California Senate Bill 743
Vehicle Miles Traveled Documentation

Metadata

Attribute Name	Description
Geography	Census Tract, City/Community Planning Area (CPA), or Traffic Analysis Zone (TAZ) depending on layer chosen
Name	Census tract number (2010 Tracts) City name (2016 Boundaries) CPA name – CPA's reported for County of San Diego and City of San Diego (2016 Boundaries) Traffic Analysis Zone (4996)
Residents/Employees	Resident or employee depending on layer chosen
Persons	Number of residents or employees in geography area
Vehicle Miles Traveled (VMT) per Capita	Average VMT by residents or employees throughout the day. Description of the data queries found below.
Percent of Mean	The percent of the geographic areas VMT per capita as compared to the regional VMT per capita

Overview

The California Senate Bill 743 (SB 743) (Steinberg, 2013) VMT maps provide an estimate of personal vehicle travel by residents and employees within the San Diego region. The California Office of Planning and Research released a Technical Advisory on Evaluating Transportation Impacts in CEQA (https://opr.ca.gov/ceqa/sb-743/) and the maps provided by SANDAG are an interpretation of the guidelines provided as a resource to the jurisdictions in our region to use as they see fit.

The estimated data in these maps are an analysis of travel using SANDAG's ABM. The currently approved ABM version (14.2.2) used for the 2021 Regional Plan is ABM2+ with the Series 14 Growth Forecast version 38. The historic version of the ABM (14.1.1) was used for the 2019 Regional Transportation Plan with the Series 14 Growth Forecast version 17. These maps and data are subject to change as new estimates are produced using updated inputs and methodologies.

Local jurisdictions are under no obligation to use the data in their development approval processes or transportation analyses under SB 743. Users of the data should exercise their professional judgment in reviewing, evaluating, and analyzing VMT reduction estimate results from the tool. Each agency should consult with California Environmental Quality Act (CEQA) experts and legal counsel regarding their own CEQA practices and updates to local policies.

The estimated data are provided at four geographic scales: City, City/County CPA, Census Tract, and Traffic Analysis. For each geography SANDAG provides the VMT data per capita and per employee. VMT per capita represents the average amount of personal, non-commercial, vehicle travel made on an average weekday by each resident who lives within that geographic boundary. VMT per employee represents the average amount of personal, non-commercial, vehicle travel made on an average weekday by each resident employee whose employment/work location is within that geographic boundary.

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Important Considerations

- Both VMT per capita and VMT per employee only include travel made by residents within the San Diego region. Employees that live outside the region and commute in from elsewhere in California or from Mexico are not included in the calculations. Residents who travel outside the region do not have their travel outside of the region included. SANDAG will provide data on the amount of travel those individuals make within the region as estimated by the ABM.

- The VMT performance measure sums up all trips made for all trip purposes or reasons throughout a typical weekday, not just those originated from or destined to the geography. The VMT per Capita measure includes all travel made for all trip purposes for San Diego residents. The VMT per Employee measure includes work-tour travel for San Diego residents. VMT per Capita is assigned to the resident's location, while VMT per Employee is assigned to the work-place location. The calculations do not include trips made by employed residents while on their employers' clock (i.e. commercial/business travel).

- Since commercial travel is not included, the VMT is for personal vehicles only (such as light duty automobiles) and does not include heavy duty trucks.

- Residents who travel to the airport to leave the region or return to the region are not included in the VMT calculations.

- Employees who have a primary workplace but choose to work from home are included in the employee VMT for the primary workplace.

- High Occupancy Vehicle (HOV) trips are per vehicle mile not per person mile. For example, if a 3-person HOV travels 9 miles it is reported as 9 VMT, not 27 VMT.

FAQs

What is the SANDAG transportation model?

The SANDAG transportation model is an ABM that simulates individual and household transportation decisions that compose their daily travel itinerary. People travel outside their home for activities such as work, school, shopping, healthcare, and recreation, and the ABM attempts to predict whether, where, when, and how this travel occurs. The result is a forecasting and alternatives analysis tool that can help gain insight into potential future outcomes of land use growth, transportation network investments, and travel policies.

What is the SANDAG transportation model used for?

SANDAG plans for complex mobility issues facing the San Diego region through the development of the Regional Plan, which is typically updated every four years. In preparation of each Regional Plan, SANDAG uses transportation and land use models to forecast potential future scenarios of where people will live and how they will travel. These models provide planners and decision makers with information to help them equitably allocate scarce resources.

The ABM was developed to produce an average spring/fall weekday forecast of travel in the San Diego region. However, travel over the course of a year has a great deal of variation from seasonal fluctuations, school session schedules, special events, and other occurrences (wildfires, rain, etc.); therefore, the ABM should not be used to monitor observed trends in traffic. Rather, the ABM is a forecasting and alternatives analysis tool that can help gain insight into potential future outcomes of land use growth, transportation network investments, and travel policies.

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In addition to its primary application in development of the Regional Plan, the ABM is used to generate estimates of VMT for a given year, which are used to inform other related analyses in the region, including Community Plan Updates, General Plan Updates, and development of Climate Action Plans.

What data is included in the SANDAG transportation model and how often is this data updated?

SANDAG continuously updates the ABM and releases a new version for use in development of the Regional Plan, which typically occurs every four years. The ABM is calibrated to the latest observed data, such as jurisdiction vehicle traffic counts and transit passenger counts.

Other data included in updates to the ABM for new version releases include:

- Transportation networks
- Land use and demographics
- Surveys of travel behavior
- Forecasts of external variables
- Changes to the components and software program code that make up the ABM

What are some of the key differences between the two most recent SANDAG transportation models?

As of December 2021, the current SANDAG transportation model is referred to as "ABM2+" which was applied in the 2021 Regional Plan[1]. The previous model is referred to as "ABM2" and was applied in the 2019 Federal Regional Transportation Plan[2].

Differences between any of these models are related to changes in the data inputs described in the previous question. For example, the ABM is updated with the latest travel data (through surveys, travel costs, and network changes such as transit routes and roadway changes) and is then calibrated to observed data.

One of the more significant differences between ABM2 and ABM2+ is the policy assumptions related to the 5 Big Moves in the 2021 Regional Plan. Another difference is the change in the land use and demographics forecast[3] between the Series 14 forecasts (IDs 17 and 38). Other differences between models are reflected in changes to the data inputs described in the previous question, such as future gas prices and observed vehicle traffic and transit passenger counts in the base year. Additionally, ABM2 and ABM2+ do not include the significant travel behavior changes observed as a result of the COVID-19 pandemic.

Can I review detailed Activity Based Model documentation?

Complete model documentation can be found at SANDAG's GitHub repository as well as in the Regional Plan appendixes:

https://github.com/SANDAG/ABM/wiki

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[1] For more information about ABM2+ as used in the 2021 Regional Plan: 2021 Regional Plan (sdforward.com)

[2] For more information about ABM2 as used in the 2019 Federal Regional Transportation Plan: 2019 Federal Regional Transportation Plan (sdforward.com)

[3] Note: the forecast includes the base year as well as future years, out to 2050.

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https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-s---travel-model-documentation---abm2.pdf?sfvrsn=dac1fd65_2

How can the SANDAG transportation model data be accessed?

Data can be accessed through the SANDAG Transportation Forecast Information Center at http://tfic.sandag.org/. Pursuant to SANDAG Board Policy No. 012, SANDAG Service Bureau [4], SANDAG member agencies, non-member government agencies, and private organizations and individuals may request specific services, including modeling, through the SANDAG Service Bureau.

Can I get access to the SANDAG SB 743 VMT reporting scripts?

SANDAG's transportation model code and reporting scripts are open source.

The ABM2 and ABM2+ reporting script is located on GitHub at ABM2 Reporting Script. Search for the SQL procedure [report].[sp_resident_vmt].

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