EV & GEOGRAPHY: TRENDS IN ENERGY AND EMISSIONS REDUCTION

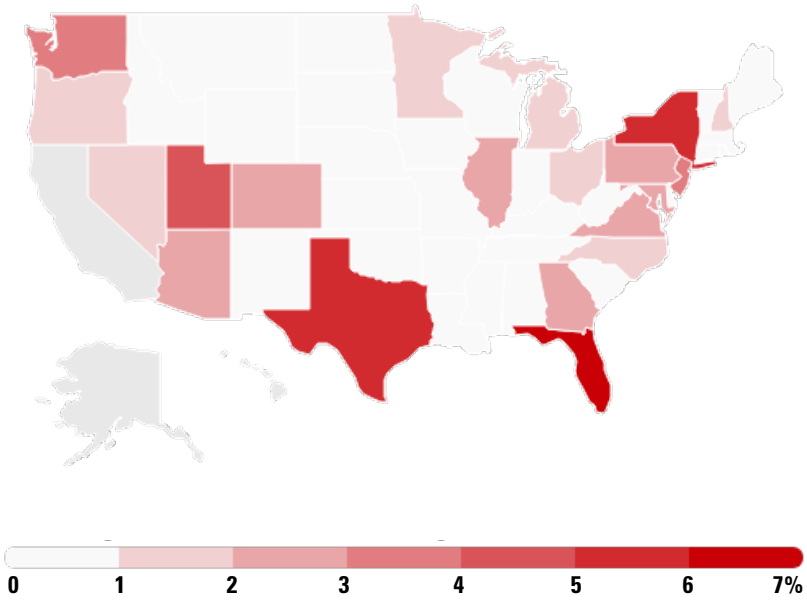
Written by: David Rymarz, Vice President of Data Analytics, Business Development & Corporate Strategy, IAA

While the electric vehicle market is growing in the U.S., a key industry question is how EVs' geographic footprint affects their overall environmental impact. Even though the environmental fit is often given as a reason for EV adoption, recent data suggests that variations across state electricity sources yield widely different outcomes on well-to-wheel emissions. This is an important early trend IAA is tracking, as the states and regions that stand to gain the greatest environmental benefit from EV adoption are logical targets for future growth and infrastructure development.

Any quick search for trends in the electric vehicle space is likely to return a host of articles making the case for this industry's bright future. A recent CCC Trends report found that U.S. sales of new electric vehicles, hybrids, and plug-in hybrids crossed the 100,000-vehicle mark in Q2 2021 for the first time.[1] The numbers are quite staggering year-over-year, as the share of sales for this segment doubled compared to 2020.[2] In fact, for the first half of 2021, Experian reported that electric vehicle registrations grew by 117.4% year-over-year, to comprise 2.4% of all new registrations.[3] While electric vehicles still only account for 0.43% of vehicles in operation, recent trends are painting an optimistic picture for this industry's future if they continue.[4]

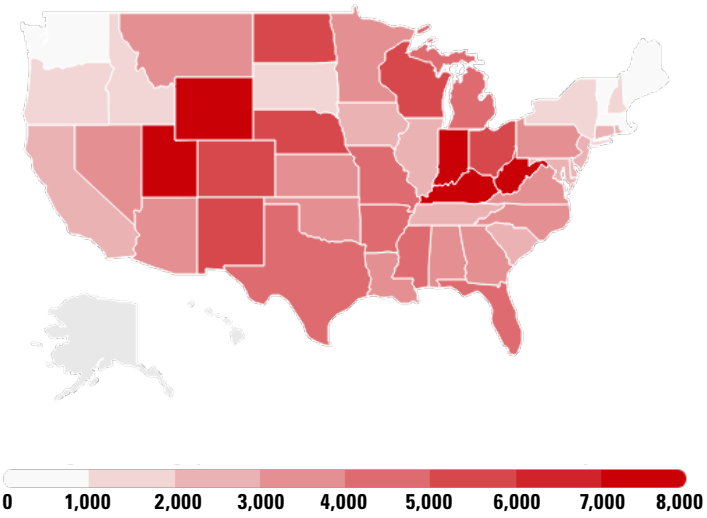
One interesting aspect to consider in this growing market segment is geography. For example, there are significant global differences in EV adoption, with Europe far outpacing the rest of the world.[5] Pew Research Center compared EV market shares globally in 2020 and found that 10% of new vehicle sales in Europe were EVs, compared to 5.7% in China, and 2% in the U.S.[6] Some countries are far ahead of the pack on this metric. Norway boasts a 74.8% EV market share of new vehicle sales.[7] An analysis by Experian found significant geographic variation within the U.S. alone. California specifically is a driver for adoption in the U.S., as 36.6% of all new vehicle registrations were for EV vehicles in the first half of 2021. Florida is second with 7.5%, followed by Texas with 5.4%, and New York with 5.1%.[8] The market behaviors towards EVs in those states is drastically different from states such as North and South Dakota, Wyoming, and West Virginia, which each had market shares of less than 0.1%.[9] For perspective, Figure 1 highlights the state-level EV shares of new vehicle registrations for January to June of 2021.[10]

Figure 1: EV Share of New Vehicle Registrations from Jan-Jun 2021



While there are many questions worth exploring around EV geographic variation, one interesting aspect is the link between individual state energy sources and the environmental benefits of driving EVs. A key argument for driving EVs is that they reduce tailpipe emissions compared to conventional vehicles, thereby lowering the carbon footprint. However, the true environmental impact can be found by analyzing "well-to-wheel" emissions, which encompasses the entire supply chain impact on emissions from energy sources, vehicle manufacturing, distribution, and ultimately the vehicle emissions themselves.[11] State geography becomes an important factor due to the use of different electricity energy sources throughout the U.S. The actual benefit of EVs for reducing emissions is far greater in states that use lower-polluting energy sources for electricity generation, such as hydro, wind and solar, compared to states that are heavily dependent on higher-polluting energy sources, such as coal.[12] For perspective, the national average annual emissions per vehicle for an all-electric vehicle is 3,783 pounds of CO2 equivalent.[13] However, the range across states is very wide, with emissions on all-electric vehicles in West Virginia averaging 8,967 pounds per CO2 equivalent on the high end, and vehicles in Vermont averaging 0 pounds per CO2 equivalent.[14] Figure 2 presents the average state-level emissions per all-electric vehicle by pounds of CO2 equivalent.[15]

Figure 2: Average per Vehicle Emissions for All-Electric Vehicles by State

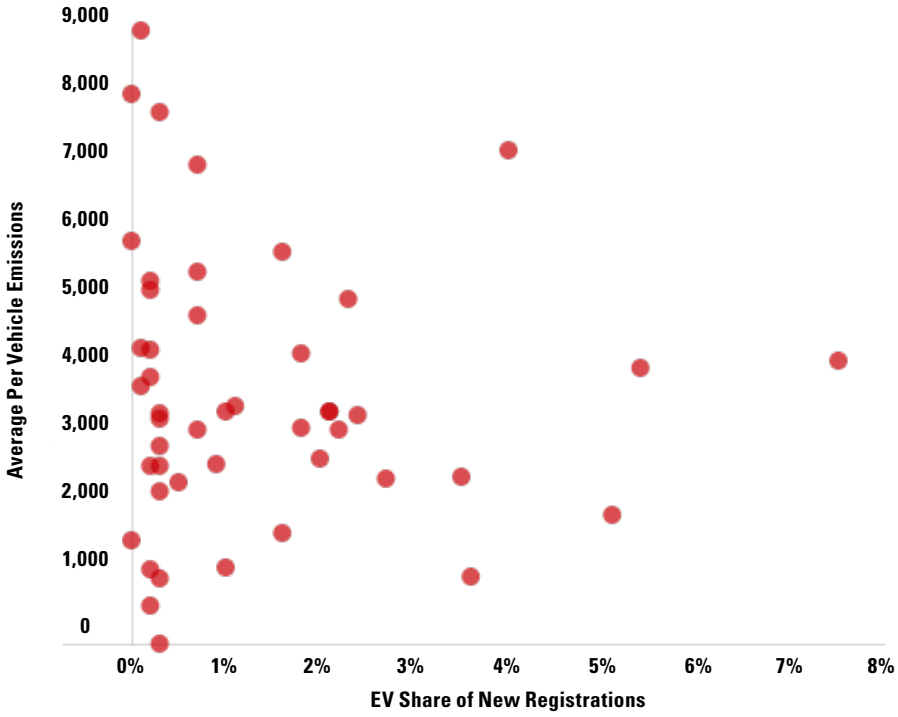


This is an important relationship because consumers often cite the positive environmental impact of driving EVs as a key factor in the decision to switch to an EV. A recent 2021 global survey conducted by Ernst & Young found that 41% of individuals looking to buy a car in the next year plan on buying an EV, and a top reason for buying an EV was the environment.[16] Notably, they found that 53% of potential EV buyers believed they had a responsibility to reduce their personal environmental impact. 78% said the pandemic had heightened their awareness and concerns about environmental issues.[17]

So, if the environmental impact of buying an EV is important to consumers, and that impact is linked to individual state energy sources, this suggests that EV growth and adoption might be stronger in states that will see the greatest emissions reduction from these vehicles. This relationship is seen in Figure 3, which maps the EV share of new vehicles in each state against all-electric vehicle emissions. This figure suggests there is some evidence that states with higher EV market shares tend to have lower all-electric per vehicle emissions. However, given the early stage of EV adoption in the U.S., this is a preliminary trend that is far from statistically sound. Another important component of this conversation is the role of infrastructure. If the push for EV adoption by the government is environmentally focused, states with lower-polluting electricity where the biggest emissions benefits of EVs reside could be a viable factor in industry growth. While all of this is preliminary in nature, this is a trend worth watching and monitoring in the coming years if this industry's growth continues at its current pace.

Figure 3: EV Share of New Vehicle Registrations and All-Electric Vehicle

Vehicle emissions are in pounds per CO2 equivalent



*Note: CA has been excluded from this visual as it is a stark outlier with an EV share of 36.6% and emissions at 2,198 pounds per CO2 equivalent.

Sources:

1. *https://227gsr5ihx54be8by2hxnudd-wpengine.netdna-ssl.com/wp-content/uploads/2021/09/9-Sept-Trends.pdf*
2. *https://227gsr5ihx54be8by2hxnudd-wpengine.netdna-ssl.com/wp-content/uploads/2021/09/9-Sept-Trends.pdf*
3. *https://www.experian.com/blogs/insights/2021/10/ev-registrations-grow-first-half-2021-non-electric-remains-dominant/*
4. *https://www.experian.com/blogs/insights/2021/10/ev-registrations-grow-first-half-2021-non-electric-remains-dominant/*
5. *https://www.pewresearch.org/fact-tank/2021/06/07/todays-electric-vehicle-market-slow-growth-in-u-s-faster-in-china-europe/*
6. *https://www.pewresearch.org/fact-tank/2021/06/07/todays-electric-vehicle-market-slow-growth-in-u-s-faster-in-china-europe/*
7. *https://www.pewresearch.org/fact-tank/2021/06/07/todays-electric-vehicle-market-slow-growth-in-u-s-faster-in-china-europe/*
8. *Experian Market Trends Review Q2 2021*
9. *Experian Market Trends Review Q2 2021*
10. *Experian Market Trends Review Q2 2021*
11. *https://afdc.energy.gov/vehicles/electric_emissions.html*
12. *https://afdc.energy.gov/vehicles/electric_emissions.html*
13. *https://afdc.energy.gov/vehicles/electric_emissions.html*
14. *https://afdc.energy.gov/vehicles/electric_emissions.html*
15. *https://afdc.energy.gov/vehicles/electric_emissions.html*
16. *https://www.ey.com/en_gl/news/2021/07/four-in-ten-consumers-plan-electric-vehicle-purchase-as-market-moves-into-high-gear*
17. *https://www.ey.com/en_gl/news/2021/07/four-in-ten-consumers-plan-electric-vehicle-purchase-as-market-moves-into-high-gear*

Forward-Looking Statement

Certain statements contained in this release contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 and which are subject to certain risks, trends and uncertainties. In particular, statements made in this release that are not historical facts may be forward-looking statements. Words such as "should," "may," "will," "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates" and similar expressions identify forward-looking statements. Such statements include statements regarding the expected timing and associated benefits with respect to this EV Perspectives piece on our business and plans regarding our growth strategies and margin expansion plan, and to our customers and company generally. Such statements are based on management's current expectations, are not guarantees of future performance and are subject to risks and uncertainties that could cause actual results to differ materially from the results projected, expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to: uncertainties regarding COVID-19, and other potential future health crises, including new more contagious and/or vaccine resistant variants, and the impact on the duration and severity of the COVID-19 pandemic and measures intended to reduce its spread, including the availability, rate of public acceptance and efficacy of COVID-19 vaccines; the loss of one or more significant vehicle suppliers or a reduction in significant volume from such suppliers; our ability to meet or exceed customers' demand and expectations; significant current competition and the introduction of new competitors or other disruptive entrants in our industry; the risk that our facilities lack the capacity to accept additional vehicles and our ability to obtain land or renew/enter into new leases at commercially reasonable rates; our ability to effectively maintain or update information and technology systems; our ability to implement and maintain measures to protect against cyberattacks and comply with applicable privacy and data security requirements; risks associated with online commerce security and credit card fraud; our ability to successfully implement our business strategies or realize expected cost savings and revenue enhancements, including from our margin expansion plan; weather-related and other event beyond our control which may adversely impact operations; failure to attract and retain key personnel, have inadequate succession planning, or manage labor shortages; business development activities, including acquisitions and the integration of acquired businesses, and the risks that the anticipated benefits of any acquisitions may not be fully realized or take longer to realize than expected; our expansion into markets outside the U.S. and the operational, competitive and regulatory risks facing our non-U.S. based operations; our reliance on subhaulers and trucking fleet operations; changes in used-vehicle prices and the volume of damaged and total loss vehicles we purchase; economic conditions, including fuel prices, commodity prices, foreign exchange rates and interest rate fluctuations; trends in new- and used-vehicle sales and incentives; and other risks and uncertainties identified in our filings with the Securities and Exchange Commission (the "SEC"), including under Item 1A "Risk Factors" in our Annual Report on Form 10-K filed with the SEC on February 28, 2022, as such risk factors may be amended, supplemented or superseded from time to time by other reports we file with the SEC, including subsequent Quarterly Reports on Form 10-Q and Annual Reports on Form 10-K. Many of these risk factors are outside of our control, and as such, they involve risks which are not currently known that could cause actual results to differ materially from those discussed or implied herein. The forward-looking statements in this release are made as of the date on which they are made and we do not undertake to update our forward-looking statements.

IAA, Inc.

Two Westbrook Corporate
Center, 10th Floor,
Westchester, IL 60154

IAAI.com