

**Planning,
Policy and
Programming****NOVEMBER 2024****Project Title:**Exploring the Integration of Induced
Travel into Analyses of Costs,
Benefits, and Air Pollutant Emissions**Task Number:** 4357**Start Date:** May 1, 2024**Completion Date:** April 30, 2025**Task Manager:**Connor Campbell
Transportation Planner
Connor.Campbell@dot.ca.gov

Exploring the Integration of Induced Travel into Analyses of Costs, Benefits, and Air Pollutant Emissions

WHAT IS THE NEED?

The California Department of Transportation's (Caltrans') 2020 Transportation Analysis Framework (TAF), developed in response to Senate Bill 743, requires Caltrans to evaluate highway expansion projects on the State Highway System for their induced travel impacts, measured as vehicle-miles-traveled (VMT). Tools like the National Center for Sustainable Transportation's induced travel calculator (<https://travelcalculator.ncst.ucdavis.edu>) and its progeny like the SHIFT calculator (<https://shift.rmi.org>) are capable of estimating induced VMT from capacity expansions of large roadways, and are becoming widely used for environmental impact analyses, e.g., under the California Environmental Quality Act. Induced travel also has economic and air quality impacts. However, most conventional cost-benefit and air pollutant emissions analysis tools do not account for induced travel, at least not fully. They also generally do not account for the distribution across different populations of induced travel-related impacts, particularly the air quality impacts of induced travel. Methods and guidance are needed to integrate induced travel and the equity of induced travel-related impacts into cost-benefit and air pollutant emissions analysis tools.

The purpose of this project is to explore the appropriateness of including induced travel and the equity of induced travel-related impacts into cost-benefit and air pollutant emissions analysis tools, like the California Life-Cycle Cost/Benefit Analysis Model (Cal-B/C) currently used by Caltrans. The research team will also explore and recommend methods for integrating induced travel and the equity of induced-travel related impacts into emissions and cost-benefit analysis tools.

WHAT ARE WE DOING?

First, the research team identify (in coordination with



DRISI provides solutions and
knowledge that improves
California's transportation system.

Caltrans) key collaborators who conduct or utilize cost-benefit and air pollutant emissions analyses for roadway projects in California, including Division of Environmental Analysis and the Cal-B/C/Transportation Economics staff at Caltrans, California Air Resources Board staff, staff at the major metropolitan planning organizations in California, staff at the Federal Highway Administration, and staff at some of the major transportation consulting firms in California. The research team will then interview the key collaborators to ascertain what air pollutant emissions and cost-benefit analysis tools are being used and explore how the tools incorporate induced travel, how they could be improved to better incorporate induced travel, and the challenges in doing so.

Second, the research team will review of the methods currently used to estimate the costs, benefits, and air pollutant emissions from roadway projects, including Cal-B/C, to independently determine how the tools incorporate induced travel and how they could be improved to better incorporate induced travel. The research team will also conduct a thorough four-pronged literature review, focusing on (1) the empirical literature on induced VMT, (2) the empirical literature on the effects of roadway capacity expansions on speed and congestion, (3) the empirical literature on the economic effects of roadway capacity expansions, and (4) the empirical literature on the equity of induced travel-related impacts.

Third, the research team will formulate recommendations on how the empirical evidence about induced travel and its equity impacts can be incorporated into air pollutant emissions and cost-benefit analysis models.

WHAT IS OUR GOAL?

The purpose of this project is to explore the appropriateness of including induced travel and the equity of induced travel-related impacts into cost-benefit and air pollutant emissions analysis tools, like the California Life-Cycle Cost/Benefit Analysis Model

(Cal-B/C) currently used by Caltrans. The research team will also explore and recommend methods for integrating induced travel and the equity of induced-travel related impacts into emissions and cost-benefit analysis tools.

WHAT IS THE BENEFIT?

The project will benefit Caltrans in at least three ways. First, the research team's review will inform Caltrans about the extent to which conventional cost-benefit and air pollutant emissions analysis tools account for induced travel and the distribution of induced travel-related impacts, which is essential for understanding how comprehensive and consistent those tools are. Second, the research team's review will inform Caltrans about how induced travel affects air pollutant emissions and the cost-benefit calculus for roadway expansion projects. Third, the research team's recommendations will help Caltrans integrate induced travel and the equity of induced-travel related impacts into emissions and cost-benefit analysis tools. This will help ensure that the full suite of roadway capacity expansion projects' impacts are considered during the project development and environmental review stages, and that the analyses are consistent across different types of impacts (e.g., air quality, greenhouse gas emissions, transportation, and environmental justice).

WHAT IS THE PROGRESS TO DATE?

The team is currently working on the analysis of the model and summarizing their findings. Additionally, the research team is working on the initial recommendations for the model. Next project quarterly is set for February 2025.