A NEW TOOL TO CALCULATE INDUCED TRAVEL
OUTLINE

- Historical approach to congestion management
- The induced travel effect
- Measuring induced travel
- NCST’s induced travel calculator
  - [https://ncst.ucdavis.edu/research/tools/](https://ncst.ucdavis.edu/research/tools/)
- Commentary from guest respondents
- Questions
HISTORICAL APPROACH TO CONGESTION MANAGEMENT

- Increase automobile capacity
  - Build new roadways
  - Add lanes to existing roadways
- Still commonly prescribed
  - SB 319 (Feb. 2019, Moorlach), initial version:
    - Would have added lanes along the entirety of I-5 and CA-99 to reduce congestion and GHG emissions
HISTORICAL APPROACH TO CONGESTION MANAGEMENT

Problem: ↑ Traffic
Treatment: ↑ Auto Capacity
Intended Effect: ↓ Traffic
INDUCED TRAVEL EFFECT

- Adding roadway capacity in congested areas reduces the time cost of driving.
- When the price of driving goes down, vehicle miles traveled (VMT) go up.
- With increasing VMT, congestion can return to pre-capacity expansion levels relatively quickly.
INDUCED TRAVEL EFFECT

Problem: ↑ Traffic

Treatment: ↑ Auto Capacity

Actual Effect: ↓ Traffic, ↑ Driving
CAN’T WAIT FOR THE ROAD TO BE WIDENED!

FINALLY!
MEASURING INDUCED TRAVEL

- Magnitude of the effect commonly measured as an elasticity:

\[
\text{Elasticity} = \frac{\% \text{ Change in VMT}}{\% \text{ Change in Lane Miles}}
\]

- Range of long-term elasticity for major roads in congested areas:
  - 0.6 – 1.0
Reducing VMT is key to meeting California’s GHG emissions reduction goals
Increasing use of VMT as a measure of transportation system performance, environmental impacts, and public health impacts

- SB 743 (2013)
- See http://opr.ca.gov/ceqa/updates/sb-743/
NCST’S INDUCED TRAVEL CALCULATOR - BASICS

- **Purpose:** provides a simple estimate of induced travel – additional VMT per year – from . . .

- **Projects:** adding general-purpose or high-occupancy-vehicle (HOV) lane miles to major roadways in the California Highway System (FHWA Class 1, 2, or 3) in . . .

- **Geography:** California’s urbanized counties - counties within a metropolitan statistical area (MSA)
NCST’S INDUCED TRAVEL CALCULATOR - EQUATION

- Calculator solves this equation:

\[
VMT \text{ Induced by Project} = \%\Delta \text{ Lane Miles} \times \text{ Existing VMT} \times \text{ Elasticity}
\]
NCST’S INDUCED TRAVEL CALCULATOR - DATA

- **User inputs:**
  - Geography
  - Facility type
  - Lane miles proposed to be added

- **Supplied inputs:**
  - Existing lane miles (2016 Caltrans data)
  - Existing VMT (2016 Caltrans data)
  - Elasticity
    - 1.0 for Class 1 facilities (interstates)
    - 0.75 for Class 2 and 3 facilities
NCST’S INDUCED TRAVEL CALCULATOR - DEMONSTRATION

- URL: https://ncst.ucdavis.edu/research/tools/
Overview

This calculator allows users to estimate the VMT induced annually as a result of adding general-purpose or high-occupancy-vehicle (HOV) lane miles to roadways managed by the California Department of Transportation (Caltrans) in one of California’s urbanized counties (counties within a metropolitan statistical area (MSA)). The calculator applies only to Caltrans-managed facilities with Federal Highway Administration (FHWA) functional classifications of 1, 2 or 3 (see Caltrans, 2019). That corresponds to interstate highways (class 1), other freeways and expressways (class 2), and other principal arterials (class 3).

How to Use

To obtain an induced VMT estimate for a roadway capacity expansion project, enter the project length (in lane miles added) and geography (MSA for additions to interstates; county for additions to other Caltrans-managed class 2 or 3 facilities).

More about this calculator

Calculator

1. Select facility type
   - Interstate highway (class 1 facility)
   - Class 2 or 3 facility
1. Select facility type

- Interstate highway (class 1 facility)
  - Select MSA
  - Bakersfield
  - Chico
  - El Centro
  - Fresno
  - Hanford-Corcoran
  - **Los Angeles-Long Beach-Anaheim**
  - Madera
  - Merced
  - Modesto
  - Napa
  - Oxnard-Thousand Oaks-Ventura
  - Redding
  - Riverside-San Bernardino-Ontario
  - Sacramento-Roseville-Arden-Arcade
  - Salinas
  - San Diego-Carlsbad
  - San Francisco-Oakland-Hayward
  - San Jose-Sunnyvale-Santa Clara
  - San Luis Obispo-Paso Robles-Arroyo Grande
  - Santa Cruz-Watsonville
  - Santa Maria-Santa Barbara
1. Select facility type
- Interstate highway (class 1 facility)
- Class 2 or 3 facility

2. Select MSA
Los Angeles-Long Beach-Anaheim

3. Input total lane miles added
90 miles

Calculate induced Travel
Results

774.8 million additional VMT/year
(Vehicle Miles Travelled)

Los Angeles-Long Beach-Anaheim MSA currently has 3515 lane miles of Interstate highway on which 30261 million vehicle miles are travelled per year.

A project adding 90 lane miles would induce an additional 774.8 million vehicle miles travelled per year.

Los Angeles-Long Beach-Anaheim MSA consists of 2 counties (Los Angeles and Orange).

This calculation is using an elasticity of 1.0.
1. Select facility type
   - Interstate highway (class 1 facility)
   - Class 2 or 3 facility

2. Select county
   - Butte

3. Input total lane miles added

Calculate Induced Travel
RESOURCES

- NCST’s Induced VMT Calculator: [https://ncst.ucdavis.edu/research/tools/](https://ncst.ucdavis.edu/research/tools/)
- OPR site with resources on induced travel, VMT, and automobile level of service: [http://opr.ca.gov/ceqa/updates/sb-743/](http://opr.ca.gov/ceqa/updates/sb-743/)
- Info on FHWA functional classifications and California’s highway system: [http://www.dot.ca.gov/hq/tsip/hseb/func_clas.html](http://www.dot.ca.gov/hq/tsip/hseb/func_clas.html)
QUESTIONS???

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