DRISI
Caltrans Division of Research, Innovation and System Information

Research Notes

Methodology Assessing the Vehicle Miles Traveled (VMT) impacts of transportation projects

Investigating Ability to Assess VMT Impacts of Rural Capacity-Enhancing Projects

Traffic Operations

DECEMBER 2021

Project Title:
Methodology Assessing the Vehicle Miles Travelled (VMT) Impacts of Transportation Projects

Task Number: 3867

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WHAT IS THE NEED?

Transportation projects have traditionally been evaluated based on how they affect the level of service (LOS) provided by a facility. This has historically resulted in using vehicle delay and other similar metrics to evaluate projects, and in evaluations focusing on how projects would affect drivers, but not necessarily on how they would impact travel demand and vehicle emissions. To improve environmental considerations, California Senate Bill 743 changed the focus from measuring the impacts to drivers to measuring impacts on travel. This had led to increased attention on reducing vehicle miles traveled (VMT) and mandating that jurisdictions can no longer use vehicle delay to assess transportation projects under the California Environmental Quality Act.

While VMT can be evaluated relatively easily along well-instrumented freeways, this may not be the case elsewhere. On urban freeways, the high density of traffic sensors and the captive nature of traffic allow to track with reasonable accuracy vehicles entering and exiting a facility. However, this becomes difficult on scantly instrumented freeways and local arterials due to the presence of multiple unmonitored entry/exit points between sensors.

Evaluating projects primarily against changes in VMT may also not allow all desirable projects to be positively evaluated. For instance, projects aiming to better use existing infrastructure by implementing efficient detours around incidents or unusual congestion, such as Integrated Corridor Management systems, may naturally lead to an increase in VMT while reducing travel times and greenhouse emissions. Despite their positive impacts on traffic, such projects may not be viewed favorably simply because they may cause some slight increase in VMT.

WHAT ARE WE DOING?

The research team at the University of California at Berkeley (UCB) will perform research that will attempt to identify:

- Evaluate how changes in VMT can relate to changes in delay and greenhouse emissions.
- Assess the need to compile mode-specific VMT for projects involving walking, biking, e-scooters, and transit in addition to private vehicles.
- Determine how VMT can be reliably measured in various situations.
- Determine the type and quantity of data that may need to be collected for adequately measuring VMT.
- Assess when additional metrics besides VMT should be considered to properly evaluate the full impacts of transportation projects.

Project results will be implemented through the publication of a guidance document describing when to use VMT as an evaluation criterion and how to estimate VMT in various circumstances.

WHAT IS OUR GOAL?

The primary goal is to provide guidance on when and how to use VMT as an evaluation criterion for transportation projects. A secondary goal is to provide methodologies for estimating VMT for off-freeway projects and projects involving multiple modes of transportation.

WHAT IS THE BENEFIT?

The development of a guidance document on how to use and estimate VMT is expected to provide the following benefits:

- Provide a consistent methodology for assessing VMT for facilities with limited continuous data collection instrumentation.
- Provide a clear, systematic method for evaluating VMT for projects having potential impacts across various transportation modes.
- Allow preliminary evaluations of VMT impacts to closer match what may be achieved in reality.
- Allow decision-makers to determine when the use of metrics other than VMT may be warranted for evaluating the truly desired impacts of specific transportation projects.

How well will the research product align with the Caltrans Strategic Management Plan?

- Safety First: By allowing better quantification of impacts on alternative transportation modes, this project will allow developing better assessments of required/desired safety elements.
- Cultivate Excellence: This project will improve the concordance between projections from preliminary impacts assessments and the actual improvements observed in the field after project completion. This should result in improved efficiency of delivered projects.
- Enhance Multi-Modal Transportation Network: This project will allow to better consider the impacts of proposed projects on alternative travel modes when considering VMT as a performance metric.
- Stewardship and Efficiency: For a relatively small investment, this project will allow improving how transportation projects are evaluated in the design or decision stage to attain the goals set by the state regarding their expected operational performance.
- Climate Action: This project will allow better quantification of the potential environmental impacts of projects aiming to reduce pollution caused by congestion, as well as projects seeking to promote shifts away from private vehicles towards more sustainable alternate transportation modes.
- Advance Equity and Livability: The evaluation guidelines developed by this project will affect how facilities are operated and result in multi-modal facilities better matching the transportation needs of the population.

WHAT IS THE PROGRESS TO DATE?

The project is anticipated to begin March 1, 2022.