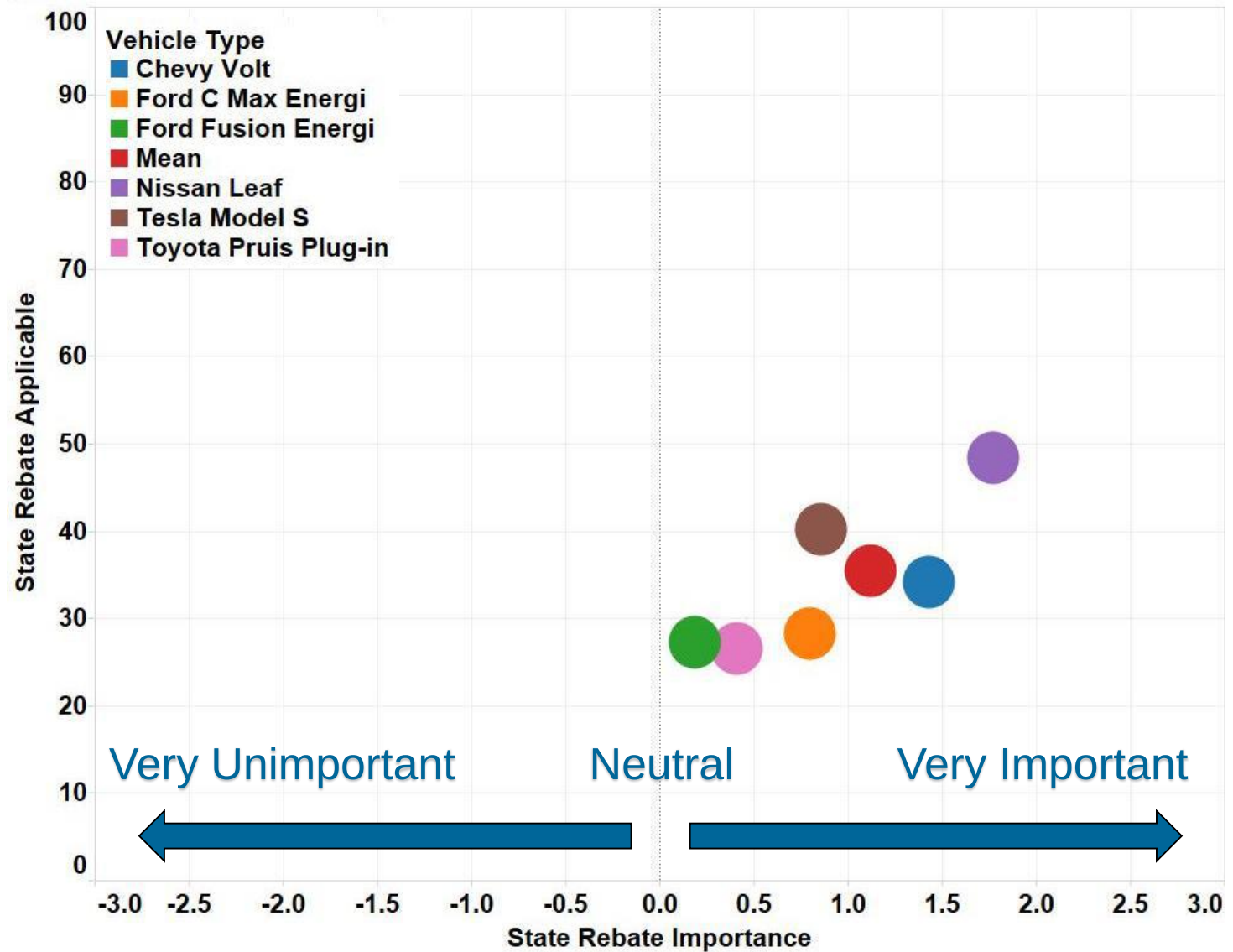
Incentives

Federal Tax Credit



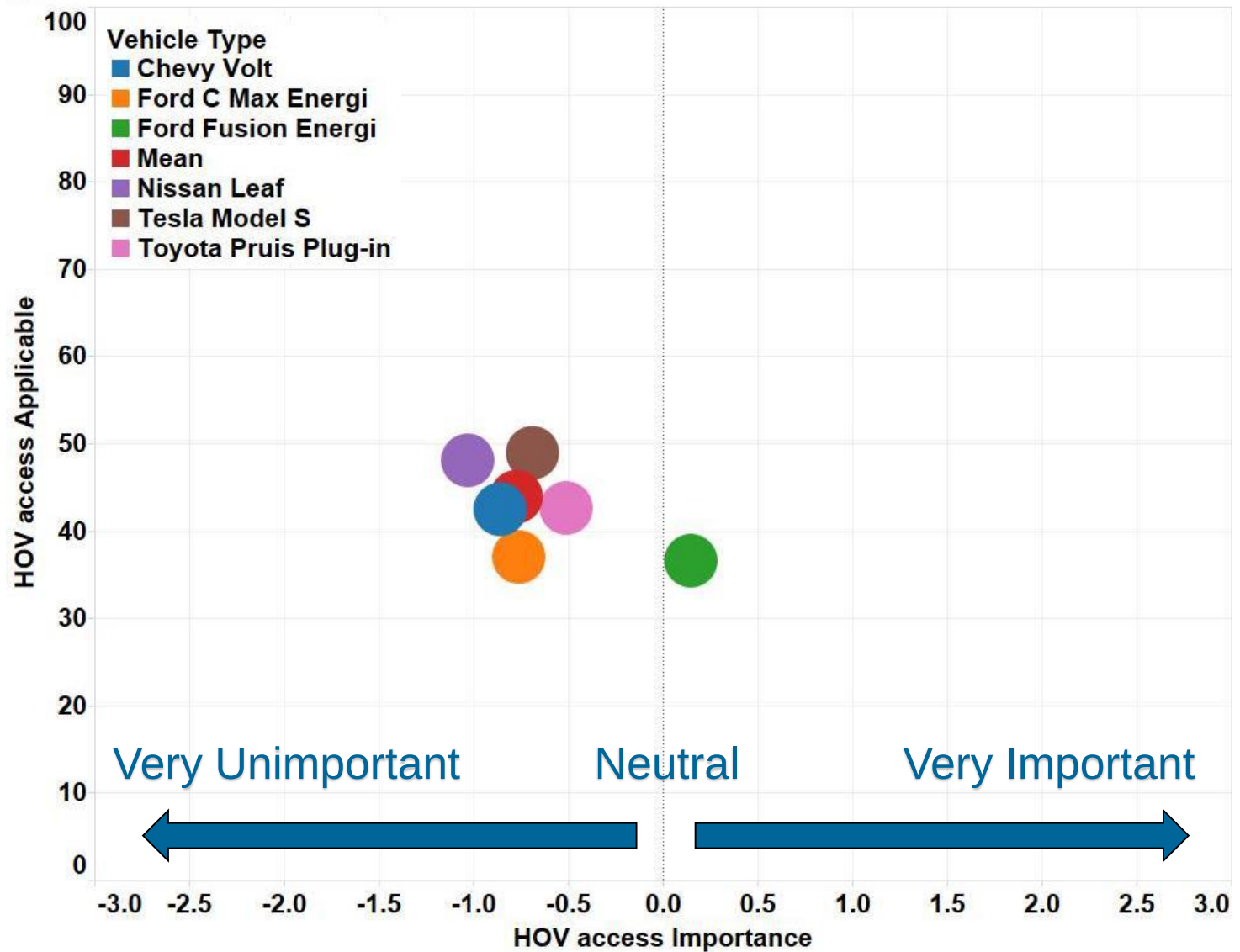
Incentives

State Tax Credit



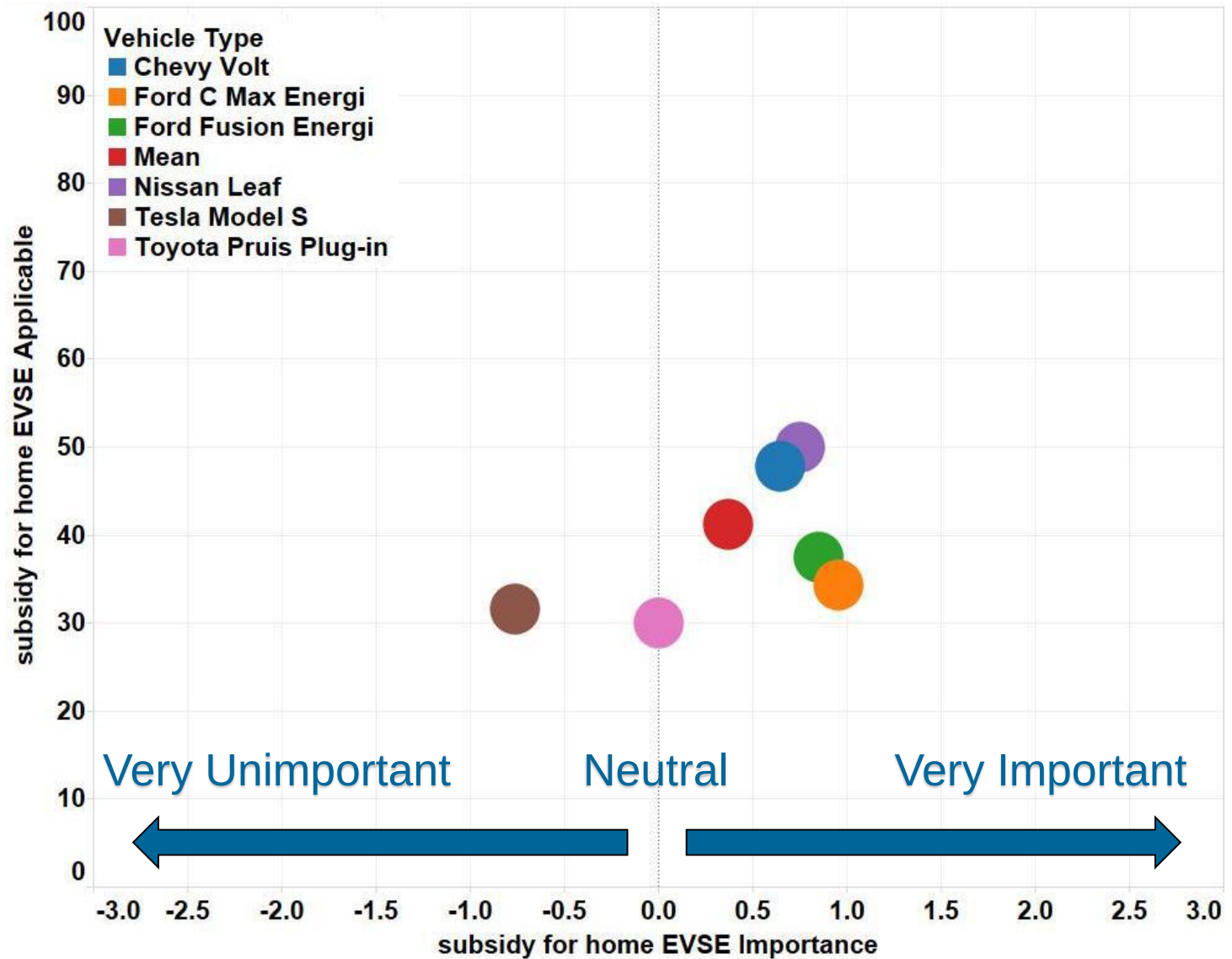
Incentives

HOV Lane Access



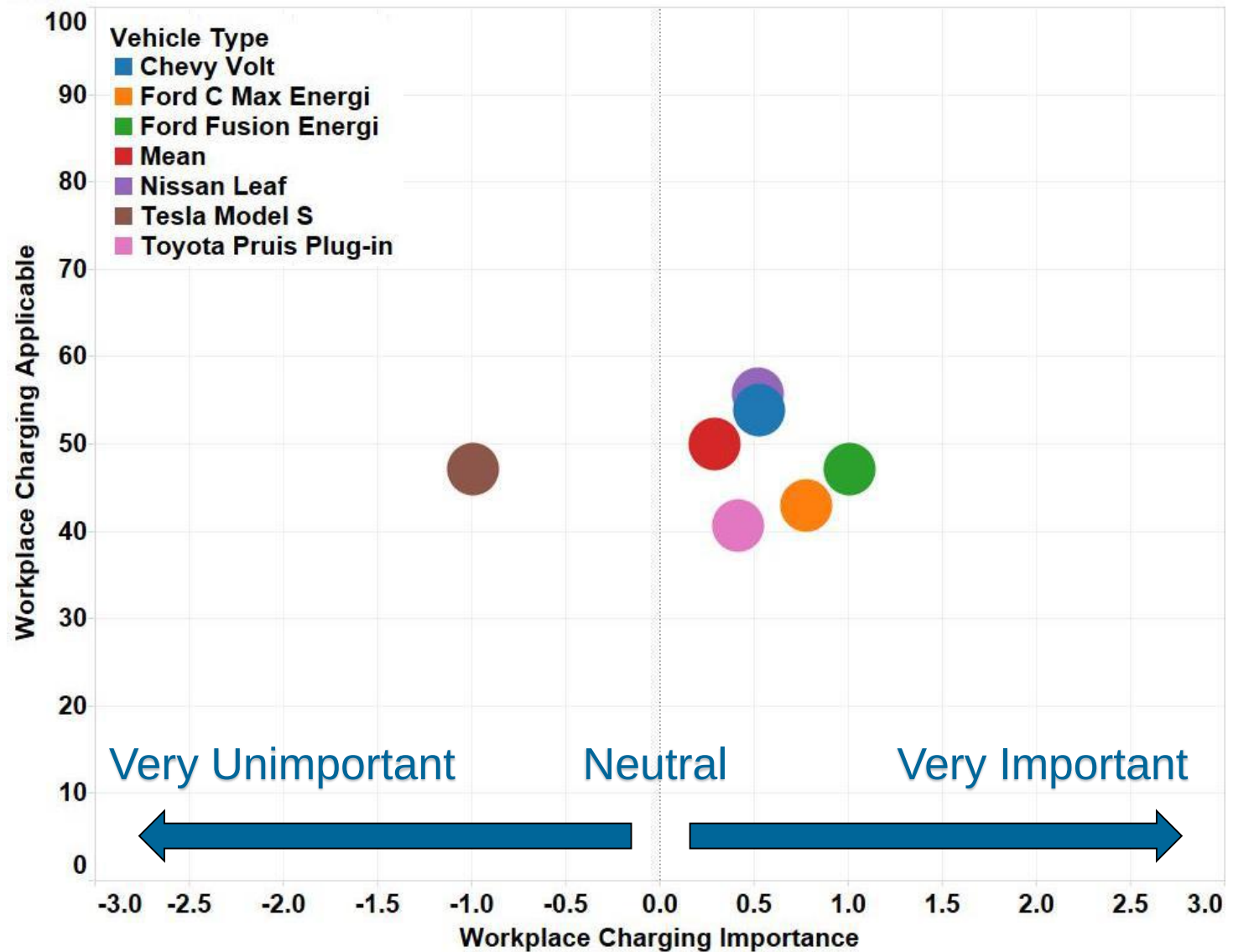
Incentives

EVSE Home Installation Credit



Incentives

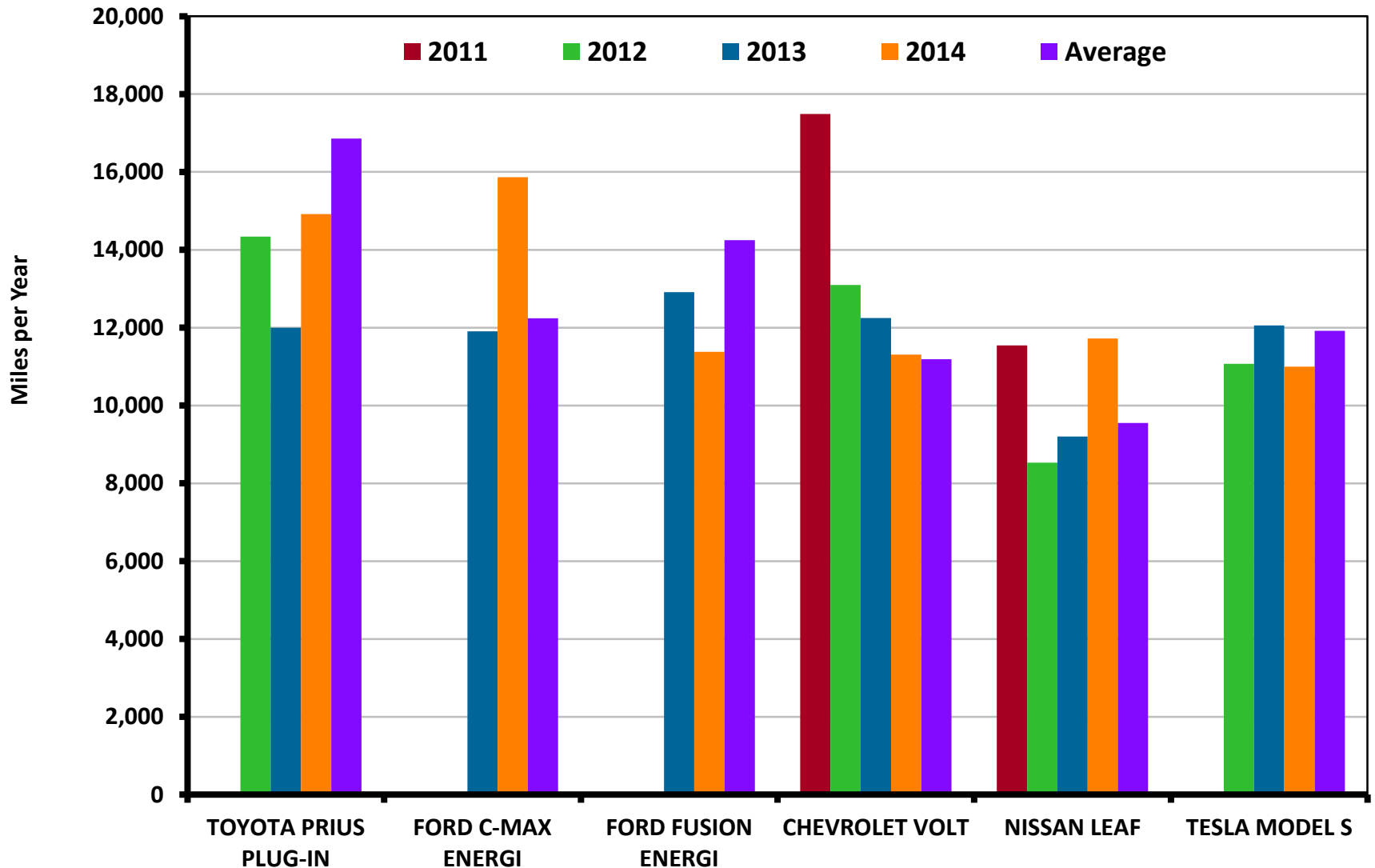
Workplace Charging



Driving Behavior

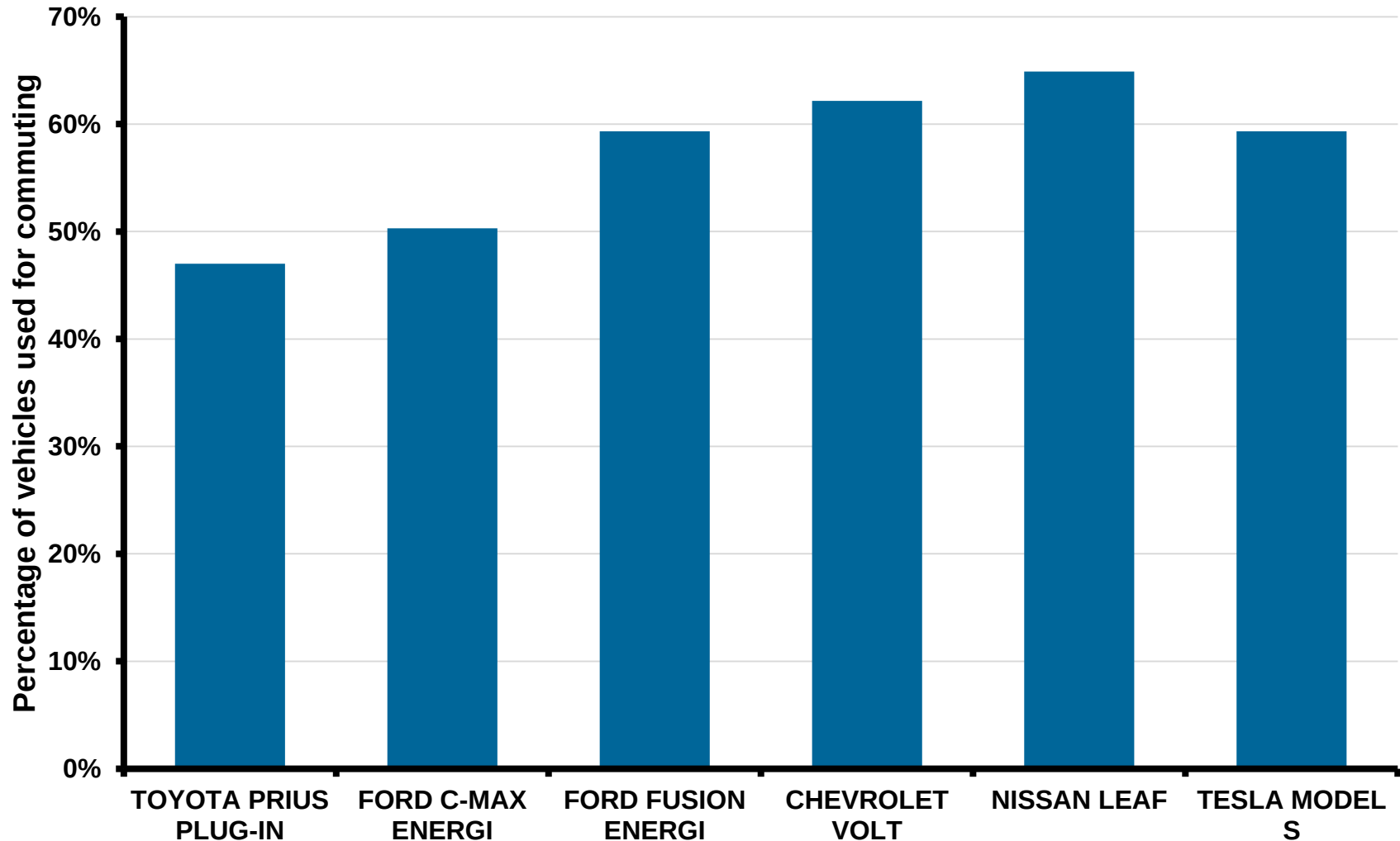
Driving Behavior

Miles driven per year by vehicle



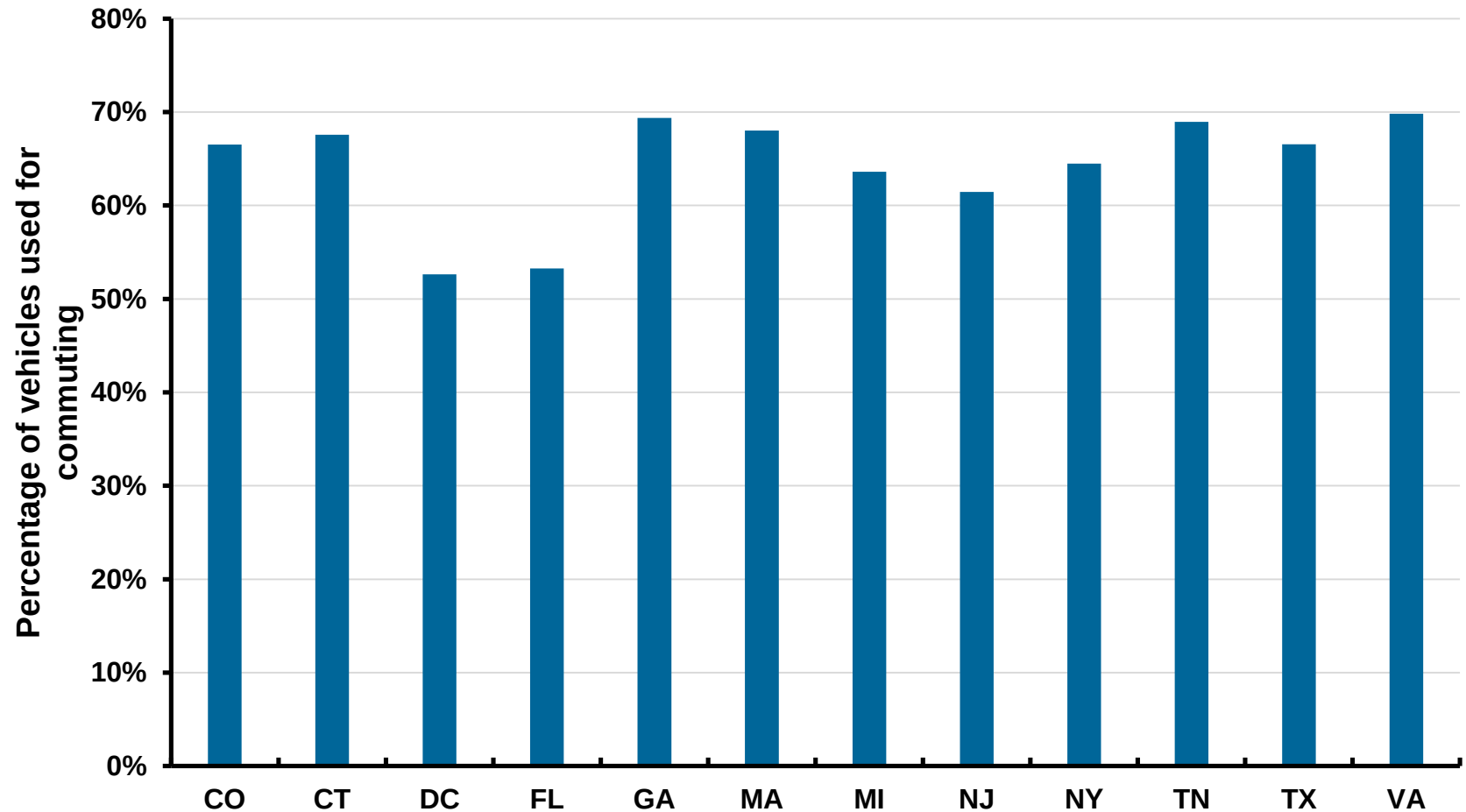
Driving Behavior

Percentage of vehicles used for commuting by vehicle



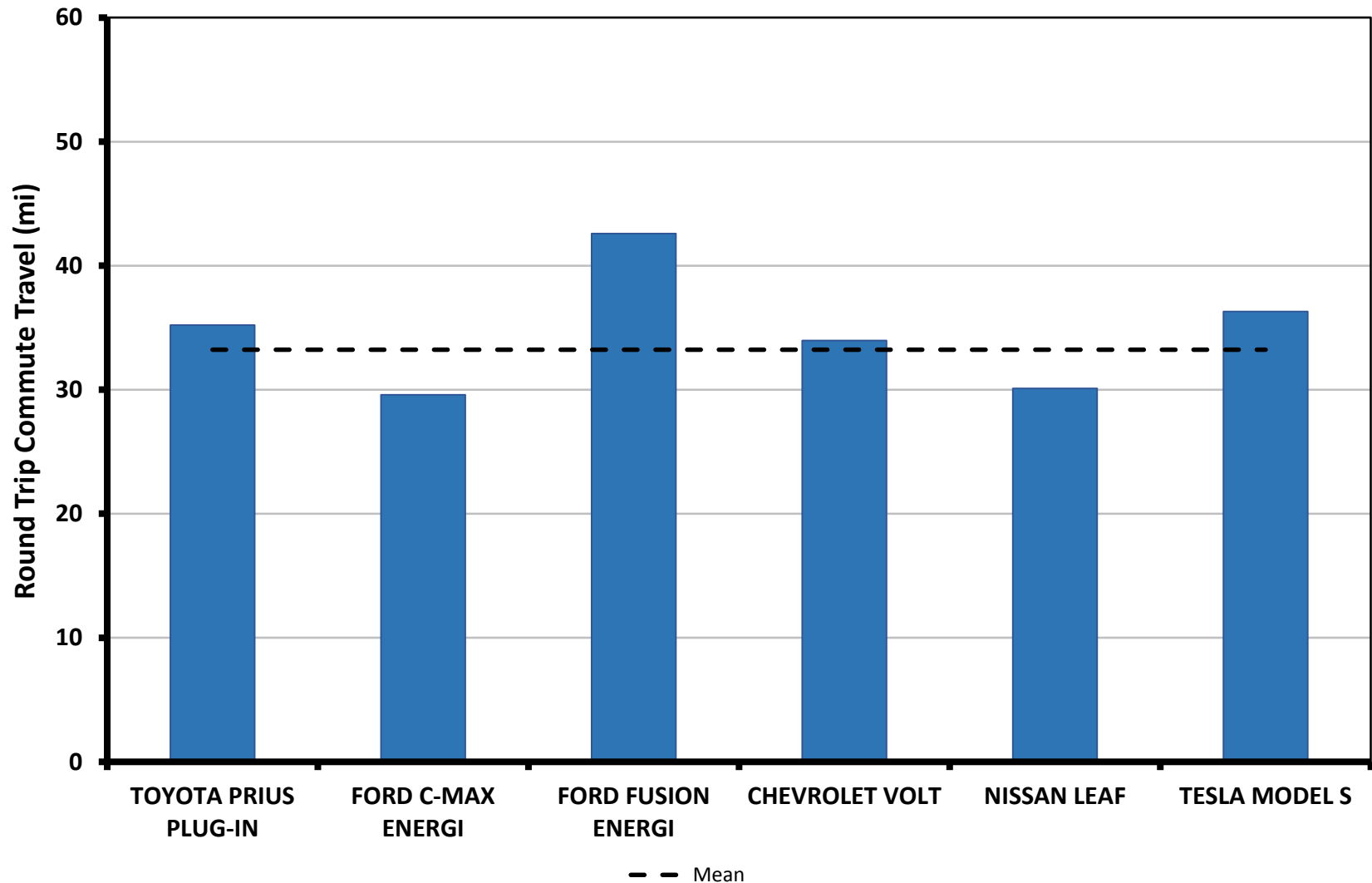
Driving Behavior

Percentage of vehicles used for commuting by State



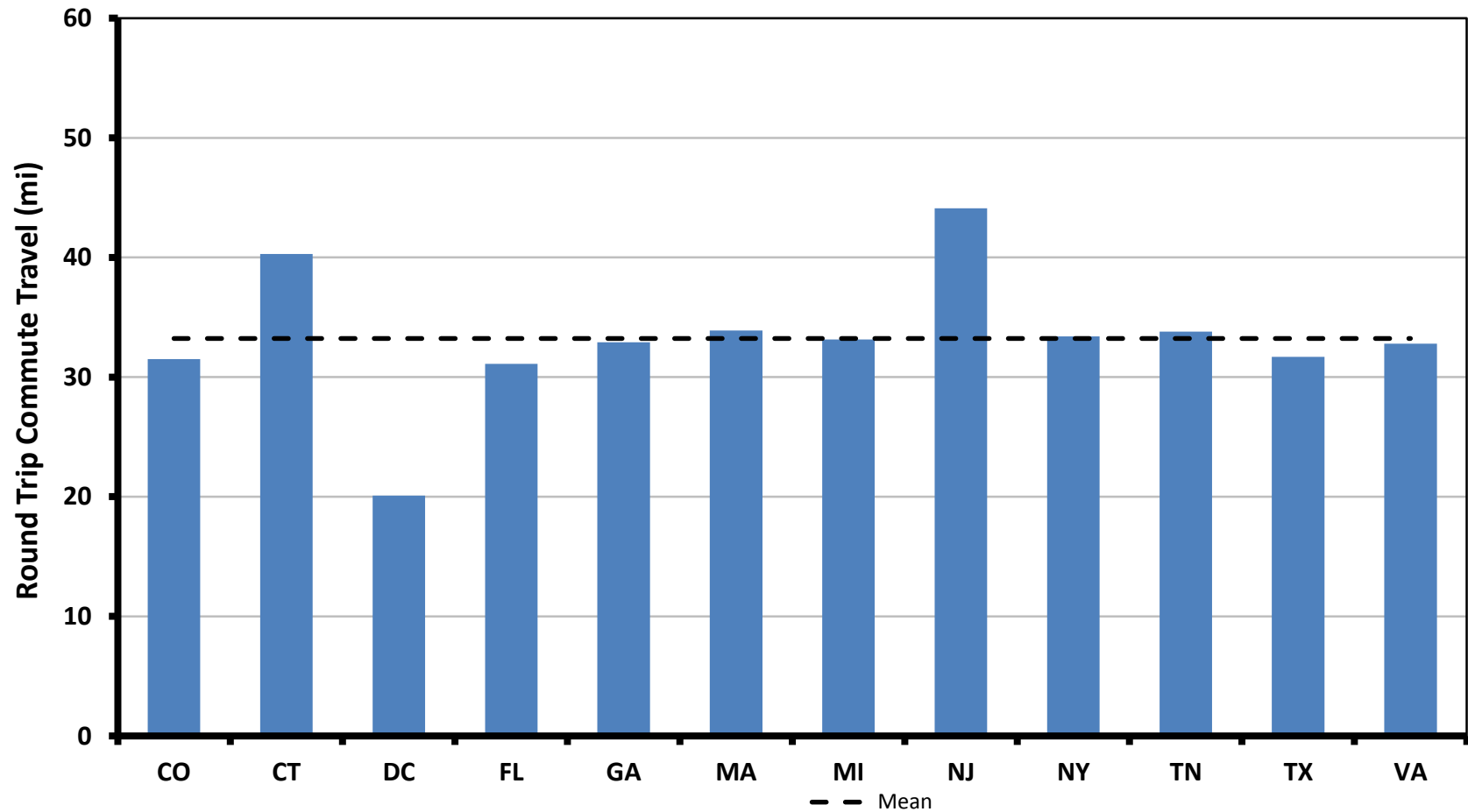
Driving Behavior

Commute Miles by vehicle



Driving Behavior

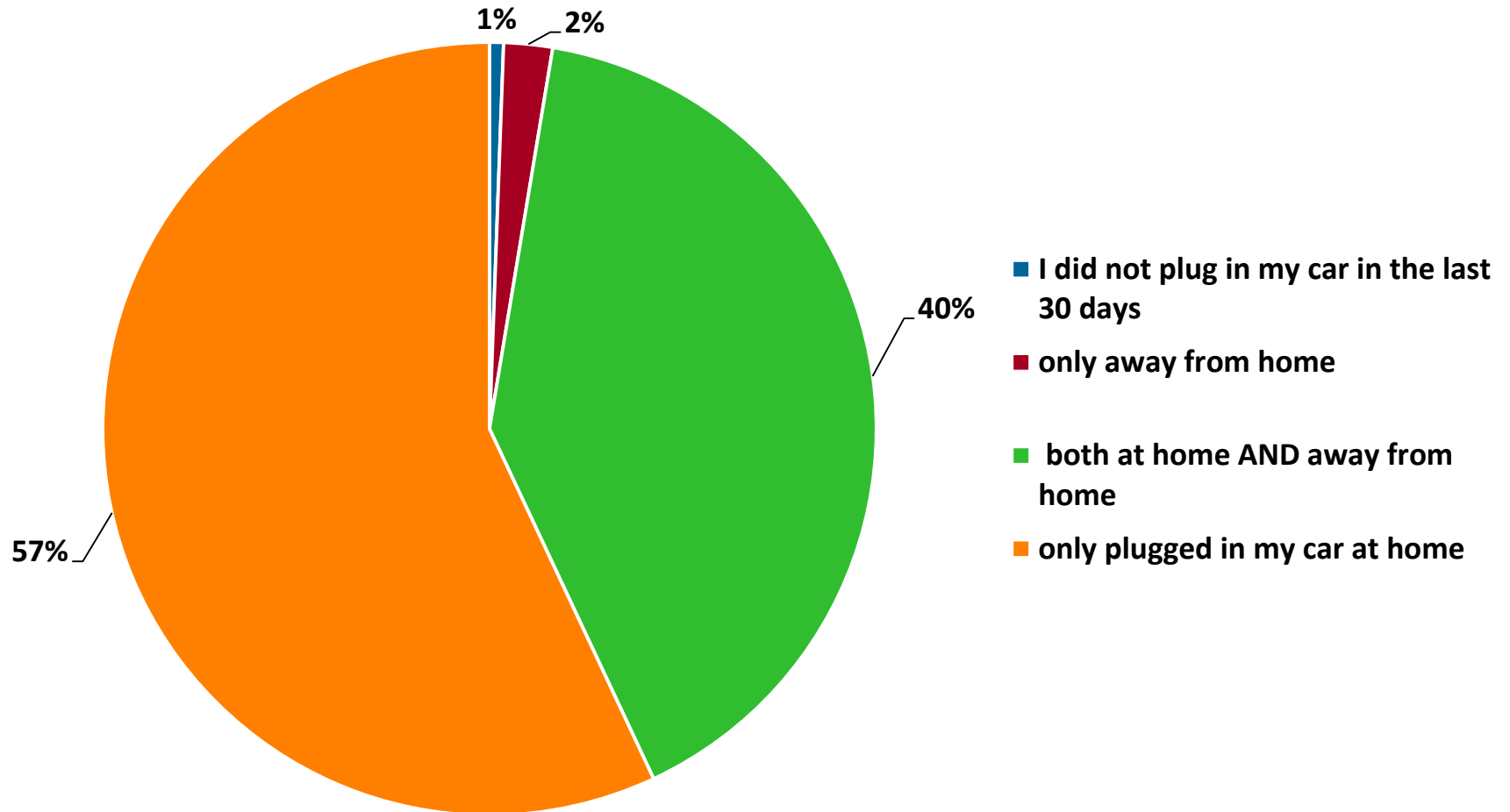
Commute Distance by State



Charging Behavior

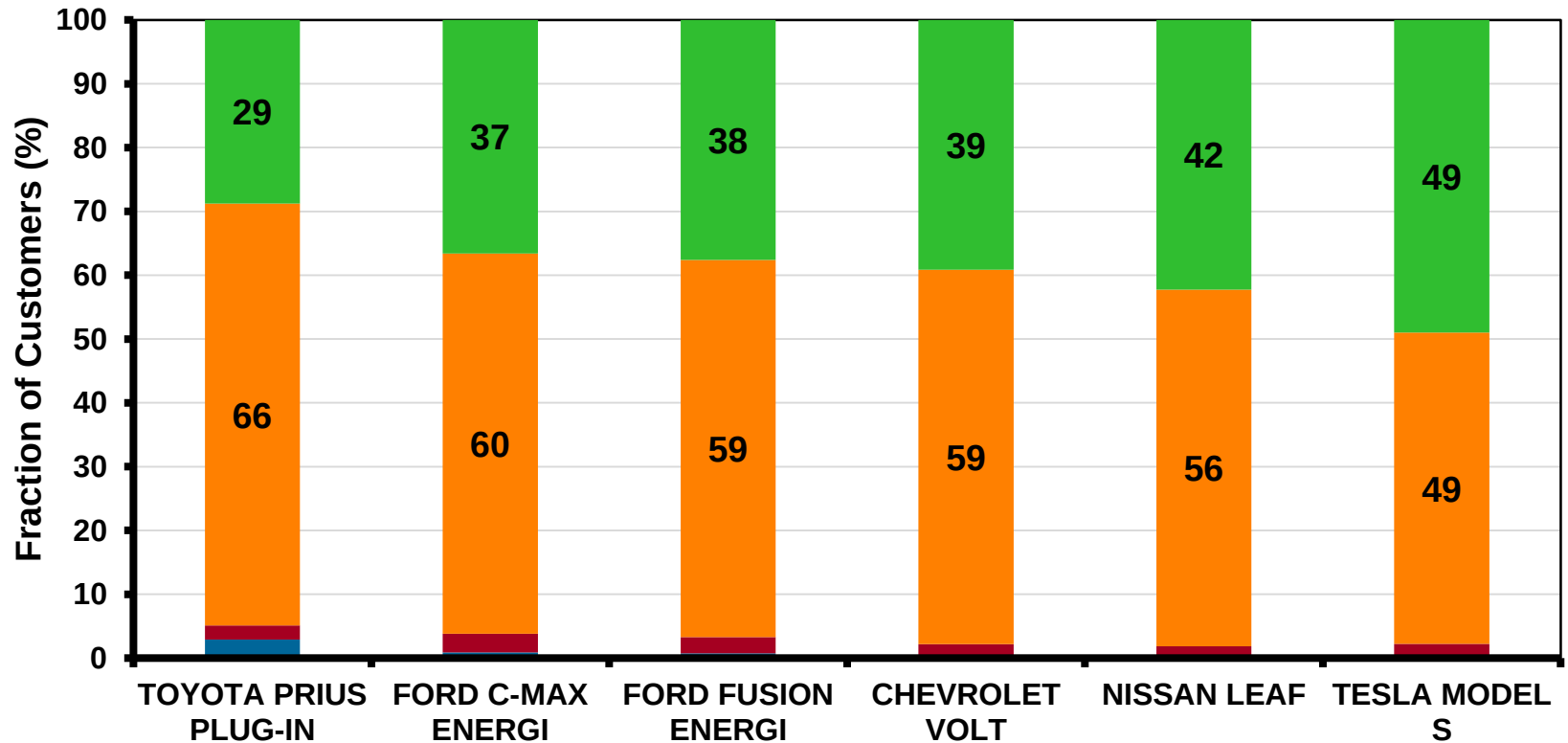
Charging Behavior

Charging Location



Charging Behavior

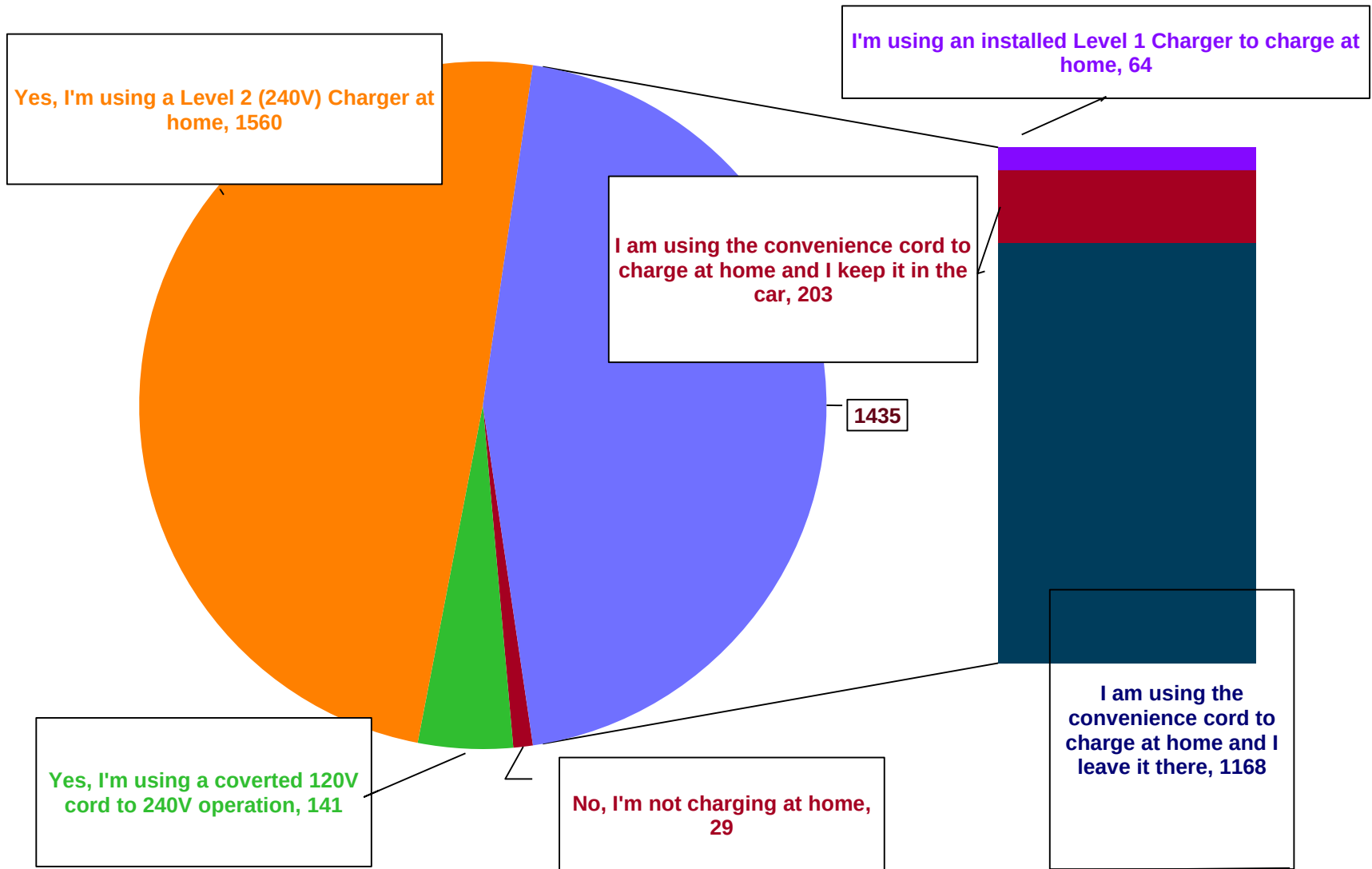
Charging Location by Vehicle



- In the last 30 days, I've plugged in my car both at home AND away from home
- In the last 30 days, I've only plugged in my car at home
- In the last 30 days, I've only plugged in my car away from home
- I did not plug in my car in the last 30 days

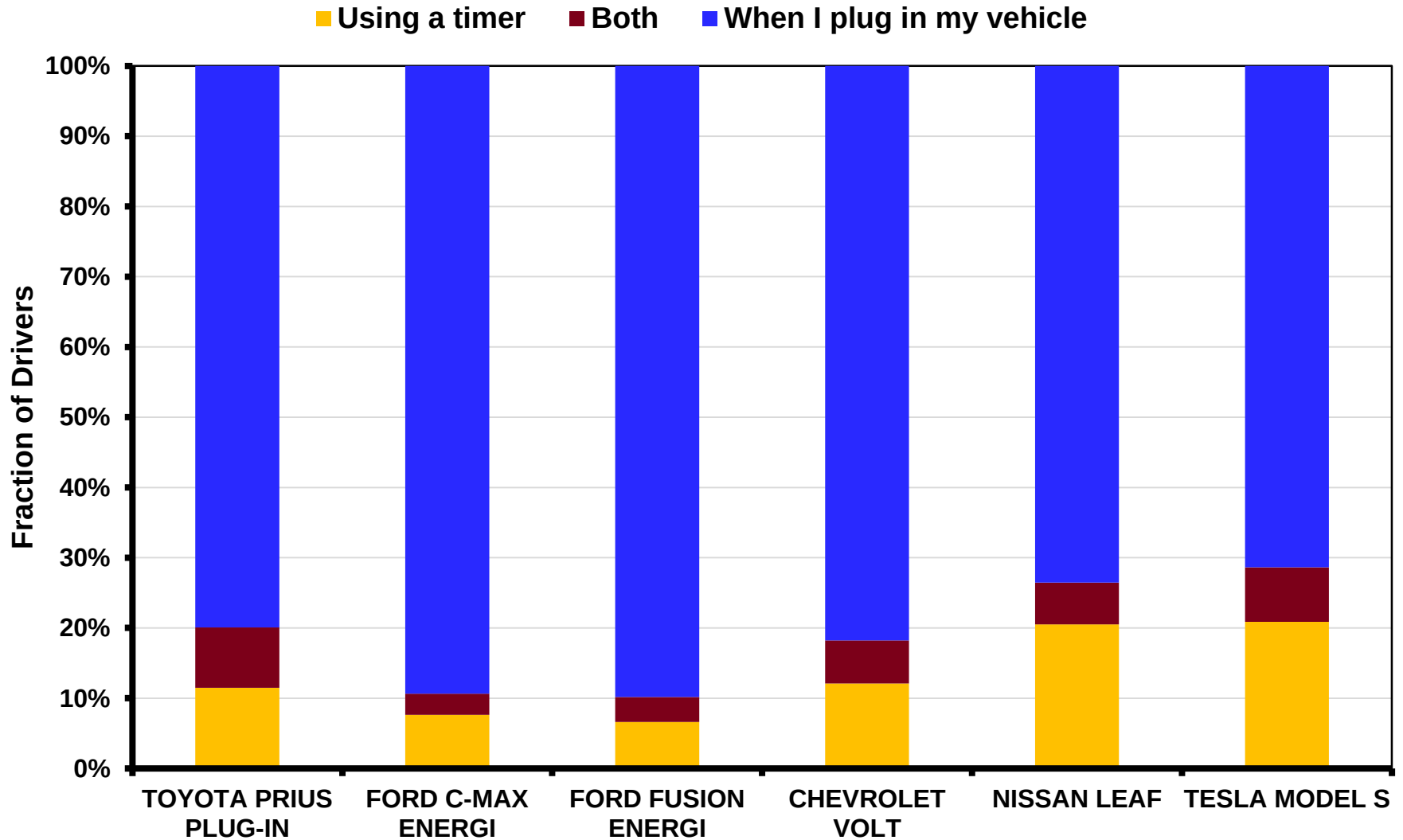
Charging Behavior

Home Charging



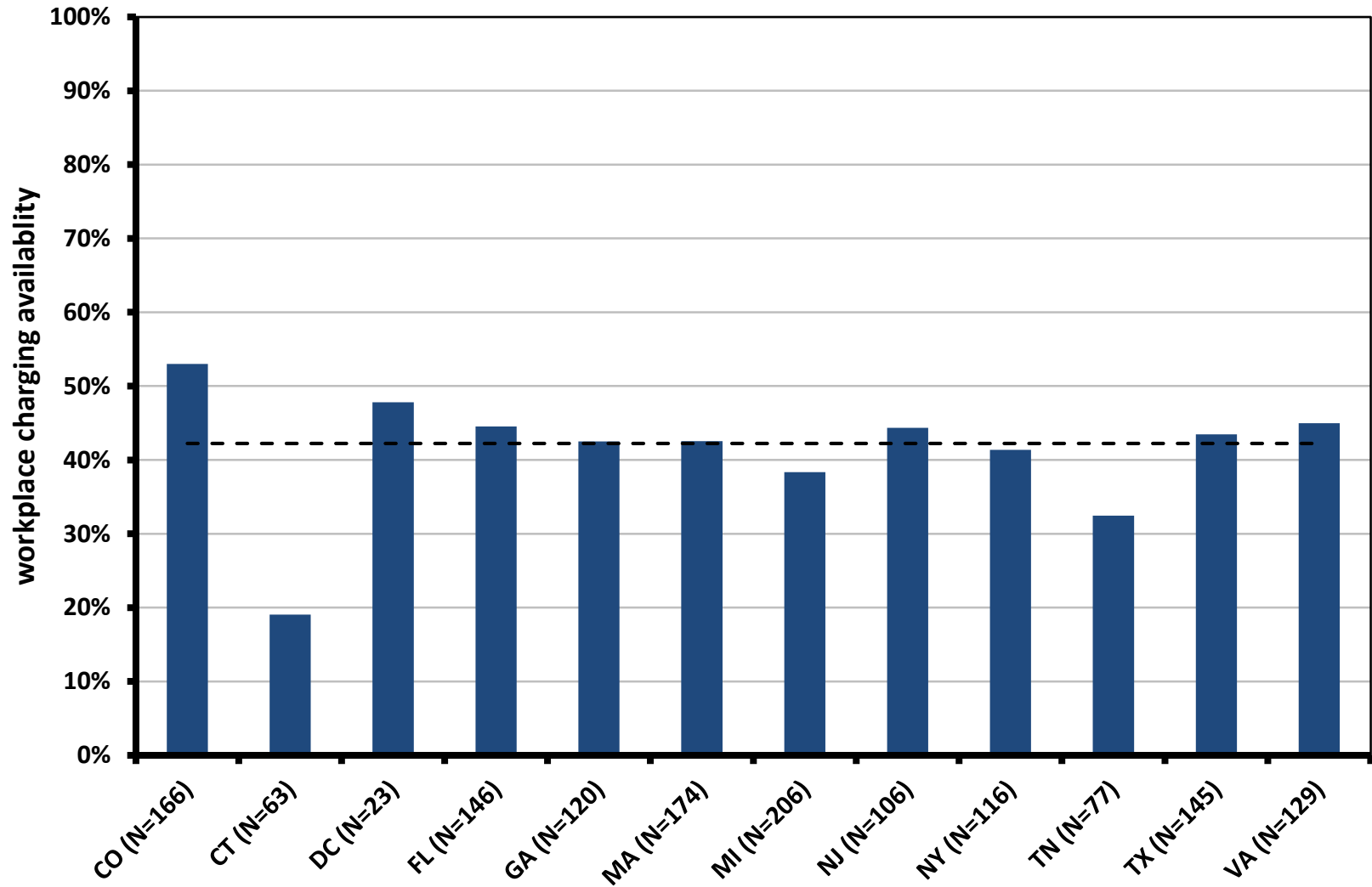
Charging Behavior

Plug in Time



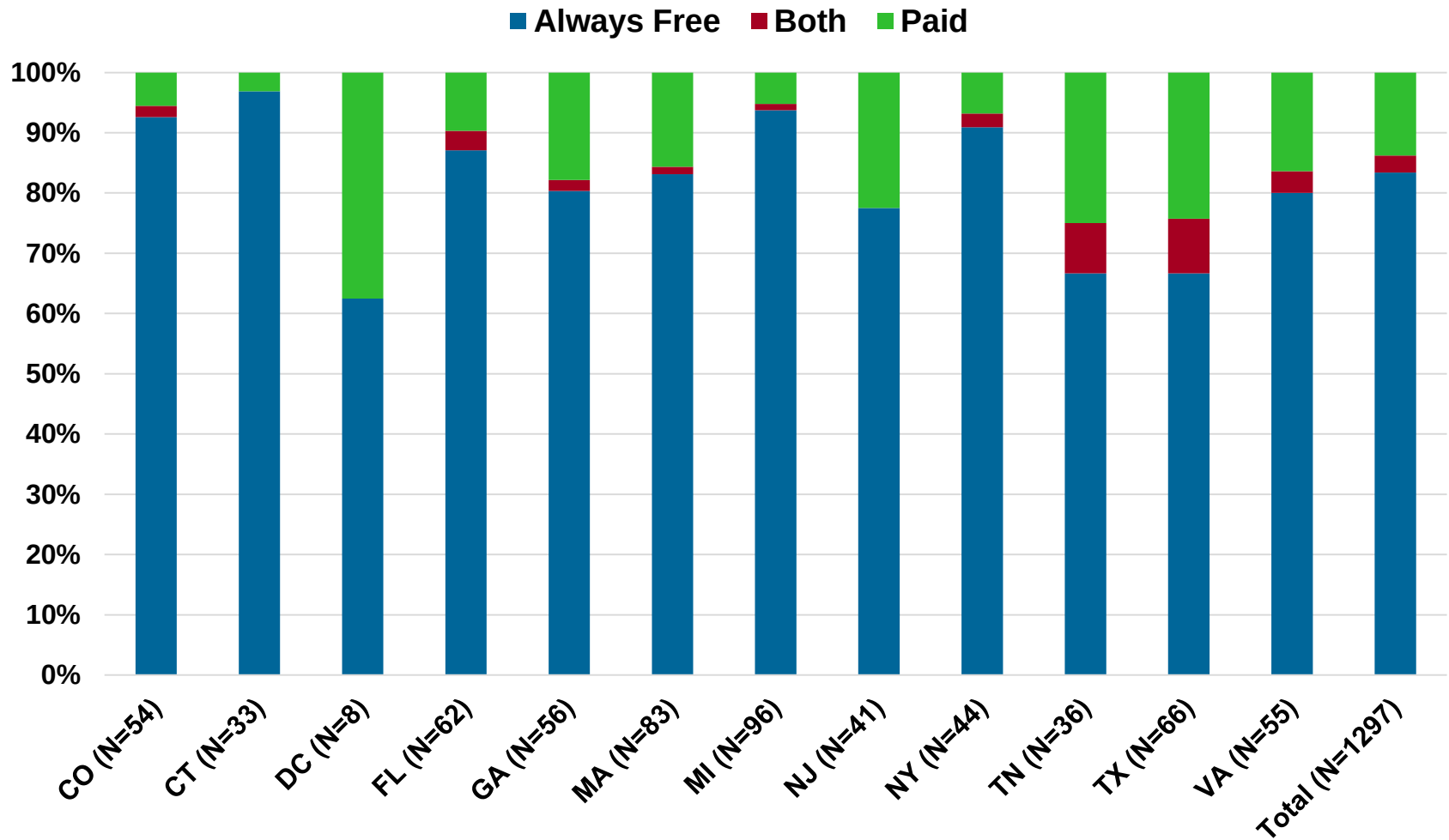
Charging Behavior

Workplace Charging Availability by State



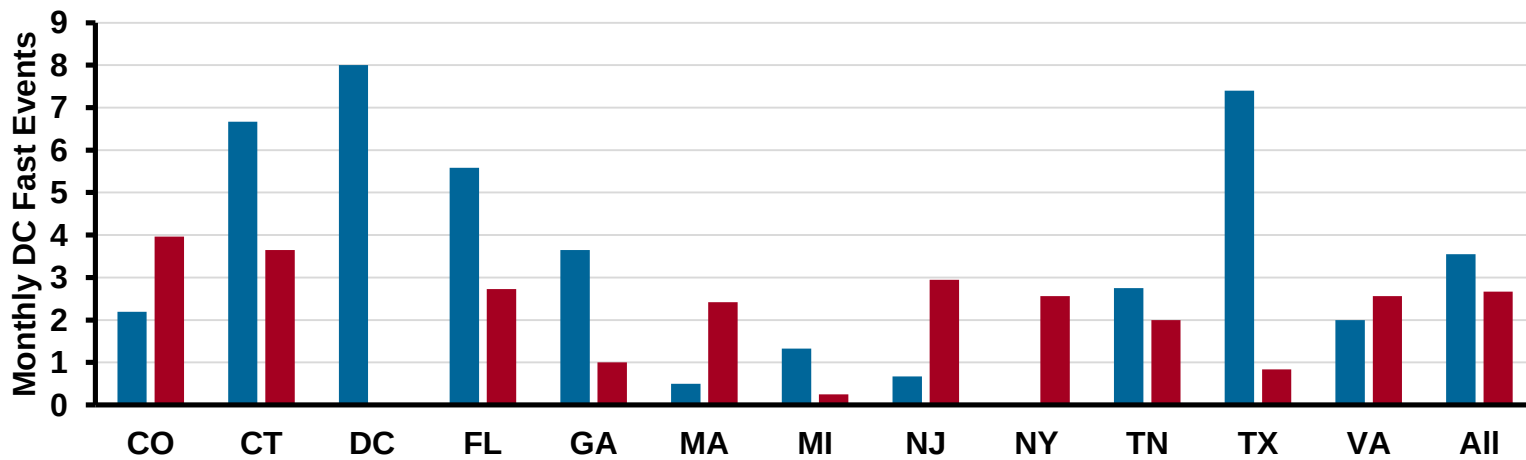
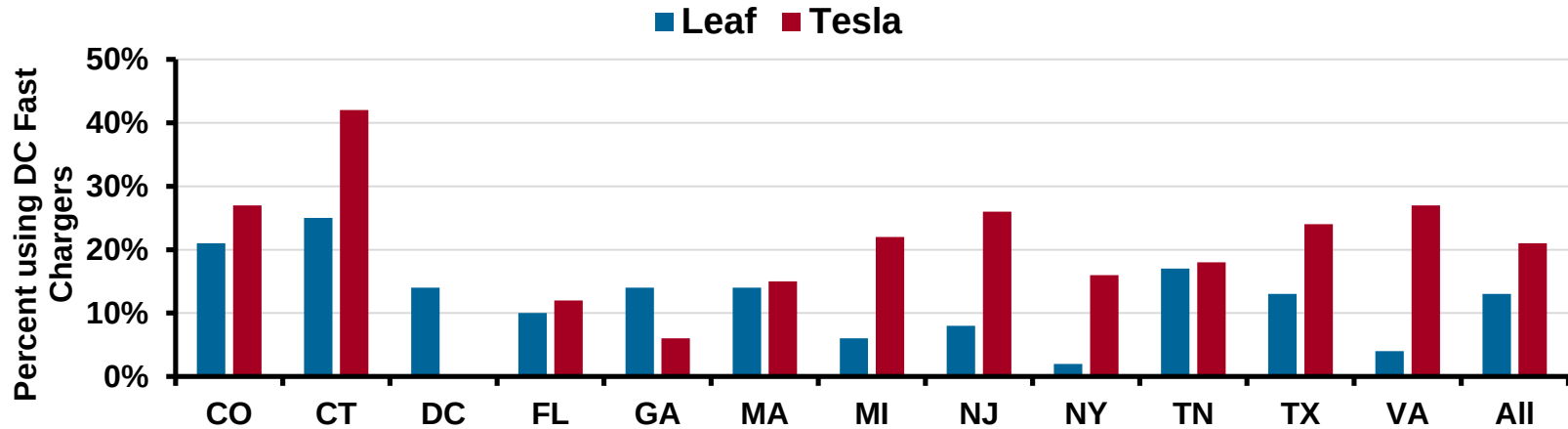
Charging Behavior

Is Your Charging Free?



Charging Behavior

Percent using DC Fast Charging



Utility Role

Did your utility company have any role in purchasing your plug-in vehicle?

NO (95%).

What type of electricity rate is your car and house on?

Flat Rate (59%)

Time of Use Rate (18%)

Don't Know (16%)

Who should install public charging infrastructure?

Your Utility Company

Local Governments

Private Businesses

Conclusions

Participant Information

- High wages
- High education

Driving Behavior

- Average commute is 33 miles round trip
- 60% use their vehicle for commuting

Charging Behavior

- Majority only charge at home
- 80% plug in when they get home
- ~40% have charging at work, mostly free
- Minority use DC Fast

Incentives

- Federal incentive is the most highly rated

Utility Role

- Utilities aren't contacting customers, but customers see them as having a role in charging infrastructure.



Questions?

- DC Fast charging? Find a way to show the data better?

Tables on page 46

Nissan LEAF

State	N (sample size)	Share use DC fast	Mean monthly charging event (for users only)
CO	130	21%	2.19
CT	12	25%	6.67
DC	7	14%	8.00
FL	117	10%	5.58
GA	140	14%	3.65
MA	29	14%	0.50
MI	51	6%	1.33
NJ	40	8%	0.67
NY	51	2%	0.00
TN	70	17%	2.75
TX	79	13%	7.40
VA	27	4%	2.00
All	753	13%	3.55

Tesla S

State	N (sample size)	Share use DC fast	Mean monthly charging event (for users only)
CO	86	27%	3.96
CT	48	42%	3.65
DC	9	0%	NA
FL	94	12%	2.73
GA	52	6%	1.00
MA	79	15%	2.42
MI	18	22%	0.25
NJ	85	26%	2.95
NY	55	16%	2.56
TN	11	18%	2.00
TX	80	24%	0.84
VA	60	27%	2.56
All	677	21%	2.67

Driving Behavior

Miles Driven per year by payment type

