

Vermont Senate Transportation Committee Meeting

February 28, 2024

Dr. Gregory Rowangould

Director, UVM Transportation Research Center
Associate Professor, Civil & Environmental Engineering

Clare Nelson

Research Assistant , UVM Transportation Research Center
M.S. Student, Civil & Environmental Engineering



TRC Overview

- Established in 2006 with \$16 million grant from US DOT
- Located in the College of Engineering and Mathematical Sciences
 - 40+ year research partnership with VTrans
- 8 core faculty and research staff + additional part time and affiliated researchers from across campus
- Provides research opportunities for undergraduate, MS and PhD students
- Home to several affiliated transportation research and outreach programs
 - National Center for Sustainable Transportation (<https://ncst.ucdavis.edu/>)
 - Transportation Infrastructure Durability Center (<https://www.tidc-utc.org/>)
 - Vermont Clean Cities Coalition (<https://vtccc.w3.uvm.edu/>)
 - Northeast Transportation Workforce Center (<http://netwc.net/>)

Centered on Small & Rural Communities

Current Research Areas & Expertise:

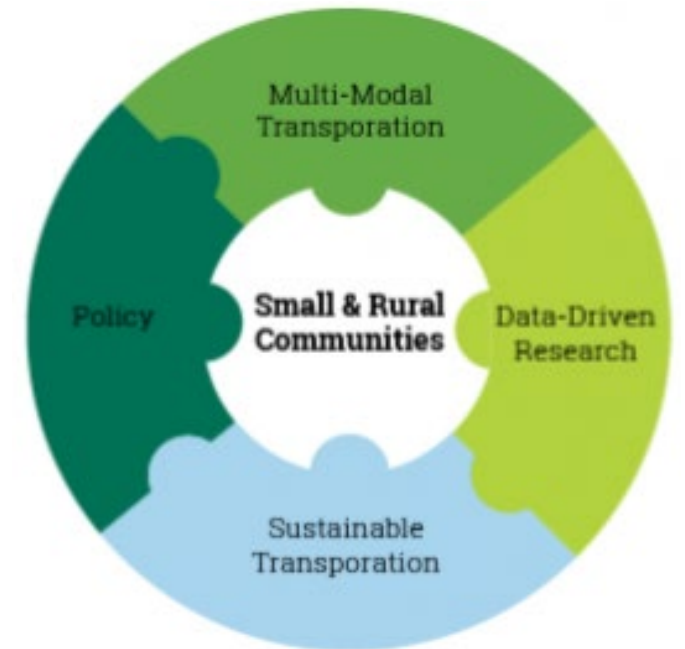
Alternative and Multi-Modal Transportation

Energy, Emissions & Environmental Impact Modeling

Equity and Travel Behavior Analysis

Safety, Infrastructure and Maintenance

Sustainable Communities and Land Use



Vermont Transportation Funding

Motor fuel excise taxes, mileage fees, flat fees...

Research Supported with Funding from:



**National Center for
Sustainable Transportation**

A USDOT University Transportation Center

Criteria for Transportation Funding Sources



REVENUE-
GENERATING
ABILITY



PUBLIC AND
POLITICAL
SUPPORT



TECHNICAL
FEASIBILITY



EQUITY
(INCOME,
COMMUNITY
TYPE)



CHARGE ALL
ROAD-WAY USERS
(OUT-OF-STATE
DRIVERS, EVS)



ADMINISTRATIVE
COSTS

Criteria for Transportation Funding Sources



REVENUE-
GENERATING
ABILITY



PUBLIC AND
POLITICAL
SUPPORT



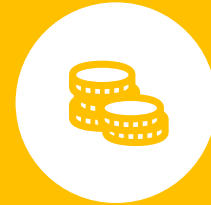
TECHNICAL
FEASIBILITY



EQUITY
(INCOME,
COMMUNITY
TYPE)



CHARGE ALL
ROAD-WAY USERS
(OUT-OF-STATE
DRIVERS, EVS)



ADMINISTRATIVE
COSTS

EVALUATED BY TRC RESEARCHERS

Criteria for Transportation Funding Sources



REVENUE-
GENERATING
ABILITY



PUBLIC AND
POLITICAL
SUPPORT



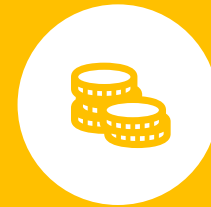
TECHNICAL
FEASIBILITY



EQUITY
(INCOME,
COMMUNITY
TYPE)



CHARGE ALL
ROAD-WAY USERS
(OUT-OF-STATE
DRIVERS, EVS)



ADMINISTRATIVE
COSTS

EVALUATED BY TRC RESEARCHERS

NEEDS MORE EVALUATION

Research Paper #1: Vermont Vehicle Data



REVENUE-GENERATING
ABILITY



TECHNICAL FEASIBILITY



EQUITY

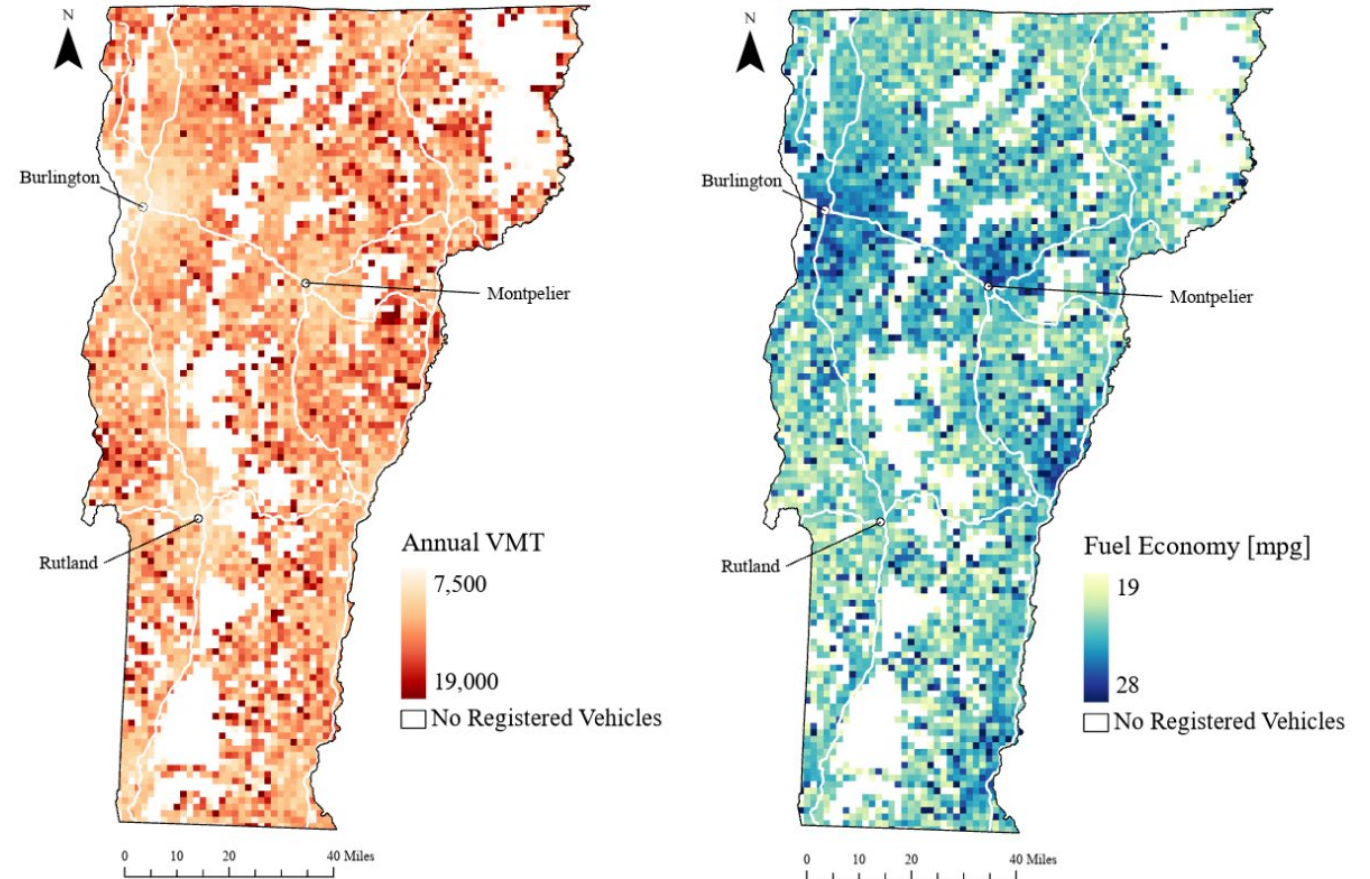


FIGURE 1 Vermont vehicle miles travelled (VMT) and fuel economy. Mean values per 2 km² grid cell

Research Paper #1: Vermont Vehicle Data



REVENUE-GENERATING
ABILITY



TECHNICAL FEASIBILITY



EQUITY

- Data from 189,251 real Vermont households
- Calculated gas tax, flat fee, and mileage fee costs for all Vermont households
- Compared costs across communities and income groups

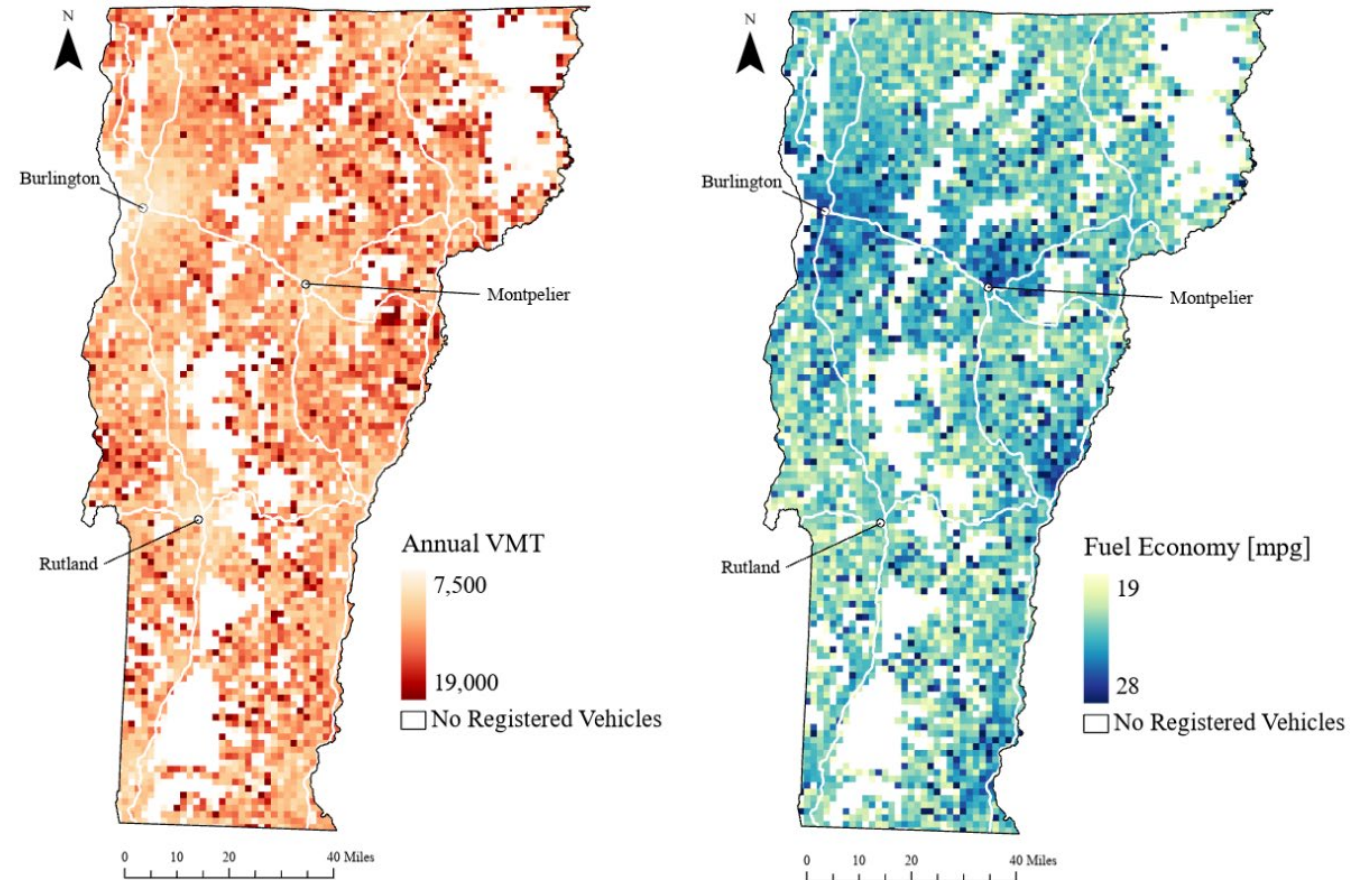


FIGURE 1 Vermont vehicle miles travelled (VMT) and fuel economy. Mean values per 2 km² grid cell

Research Paper #1: Vermont Vehicle Data

FLAT FEES

- Will have *large financial impacts* on VT households (both positive and negative)

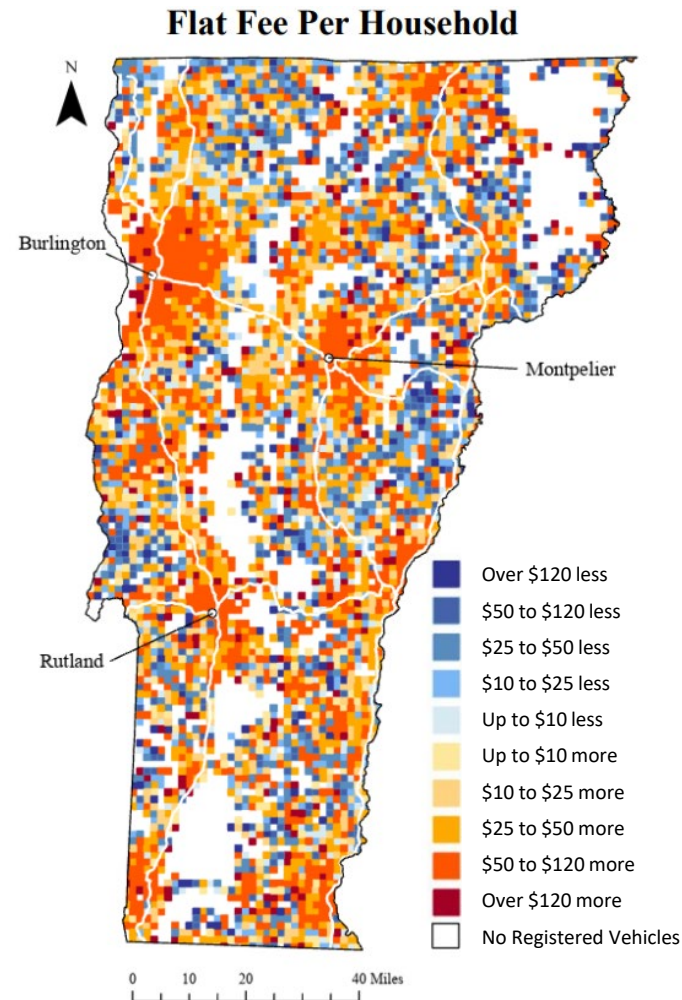


FIGURE 2 Changes in Annual Transportation Tax Spending for Vermont Households. Mean values per 2 km² grid cell

Research Paper #1: Vermont Vehicle Data

FLAT FEES

- Will have *large financial impacts* on VT households (both positive and negative)

MILEAGE FEES

- Will have *minimal financial impacts* on VT households
- Will save rural and low-income households money
- Is somewhat more progressive than the gas tax

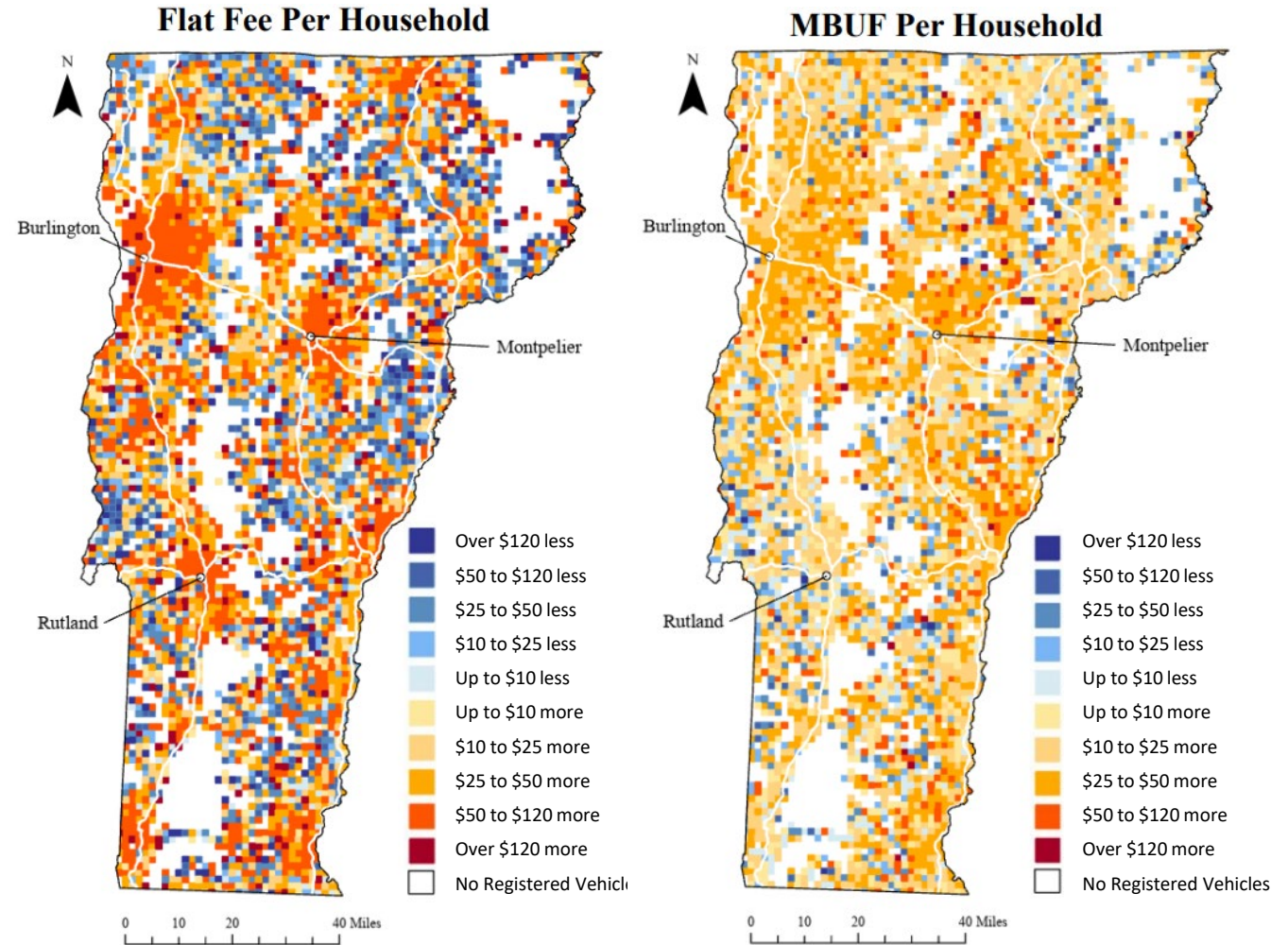


FIGURE 2 Changes in Annual Transportation Tax Spending for Vermont Households. Mean values per 2 km² grid cell

Research Paper #2: Public Opinion Surveys



PUBLIC AND POLITICAL
SUPPORT



Do you support replacing the gas tax with a mileage fee collected using annual odometer readings?

No

Yes



Do you support replacing the gas tax with a mileage fee collected using a plug-in device *without* GPS?

No

Yes



FIGURE 3 Survey Voting Opportunities

Research Paper #2: Public Opinion Surveys



PUBLIC AND POLITICAL
SUPPORT

- 2,114 responses from a nationally representative sample
- Measured support for gas tax alternatives (mileage fees and flat fees)
- Tested how education (cost, fairness, and privacy information) changes support
- Conducted for New England (VT, NH, ME) and nationally



Do you support replacing the gas tax with a mileage fee collected using annual odometer readings?

No

Yes



Do you support replacing the gas tax with a mileage fee collected using a plug-in device *without* GPS?

No

Yes



FIGURE 3 Survey Voting Opportunities

Research Paper #2: Public Opinion Surveys

SUPPORT FOR MILEAGE FEES INCREASES WITH...

- Simple education
 - Specifically, cost education (regardless of whether they learn they'll lose or save money)

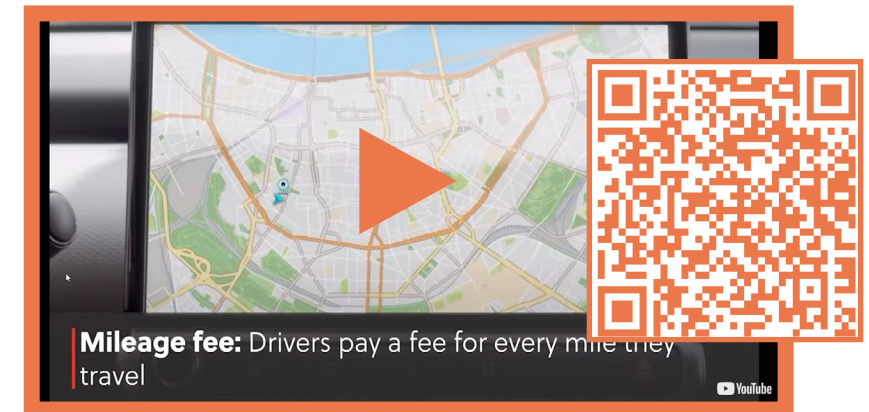
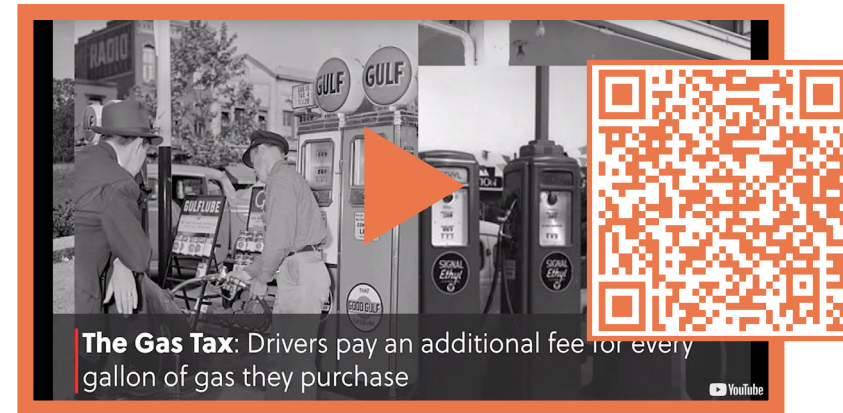


FIGURE 4 Educational videos discussing privacy, fairness, and prior research

Research Paper #2: Public Opinion Surveys

SUPPORT FOR MILEAGE FEES INCREASES WITH...

- Simple education
 - Specifically, cost education (regardless of whether they learn they'll lose or save money)
- Low-income and block rates
- Offering multiple mileage collection options
 - This helps significantly with privacy concerns

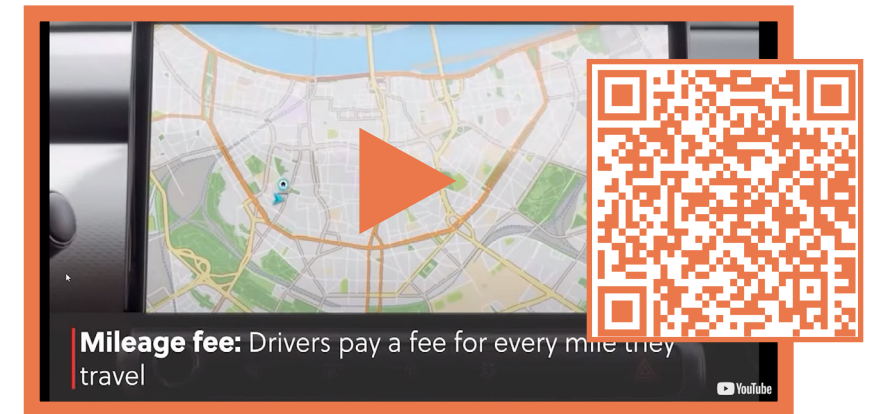
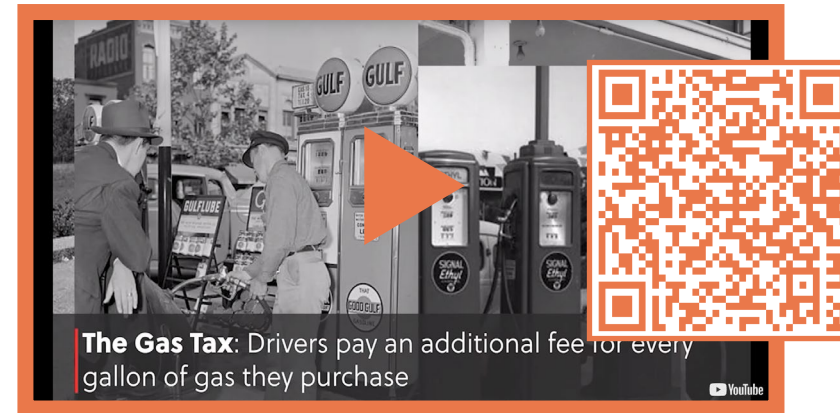


FIGURE 4 Educational videos discussing privacy, fairness, and prior research



REVENUE-GENERATING ABILITY

With the slow rate of electric vehicle adoption in Vermont, only applying a mileage fee to electric vehicles will not close the funding gap.



PUBLIC AND POLITICAL SUPPORT

Public support for changes to the gas tax is low (~30%). Privacy and costs are the most important considerations. Cost education is highly effective. Many overestimate annual transportation costs.



TECHNICAL FEASIBILITY

Vermont already collects mileage during annual safety inspections. **The federal government has funding for state mileage fee pilot programs¹.**



EQUITY

Flat fees are slightly more regressive than the gas tax. Mileage fees are less regressive than the gas tax. Both fees, on average, benefit rural drivers.



CHARGE ALL ROAD-WAY USERS

Charging out-of-state drivers is a concern. **Other states have found solutions** to this issue (tolls on major interstates at state border locations, inter-state pilot programs, RFID tags at gas stations, tax reimbursements for in-state drivers).



ADMINISTRATIVE COSTS

Depends on fee collection method and rate structure. Requires additional study.

Tracking Progress Towards Climate Goals

Vehicle use, energy, and GHG dashboard

Research Supported with Funding from:



Chittenden County Transportation Emissions Tracker

SPATIAL TRENDS TEMPORAL TRENDS TOWN REPORTS

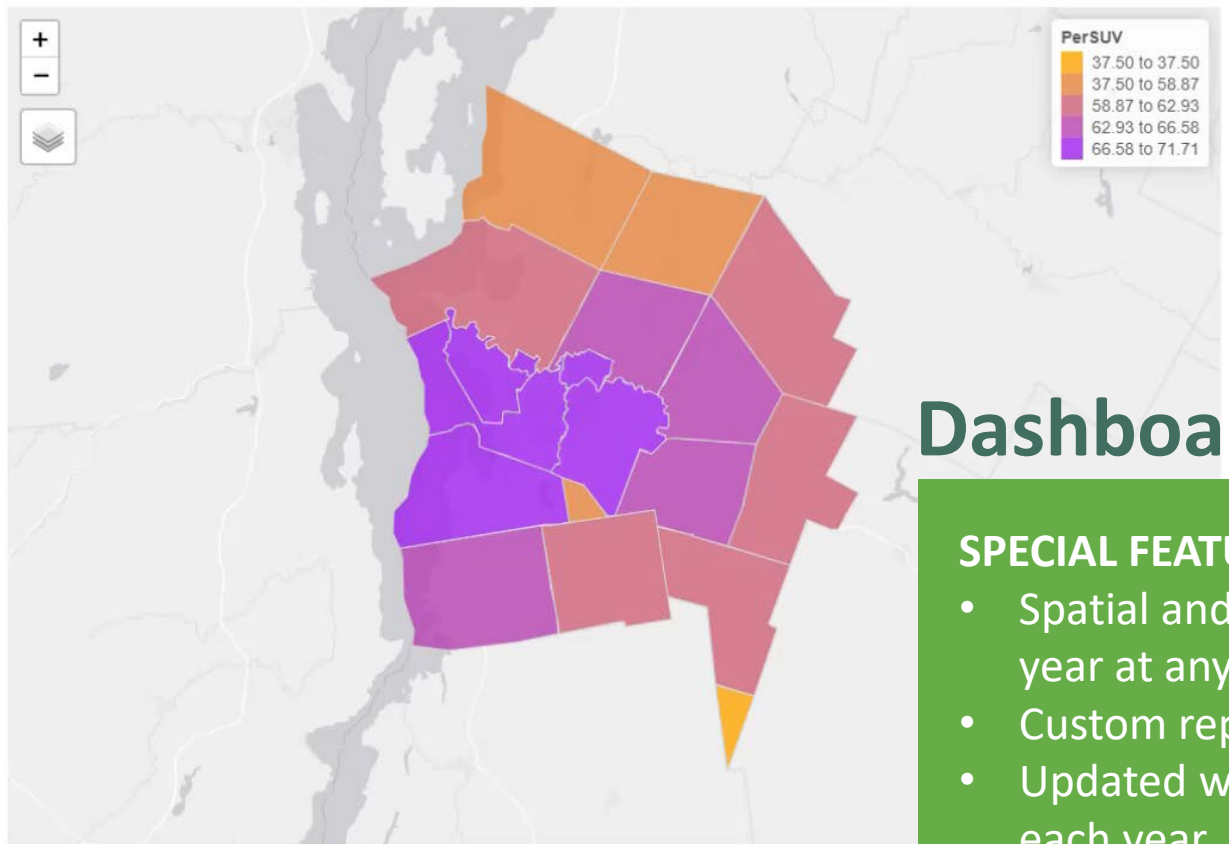
Select DMV Year:
2019

Select a Spatial Scale:
Towns

Select a Variable to Visualize:
Percent SUV

Change the Color Classification :
jenks

Display town names on the map



Dashboard Demo

SPECIAL FEATURES

- Spatial and temporal for any year at any spatial scale
- Custom report generation
- Updated with new DMV data each year



THE UNIVERSITY OF VERMONT
**TRANSPORTATION
RESEARCH CENTER**

Dr. Gregory Rowangould
gregory.rowangould@uvm.edu

Clare Nelson
clare.nelson@uvm.edu