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Environmental Reviews Fail to Accurately Analyze Induced Vehicle Travel from Highway Expansion Projects

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Issue

Induced travel is a well-documented effect in which expanding highway capacity increases the average travel speed on the highway, which in turn reduces the perceived “cost” of driving and thereby induces more driving.¹ This increase in vehicle miles traveled (VMT) increases congestion (often back to pre-expansion levels) and air pollutant emissions, reducing or eliminating the purported benefits of the expansion (Figure 1). Yet highway expansion projects continue to be proposed across California, often using congestion relief—and sometimes greenhouse gas reductions—as a justification for adding lanes. These rosy projections about the benefits of highway expansion projects indicate that the induced travel effect is often not fully accounted for in travel demand models or in the projects’ environmental review process.

With this problem in mind, researchers at the University of California, Davis developed an online tool to help agencies estimate the VMT induced annually by adding lanes to major roadways in California’s urbanized counties. The Induced Travel Calculator estimates project-induced VMT using the project length (in lane miles) entered by the user, lane-mile and VMT data from Caltrans, and estimates of elasticities (the percentage change in VMT that results from a 1% increase in lane miles) from peer-reviewed studies.

The researchers also applied the calculator to estimate the vehicle travel induced by

five highway expansion projects in California that had gone through environmental review within the past 12 years. They then compared their estimates with the induced travel analysis completed for the projects’ actual environmental impact assessments. The five projects include (1) the U.S. Highway 101 High-Occupancy Vehicle (HOV) Widening (Marin-Sonoma Narrows), (2) the State Route 1 Corridor Analysis of HOV Lanes (Santa Cruz), (3) the State Route 210 Mixed-Flow Lane Addition (San Bernardino), (4) the State Route 99 South Stockton Six-Lane Project, and (5) the Interstate 405 HOV Widening.

Key Findings

Environmental reviews of highway expansion projects include inconsistent, if any, analysis of induced vehicle travel. The environmental analysis documents for the five projects varied wildly in their discussion of induced vehicle travel impacts. Two documents did not discuss the induced travel phenomenon at all. And the only two documents to analyze it in detail did so in responses to comments, not in the original analysis. Even when the documents did analyze induced travel in detail, the discussion of the effect was contradictory within the documents and inconsistent with the induced travel literature.

Projects’ environmental review documents underestimate induced vehicle travel. Only three of the five documents reported estimates of induced VMT. All three estimates were lower than what the researchers estimated using the

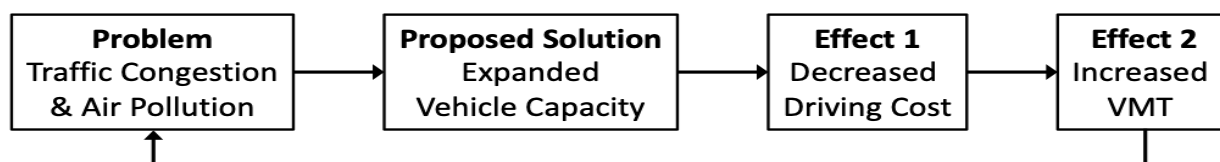


Figure 1. Induced vehicle travel effect of highway capacity expansions

Induced Travel Calculator. In two of the three cases, the estimates were an order of magnitude lower (Figure 2).

Policy Implications

The results provide additional evidence that environmental analyses often fail to consistently and accurately discuss—let alone estimate—the induced travel effects of highway capacity expansion projects. Going forward, the Induced Travel Calculator can help agencies consistently quantify induced travel by using elasticity-based estimates of VMT levels derived from the project’s lane-mile changes. Indeed, Caltrans’ 2020 Transportation Analysis Framework recommends that the Induced Travel Calculator be used where possible to estimate or at least benchmark induced VMT for California state highway system projects.

More Information

This policy brief is drawn from “Induced Vehicle Travel in the Environmental Review Process,” a paper in the *Transportation Research Record: Journal of the Transportation Research Board* by Jamey M.B. Volker, Amy E. Lee, and Susan Handy of the University of California, Davis. The article is available at <https://ncst.ucdavis.edu/research-product/induced-vehicle-travel-environmental-review-process>.

NCST’s Induced Travel Calculator can be accessed at <https://ncst.ucdavis.edu/research-product/induced-travel-calculator>.

For more information about the findings presented in this brief, please contact Jamey Volker at jvolker@ucdavis.edu.

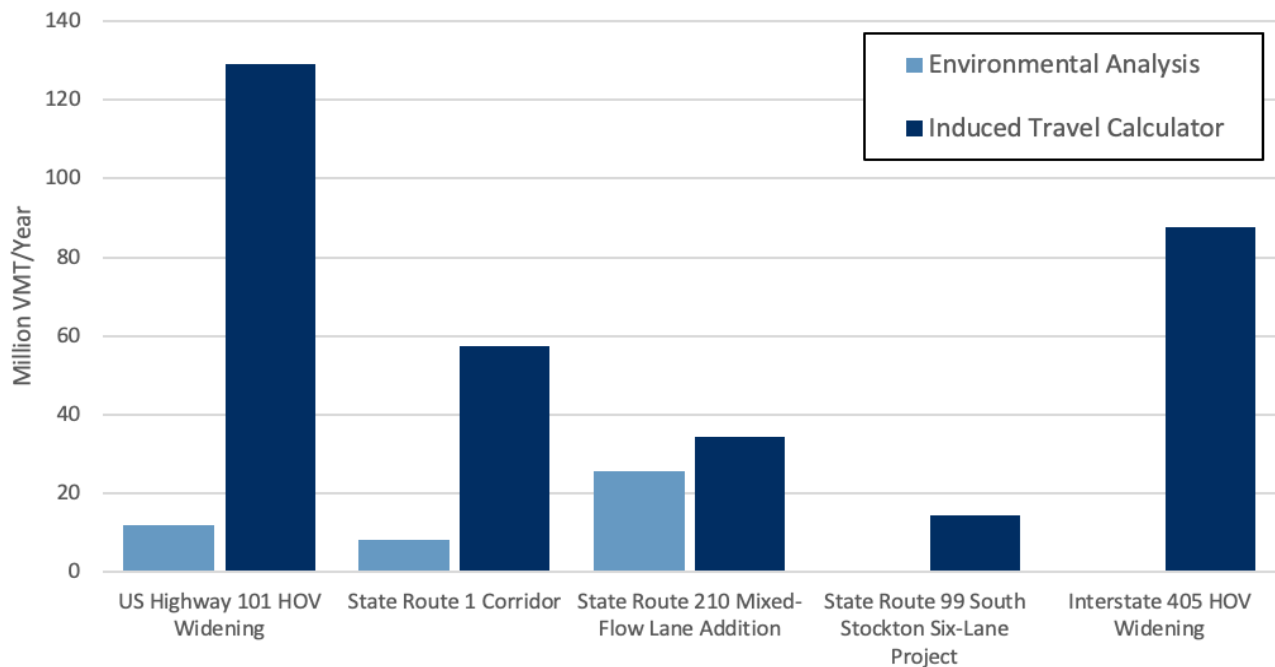


Figure 2. Comparison of induced VMT estimates in highway expansion project environmental analyses versus the Induced Travel Calculator (analyses for the State Route 99 and Interstate 405 projects did not estimate induced travel)

¹Handy, S. (2015). *Increasing Highway Capacity Unlikely to Relieve Traffic Congestion*. UC Davis: National Center for Sustainable Transportation. <https://escholarship.org/uc/item/58x8436d>

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