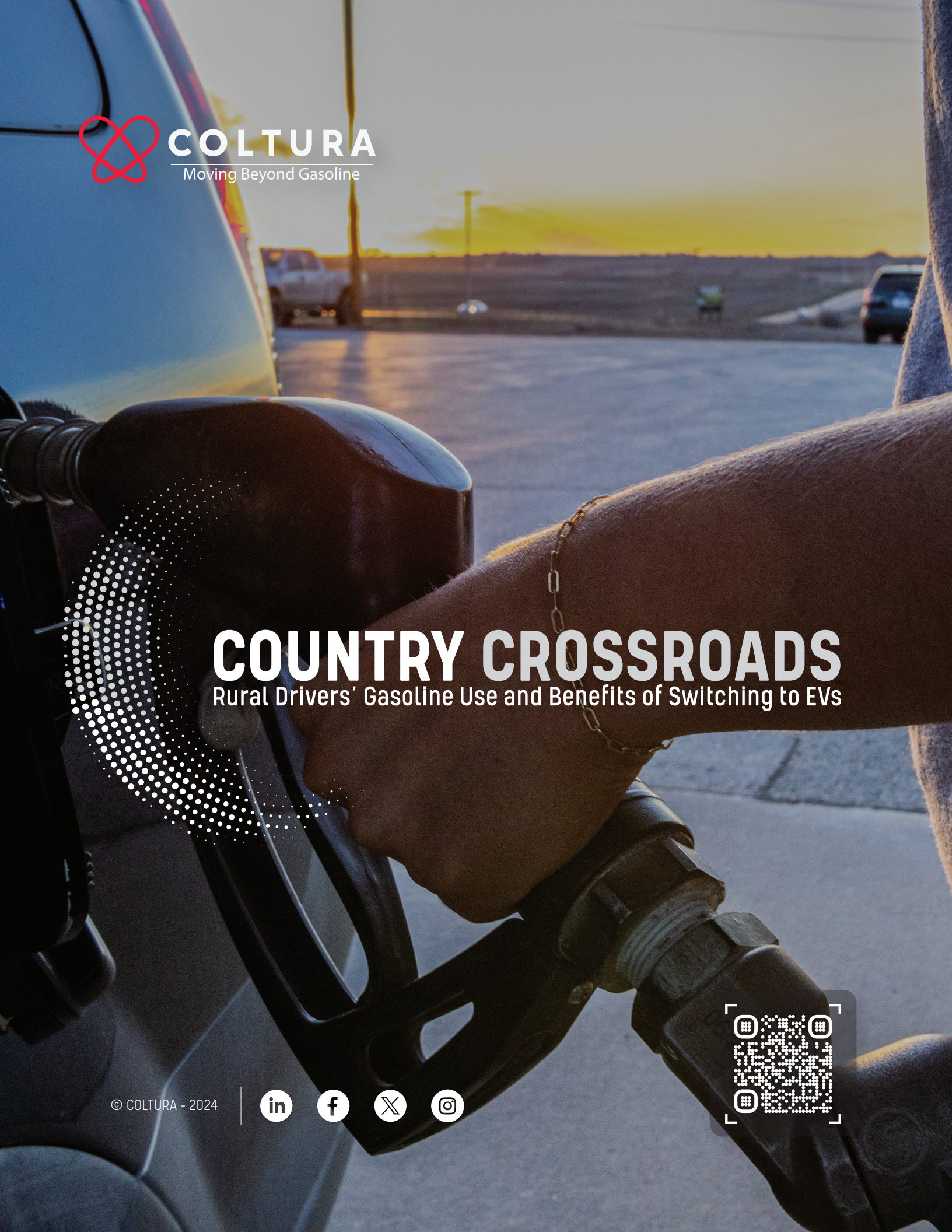


COLTURA
Moving Beyond Gasoline

# COUNTRY CROSSROADS

## Rural Drivers' Gasoline Use and Benefits of Switching to EVs

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# Country Crossroads:
## Rural Drivers' Gasoline Use and Benefits of Switching to EVs

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**ACKNOWLEDGEMENTS**
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# I. Executive Summary

Rural America's heavy reliance on gasoline imposes an enormous economic burden on families, in addition to the vast carbon emissions associated with gasoline use.

This report uncovers the silent struggle of "rural Gasoline Superusers" – a subset of rural drivers who, while representing less than 4% of the US population, use nearly 13% of the nation's gasoline. These rural drivers often face significant financial hardships for their mobility, with many spending a quarter of their household income on gasoline alone.

Because their expenditures on gasoline and maintenance are so high, many rural Superusers can save on total monthly costs by switching to an electric vehicle (EV), even with a higher car payment. This report explores pathways for transitioning rural Superusers to EVs, highlighting the dual benefits of economic resilience and environmental sustainability in rural America.

Data can guide strategies for transitioning the biggest gasoline-using rural drivers to EVs, ensuring the fastest reduction in gasoline use and the biggest financial benefits for drivers. Informed by data, state governments can achieve greater economic and environmental benefits per dollar spent on EV while reducing dependence on fossil fuels. Furthermore, helping rural Superusers switch to EVs can create new allies and local support for EVs and clean energy, even in typically conservative rural areas.

FINDINGS

### Rural drivers consume a high percentage of gasoline for the relative size of rural America:

- Rural drivers consume 25.6% of all US light-duty vehicle gasoline despite being only 18.8% of drivers.
- 35.8% of Superusers - defined as US drivers in the top 10% in terms of their gasoline consumption - live in rural areas ("rural Superusers").
- Rural Superusers are only 3.6% of all US light-duty vehicle drivers, but consume 12.9% of all US light-duty vehicle gasoline.
- Rural Superusers each consume, on average, 1,950 gallons of gasoline annually, compared to 453 gallons for rural non-Superusers, and 379 gallons for non-rural non-Superusers.

### Rural Superusers face high financial burdens from gasoline costs:

- Rural light-duty vehicle drivers spend on average 8.9% of their household income on gasoline, compared to 5.1% for non-rural drivers.
- On average, rural Superusers spend 16.8% of their household income on gasoline, compared to 7% for rural non-Superusers and 12.2% for non-rural Superusers.
- 48.2% of rural Superusers earn less than the US median household income of $74,580, compared to 34% of non-rural Superusers that earn less than the US median household income. 6.2% of rural Superusers earn less than $20,000 a year, versus 3.6% of non-rural Superusers.
- On average, rural Superusers earning below the US median household income spend 25.5% of household income on gasoline, compared to 22.4% for non-rural Superusers.

### Rural Superusers are found across the US:

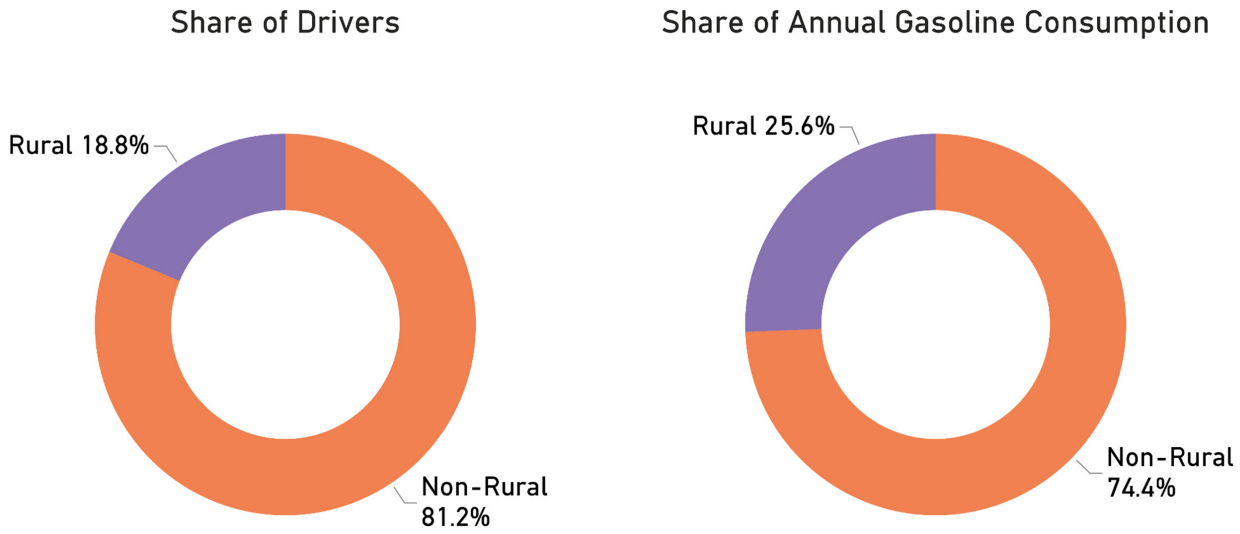
- The states with the greatest number of rural Superusers are Texas, Missouri, Ohio, Georgia, and North Carolina. The rural counties with the greatest number of Superusers are Hawaii HI, Merrimack NH, Litchfield CT, Franklin MO, and Schuylkill PA.
- The states with the highest percentage of rural Superusers per capita are North Dakota, South Dakota, Vermont, Montana, and Wyoming. The counties with the highest percentage of rural Superusers per capita are Petroleum MT, Burke ND, Glasscock TX, Garfield MT, and Harding NM.
- The rural counties with the highest EV share[1] are Blanco TX, Clear Creek CO, San Juan WA, Crook OR, and Eagle CO. The rural counties with the greatest number of EVs are Humboldt CA, Nevada CA, Eagle CO, Litchfield CT, and Bastrop TX.

[1] Among counties with a minimum of 500 EVs.

## II. Introduction

More than 200 million Americans are dependent on gasoline to go about their daily lives. The level of this dependence leads to alarming outcomes for the climate; the US consumes 35% of the world's gasoline despite only having 4% of its people.[2] Rural areas play a crucial role in this consumption pattern. Rural residents often rely on personal vehicles for transportation more than urban dwellers due to limited public transit options. Additionally, the distances between home, work, services, and leisure activities in rural areas typically require longer travel, leading to higher gasoline use per capita. As such, rural drivers consume 25.6% of all US light-duty vehicle gasoline, despite representing only 18.8% of US drivers.

*Rural drivers consume a disproportionate share of US light-duty vehicle gasoline*




*Distribution of gasoline drivers (left) and gasoline consumption (right) of rural and non-rural Americans. Source: Coltura Census-Level Gasoline Model.*

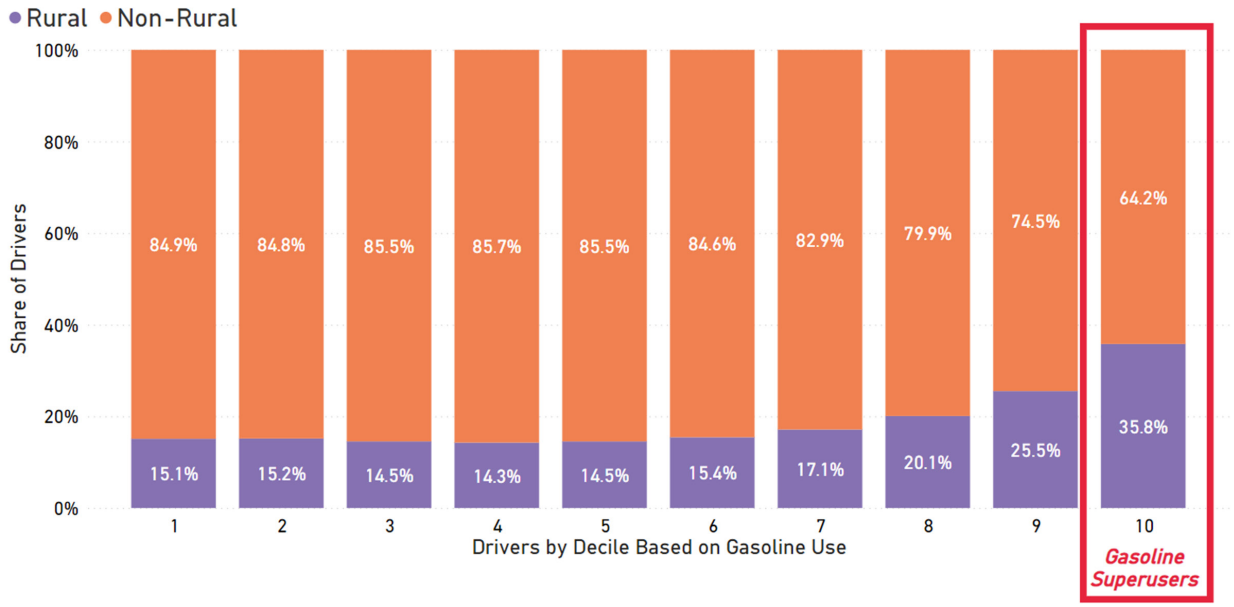
[2] Energy Information Administration.

## III. Understanding rural Superusers

Rural Superusers tend to use more gasoline and travel longer distances than other drivers, resulting in higher transportation costs. They are crucial partners in vehicle electrification, who can benefit economically from reduced fueling costs while helping reduce national gasoline consumption and emissions. Understanding more about rural Superusers can help advocacy groups and public agencies co-develop more effective vehicle electrification interventions with rural communities.

Rural Superusers are almost 36% of all Superusers. Superusers are the top 10% of US gasoline consumers, and rural Superusers are Superusers who live in rural counties or census tracts, as defined by the 2022 Health Resources & Services Administration (HRSA). The HRSA definition of rural is fairly conservative as there are many communities that may define themselves as rural but are not considered rural by HRSA. As such, the estimate for rural Superusers is likely conservative as well.

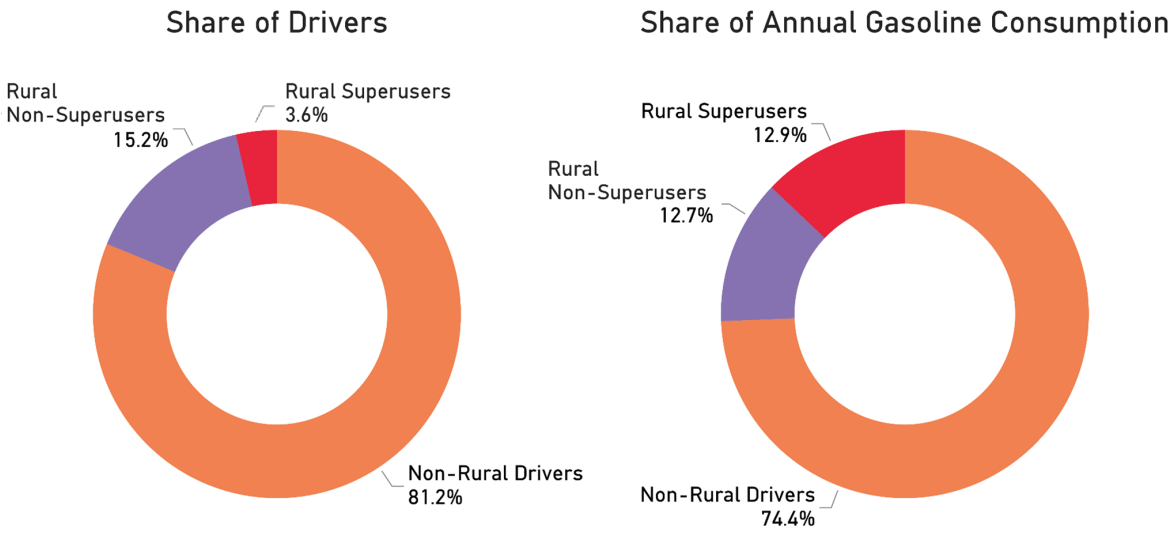
*Rural drivers are almost 36% of Superusers*




*US light-duty vehicle drivers sorted by decile based on their gasoline consumption, with each bar split into rural and non-rural drivers. The top 10% of drivers are considered Gasoline Superusers. Source: Coltura Census-Level Gasoline Model.*

Rural Superusers are only 3.6% of drivers but consume 12.9% of US light-duty vehicle gasoline.

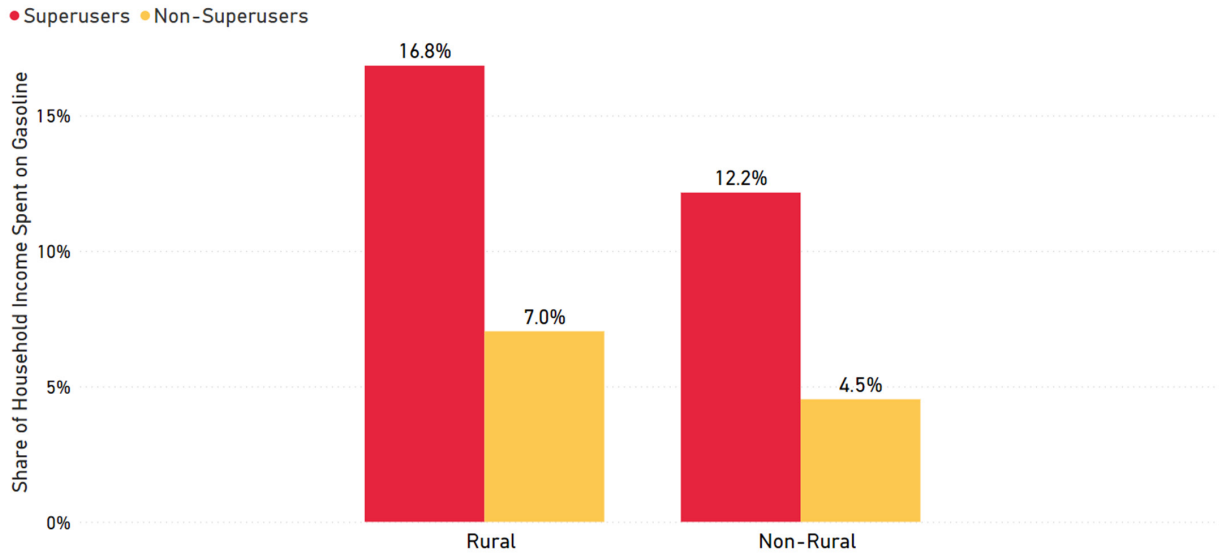
*Rural superusers consume a disproportionate share of us gasoline*




*Distribution of gasoline consumption (right) and drivers (left) of rural Superusers, rural non-Superusers, and non-rural drivers. Source: Coltura Census-Level Gasoline Model.*

The disproportionate gasoline consumption of rural Superusers can lead to financial strain due to gasoline costs. On average, rural Superusers spend 16.8% of their household income on gasoline, compared to 7% for rural non-Superusers, 12.2% for non-rural Superusers, and 4.5% for non-Superusers.

*Rural Superusers spend almost 17% of household income on gasoline, compared with 12% for non-rural Superusers*

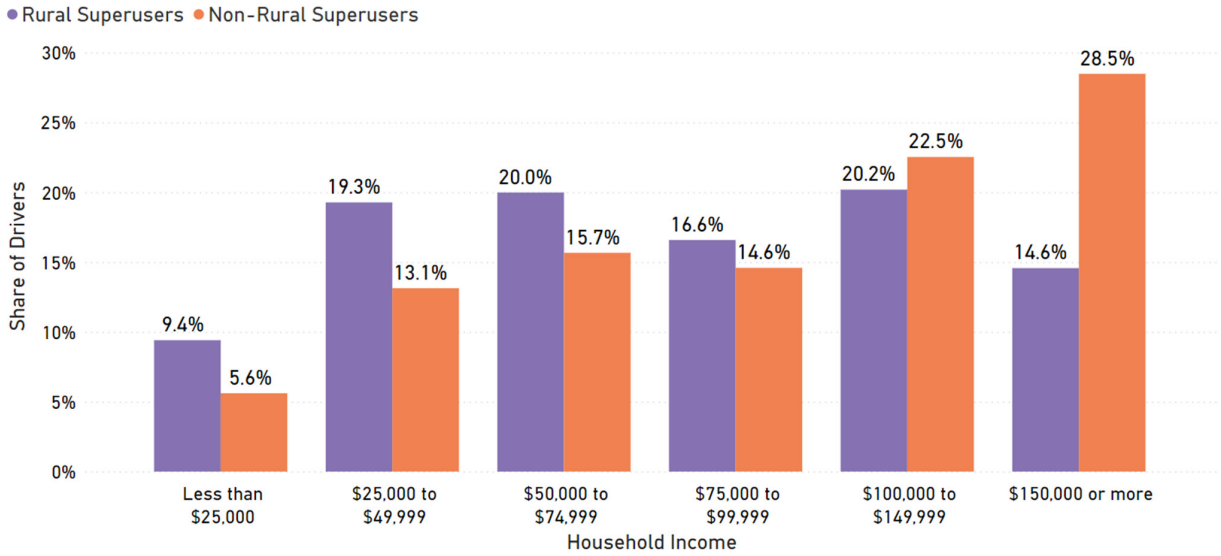



*Average share of household income spent on gasoline for rural Superusers and rural non-Superusers. Source: Coltura Census-Level Gasoline Model.*

Among Superusers, rural drivers are more prevalent than non-rural drivers in all but the highest income brackets.



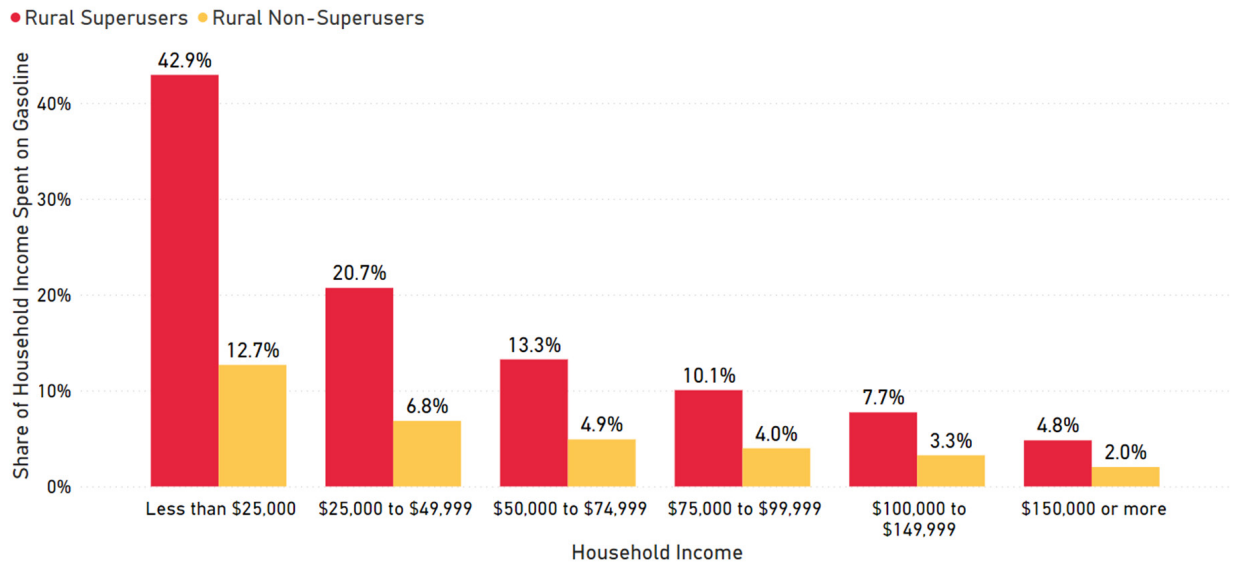

*Rural Superusers are disproportionately low income relative to non-rural Superusers*




*Distribution of household income of rural and non-rural Superusers. Source: Coltura Census-Level Gasoline Model.*

Gasoline can cost more than a third of annual household income for rural Superusers who earn substantially below the US median household income. The 48.2% of rural Superusers who earn less than the US median household income of $74,580 spend on average 25.5% of household income on gasoline.

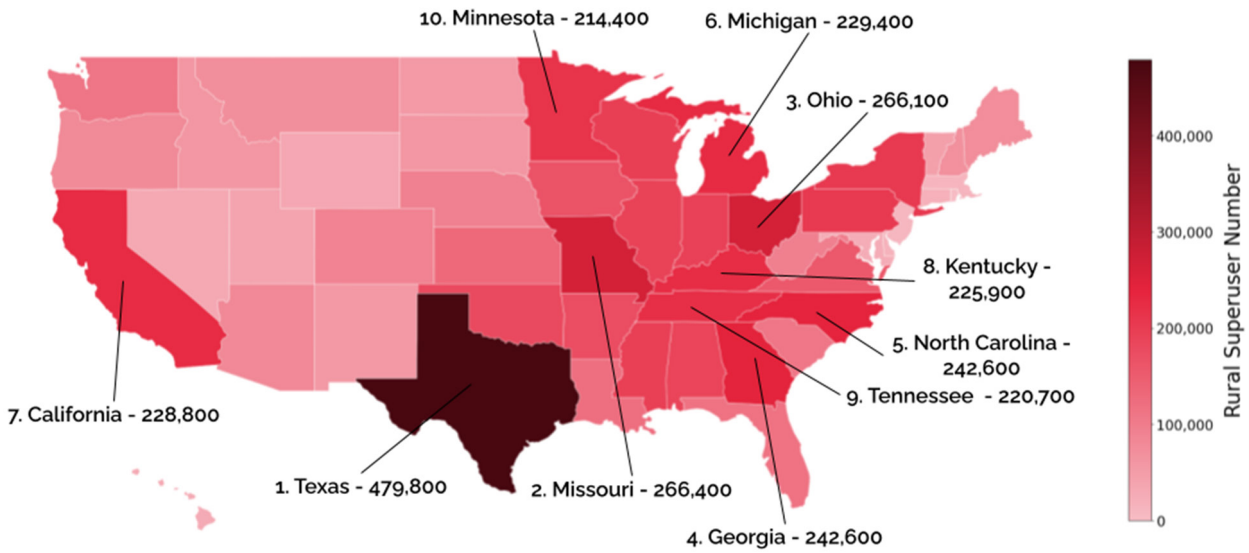
*High gasoline burden for low-income rural Superusers*




*Average share of household income spent on gasoline for rural Superusers and rural non-Superusers by income bracket. Source: Coltura Census-Level Gasoline Model.*

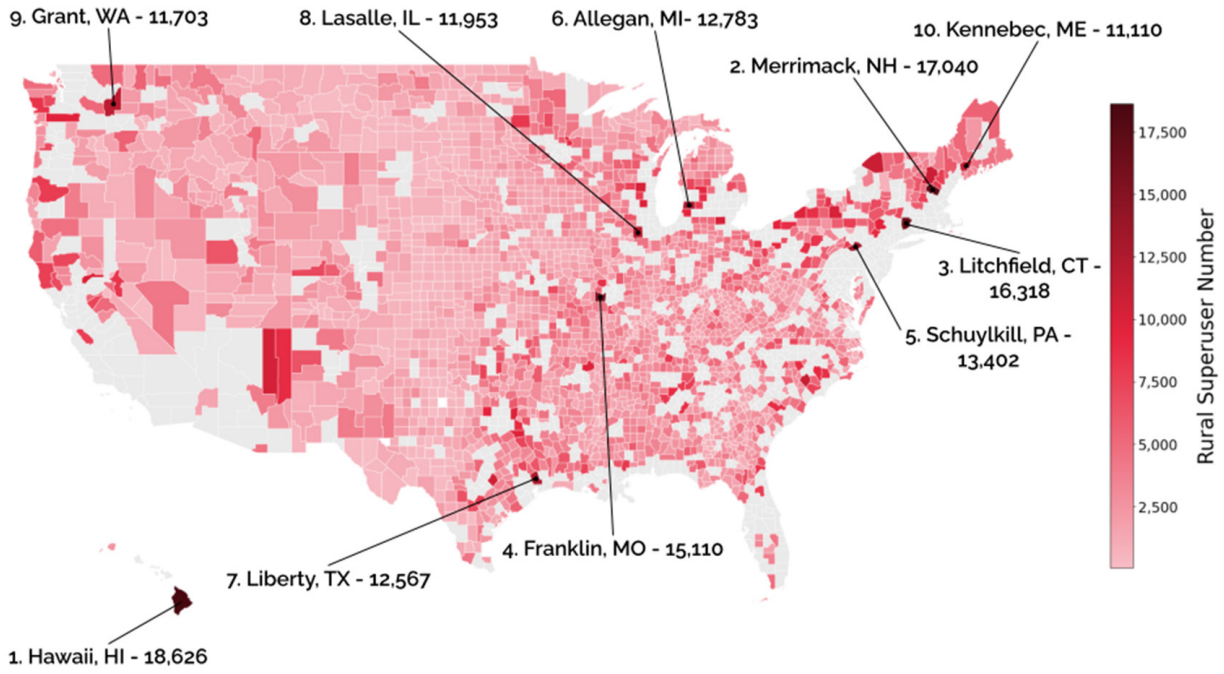
The largest numbers of Superusers are in some of the highest-population states that have a mix of urban and suburban cores surrounded by rural areas.

*Top 10 states by number of rural Superusers*




There are large numbers of rural Superusers in higher-population rural counties.

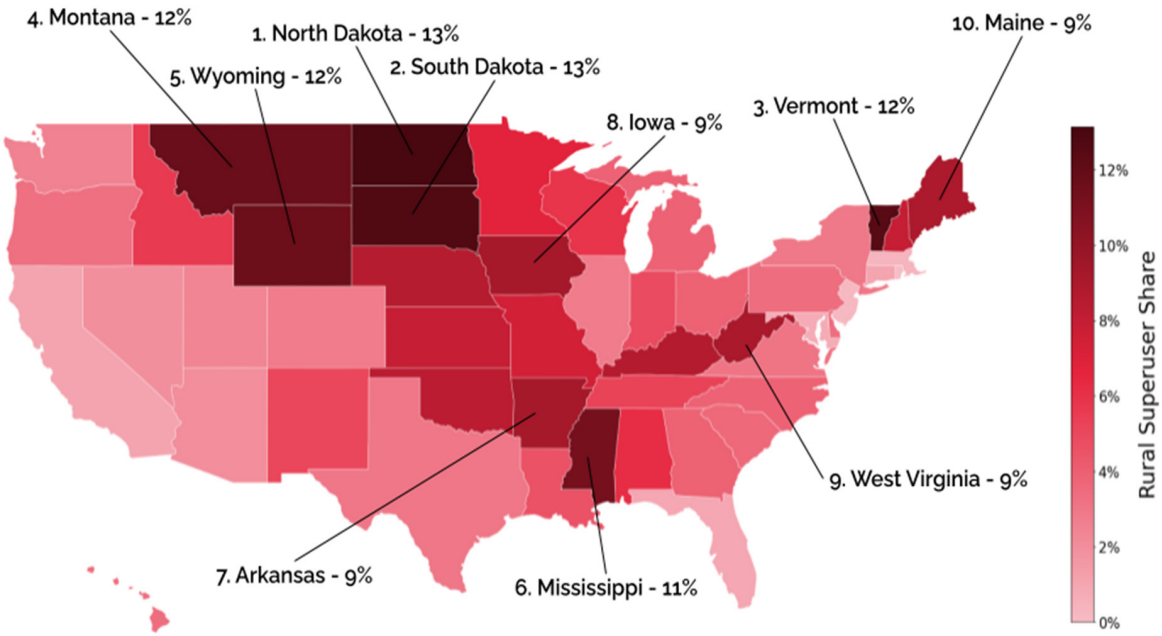
*Top 10 rural counties by number of Superusers*




| No. | County | Number of rural Superusers | Population |
|---|---|---|---|
| 1 | Hawaii, HI | 18,626 | 201,350 |
| 2 | Merrimack, NH | 17,040 | 150,902 |
| 3 | Litchfield, CT | 16,318 | 181,143 |
| 4 | Franklin, MO | 15,110 | 103,629 |
| 5 | Schuylkill, PA | 13,402 | 141,935 |
| 6 | Allegan, MI | 12,783 | 117,104 |
| 7 | Liberty, TX | 12,567 | 86,173 |
| 8 | Lasalle, IL | 11,935 | 108,998 |
| 9 | Grant, WA | 11,703 | 96,648 |
| 10 | Kennebec, ME | 11,110 | 122,158 |

The highest concentrations of rural Superusers are in predominantly rural states, where driving long distances is often necessary for day-to-day life.

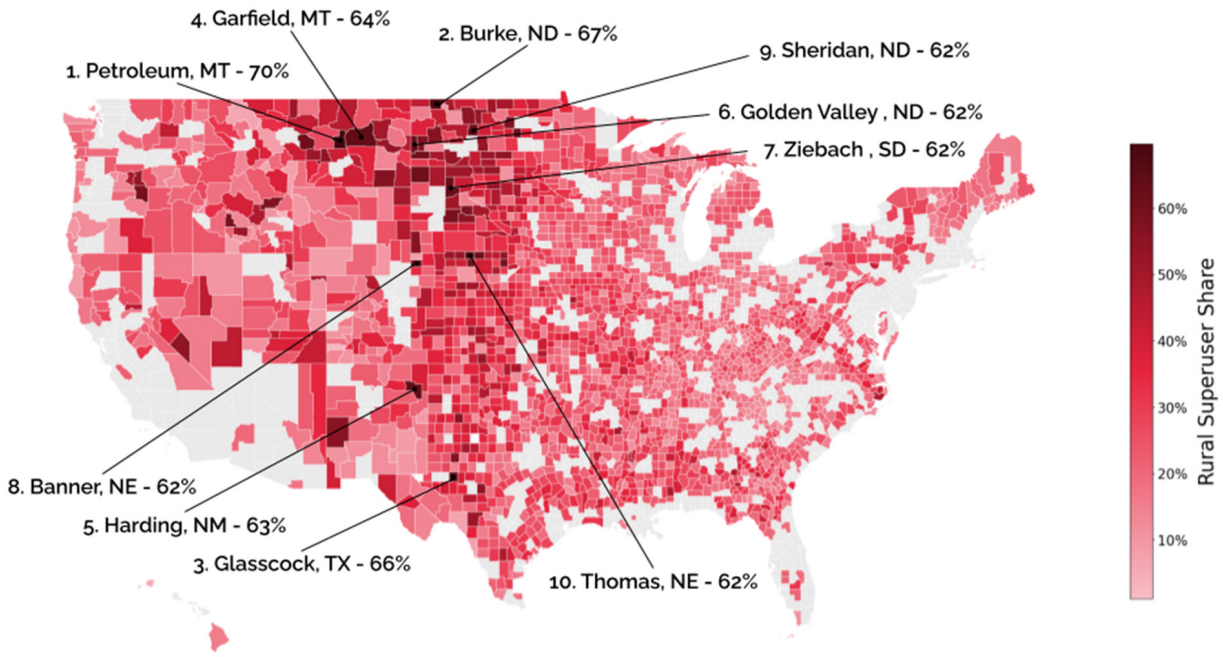
*Top 10 states in terms of rural Superuser share*




The highest density of rural Superusers can be found in low population counties.



*Top 10 rural counties in terms of Superuser share*




| No. | County | Rural Superuser share | Population |
|---|---|---|---|
| 1 | Petroleum, MT | 70% | 464 |
| 2 | Burke, ND | 67% | 2,142 |
| 3 | Glasscock, TX | 66% | 1,447 |
| 4 | Garfield, MT | 64% | 1,051 |
| 5 | Harding, NM | 63% | 432 |
| 6 | Golden Valley, ND | 62% | 1,796 |
| 7 | Ziebach, SD | 62% | 2,767 |
| 8 | Banner, NE | 62% | 1,289 |
| 9 | Sheridan, ND | 62% | 2,767 |
| 10 | Thomas, NE | 62% | 586 |




## IV. Economic and environmental impacts of prioritizing rural Superusers

There are both environmental and economic benefits of prioritizing rural Superusers for the transition to electric vehicles. A rural Superuser burns 1,950 gallons of gasoline in a year on average - 4.3 times more than a rural non-Superuser, who burns 453 gallons. This is compared to 1,858 annual gallons for non-rural Superusers and 379 gallons for non-rural non-Superusers. A rural Superuser would save on average nearly $4,000 a year on fuel (gasoline savings minus electricity costs) by switching to an EV. If all rural Superusers were to switch to EVs, 12.5 billion gallons of gasoline, and 76 MMT of carbon would be avoided each year - more than the carbon emissions from all US shipping to other countries (68 MMT annually). Economically speaking, this translates to $55.4 billion a year shifted away from gasoline and toward EVs, EV charging, electricity, and the EV transition.

The importance of prioritizing Superusers is amplified in rural areas because of the lack of alternatives to personal vehicles; while non-rural Superusers benefit from expanded public transportation infrastructure, most rural Superusers cannot be lifted from gasoline dependence without an EV.

Rural Superusers also stand to benefit financially from switching to EVs. The following examples show how a Superuser can save hundreds of dollars a month by trading in their gas car for an EV:

*Superuser Monthly Cost Comparison*



**2015 Ford F-150**



**Ford 2023 F-150 Lightning**

| | | |
|---|---|---|
| Monthly Fuel | $781 | $285 |
| Monthly Maint. and Repair | $667 | $200 |
| Payment on Loan | | $775 |
| **Total Monthly Cost** | **$1,448** | **$1,260** |

**Assumptions:** 40,000 miles/year, Gas $3.70/gallon, Electricity 17/KwH, Interest Rate 6.6396, F-150 Lightning Cost $54,000, F-150 Mileage 200,000, F-150 Trade-In $7,000, Federal credit of $7,500, F-150 Maintenance 20 cents/mi. F-150 Lightning Maintenance = 6 cents/mi.



**2017 Chevy Trax**



**2023 Chevy Bolt EUV**

| | | |
|---|---|---|
| Monthly Fuel | $457 | $163 |
| Monthly Maint. and Repair | $667 | $200 |
| Payment on Loan | | $442 |
| **Total Monthly Cost** | **$1,124** | **$785** |

**Assumptions:** 40,000 miles/year, Gas $3.70/gallon, Electricity 17/KwH, Interest Rate 6.63%, Bolt EUV Cost $33,000, Trax Mileage 200,000, Trax Trade-In $4,000, Federal credit of $7,500, Trax Maintenance = 20 cents/mi. Bolt Maintenance = 6 cents/mi.

These environmental and economic gains come alongside the advantage of diverting dollars away from foreign oil and toward the betterment of rural communities.

## V. EV adoption in rural areas

The vast majority of rural counties have extremely low rates of EV adoption, following the national trend showing an inverse relationship between concentrations of Superusers and EV ownership. There are a number of exceptions. Most of the rural counties with higher penetrations of EVs tend to be located in states with reasonably good EV incentives and rural areas near bigger cities, high-wealth vacation spots, or employers that would attract EV owners. Bastrop County in Texas is home to two Elon Musk-owned facilities, including SpaceX and the headquarters for the Boring Company. Eagle County in Colorado is home to Vail, an expensive mountain resort. Litchfield County in Connecticut is close to major Northeast population centers.

*Top 10 rural counties by EV share (minimum 500 EVs)*

| No. | County | EV share |
|---|---|---|
| 1 | Blanco, TX | 12.7% |
| 2 | Clear Creek, CO | 10.6% |
| 3 | San Juan, WA | 6.2% |
| 4 | Crook, OR | 5.9% |
| 5 | Eagle, CO | 4.8% |
| 6 | Pitkin, CO | 4.3% |
| 7 | Addison, VT | 3.8% |
| 8 | Grimes, TX | 3.5% |
| 9 | Elbert, CO | 3.3% |
| 10 | Schuyler, NY | 3.3% |

*Top 10 rural counties by number of EVs*

| No. | County | Number of EVs |
|---|---|---|
| 1 | Humboldt, CA | 2,126 |
| 2 | Nevada, CA | 1,943 |
| 3 | Eagle, CO | 1,865 |
| 4 | Litchfield, CT | 1,622 |
| 5 | Bastrop, TX | 1,480 |
| 6 | San Benito, CA | 1,476 |
| 7 | Cayuga, NY | 1,404 |
| 8 | Flathead, MT | 1,361 |
| 9 | Mendocino, CA | 1,345 |
| 10 | Crook, OR | 1,334 |

# VI. Policy/practice recommendations

In light of the foregoing analysis, the following policies and practices for rural gasoline reduction and EV adoption are recommended:

**Use gasoline consumption data to maximize the economic and environmental outcomes of electric vehicle programs and incentives:**

- Local and state governments and other stakeholders should set goals for gasoline reduction and measure and report progress toward these goals.

**Focus EV/EV charging incentives on rural Superusers:**

- Provide higher state/local EV discounts/rebates for both new and used EVs for rural Superusers.
- Rural electric coops should incentivize their customers, especially Superusers, to make the switch to EVs with incentives such as EV discounts, free or discounted home EV chargers and installation, and electricity discounts.

**Leverage data to focus EV outreach/education on rural Superusers:**

- Prioritize rural Superusers for EV education and outreach - especially regarding the financial benefits of switching to an EV and addressing common misperceptions about costs, range, and charging.
- Use data analytics to identify rural Superusers with the highest potential for EV adoption, considering factors like distance traveled, income levels, and current gasoline expenditure.
- Target educational campaigns on the benefits of EVs to these drivers, using local media, social media, and community events to reach the audience effectively.

**Engage rural communities and stakeholders:**

- Establish partnerships with local governments, agricultural organizations, and rural development agencies to promote rural Superuser EV adoption through community-led initiatives.
- Organize EV demonstration events and test drives in rural areas with high concentrations of Superusers to increase familiarity and comfort with electric vehicles.

**Invest in rural charging infrastructure to help Superusers:**

- Provide access to home charging for rural Superusers.
- Site public charging stations where rural Superusers can see and use them.
- Prioritize high-traffic locations such as community centers, workplaces, and shopping areas, to address actual and perceived range anxiety.

**Study rural areas with EVs:**

- Study rural areas where EVs have gained a foothold to determine which factors contributed to the EV uptake there.

## VII. Conclusion

Focusing efforts on the transition of rural Gasoline Superusers to EVs can unlock significant economic benefits for rural households burdened by disproportionate fuel expenses and achieve a substantial reduction in national gasoline use. Further, increasing EV adoption by Superusers in rural areas can catalyze expanded charging networks to enhance accessibility and convenience for all EV users. State governments and policymakers should forge strategic, data-informed initiatives that prioritize the economic and environmental well-being of rural communities.



# VIII. Appendix

Data sources:

The consumer-level gasoline consumption data for this report is derived from three primary datasets:

- The Replica dataset uses anonymized mobile phone data and other GPS data to identify billions of vehicle trips taken by 210 million drivers and assigns those trips to a statistically representative "synthetic" person in a census block group.
- The L2 Data dataset provides comprehensive demographic and vehicle data concerning 110 million American households.
- The Health Resources & Services Administration (HRSA) provides a list of rural counties and census tracts defined as rural in non-rural counties. As a disclaimer, many communities that would consider themselves to be rural/small town are not included in HRSA. For example, the city of Farmington in New Mexico, which, as of the 2020 census, has a population of only 46,624 people, is considered a metropolitan statistical area, and only a few census tracts within the county are counted toward HRSA's definition. As such, estimates such as the rural share of US gasoline consumption are relatively conservative.

Methodology:

The Replica trips data was combined with the household and vehicle data from L2 Data and machine learning was used to predict the miles per gallon for each trip reported by Replica. The gasoline consumption of each trip was then calculated and assigned to the synthetic person that Replica associated with the trip. The combination of these data sources allows for the prediction of drivers' gasoline usage of consumers from the census block group level to the national level. Because many drivers drive multiple vehicles, this approach captures all driving done by a driver across the different vehicles they drive.

This report and analysis uses the definition of rural provided by the Health Resources & Services Administration (HRSA) which includes non-metro counties and more rural census tracts. The HRSA data is combined with the consumer-level data by assigning each person as rural or non-rural based on their home census tract.



## About COLTURA

Founded in 2014, Coltura is a 501(c)(3) nonprofit with a mission to improve climate, health, and equity by accelerating the switch from gasoline to cleaner alternatives. Our vision is a gasoline-free America by 2040 or sooner. We work to cut gasoline use quickly, efficiently, and equitably by:

- Developing policies and data to open new pathways for moving beyond gasoline;
- Prioritizing policies that ease the financial burden on lower-income families who use the most gasoline;
- Leading coalitions and arming leaders and advocates with policy and data tools to advance gasoline reduction policies; and
- Challenging the acceptability of gasoline through social media, art, music, and other cultural means.

Learn more at www.coltura.org.



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