Research Project Brief

Report R26-46: Exploring the Use of VMT as an Evaluation Metric Within Virginia's Transportation Planning Process

VTRC Virginia Transportation Research Council

Background

For decades, transportation planners and engineers have used automobile Level of Service (LOS) to communicate transportation system conditions in response to changes such as land development. Vehicle miles traveled (VMT) can also be a useful measure of vehicle travel and a proxy for other categories such as vehicle emissions. Although using VMT to describe overall travel patterns is not new, some states and localities have adjusted their transportation analysis processes in recent years to focus on VMT in conjunction with VMT reduction goals.

Research Objectives

The purpose of this study was to explore how VMT might be used as a transportation evaluation metric in Virginia, based on reviewing how VMT has been applied elsewhere and translating such uses to the Virginia context. The research explored how widespread VMT is in the United States; at what points in Virginia's planning process could VMT analysis be used; and the benchmarks, analysis methods, benefits, drawbacks, and implementation challenges and solutions from other agencies that have used VMT as a metric.

Approach

To fulfill the study purpose, the research team conducted a literature review and interviewed planners, focusing on two states (California and Oregon) that have experience with VMT and on Virginia planners who provided an understanding of VMT and LOS requirements in Virginia. Then, the researchers conducted two Virginia case studies to illustrate the use of VMT as a metric.

Outcomes

VMT is used outside Virginia in processes such as congestion management, environmental analysis, safety evaluations, and efforts to further equity and economic development. It also already plays a role in several points of Virginia's planning process. Although induced VMT calculators exist, the geographical extent of the analysis greatly affects their interpretation. This report recommends that VDOT consider the pros and cons of using VMT when updating relevant guidance documents.

Research Benefits

Updating relevant guidance documents will provide clarity to VDOT planners and other users. The exact nature of these time savings would depend on the nature and extent of updates, but if they create uniformity in analysis procedures, VDOT would recognize benefits in terms of staff time and avoided costs of redoing analyses, which would likely be needed if VMT analysis were requested in the absence of clear procedures.

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Research Findings

Summary of Strengths and Weaknesses of Using Vehicle Miles Traveled (VMT) as a Metric

Strengths	Weaknesses
• Enables a VMT reduction framework to lower induced travel and associated impacts. • Shifts priority away from solely automobile mobility to use of the system as a whole. • Useful as a proxy for emissions and environmental impacts. • Lower VMT is generally associated with lower injury risk. • Factors lowering VMT, such as encouraging infill development, multimodal travel, and higher density, have positive impacts on outcomes such as economic activity and equity. • VMT fees can link system usage and revenue generation. • May reduce analysis time and costs depending on context. • Ease of communication (literally measures how much driving occurs). • Wide versatility and scalability (e.g., by analyzing high- versus low-impact VMT).	• Difficulty in acquiring accurate projections if running a regional travel demand model is infeasible. • Inconsistency between models or a tendency for them to overestimate. • Some jurisdictions may be less receptive to a new metric than to the status quo. • Lack of guidance in evaluating land use or transportation project impacts. • Suburban and rural areas can pose implementation hurdles. • Not a silver bullet: associated benefits come from the broader context of how VMT is lowered rather than its use as a metric. • Defining project-level measurement methods could be challenging, and different methods would be needed for land use and transportation projects. • Difficulty in isolating impacts to projects and defining analysis areas when using big-data tools.