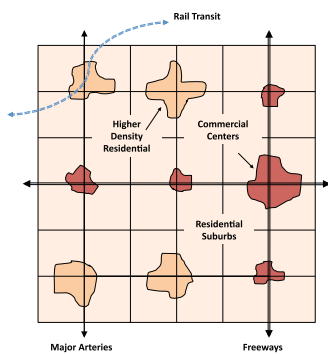


Transportation modeling

You've probably seen or heard about models throughout your life – whether physical models such as a train or a building or more abstract models like those used to give us weather forecasts. What they have in common is that they represent real world objects or processes.



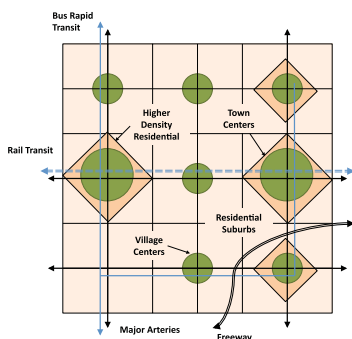
HOW DO THEY KNOW?

Ever heard that new transit service will take X number of cars off the road? Or that building a new road will cut travel time by X minutes? Ever wondered how planners know that?

It all comes from a model...



We also use models in transportation planning. These models are a series of complex mathematical equations that represent the choices, decisions, and behavior of thousands (or millions) of individual travelers.

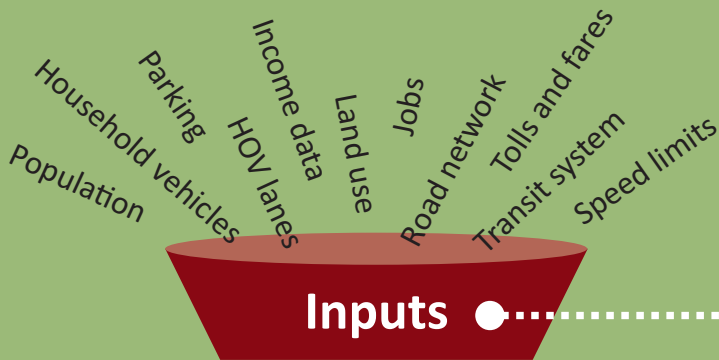


MODELS HELP US:

- Know where, when and how people are traveling
- Understand what and where our transportation needs are now and in the future
- Evaluate different strategies and investments to meet those needs
- Determine the impacts of strategies and investments on system performance, air quality, travel time, and land use, just to name a few

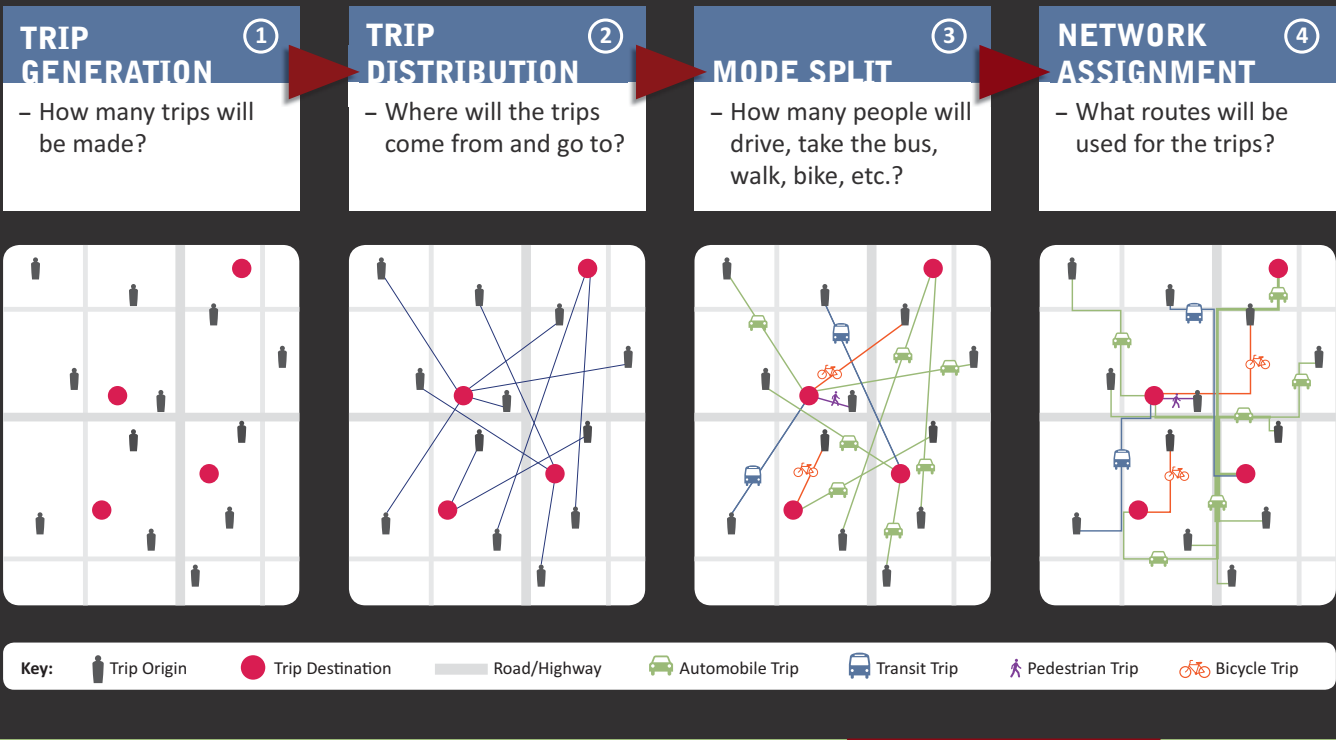
Regional Travel Demand Model

The Regional Travel Demand Model is a computer software package that replicates our regional transportation system



SMTC's model is a "Four Step Model" that takes inputs such as population and economic forecasts, the geographic dispersion of people and jobs throughout the region, and a description of the transportation system – the roads and transit system.

Regional Travel Demand Model



Outputs

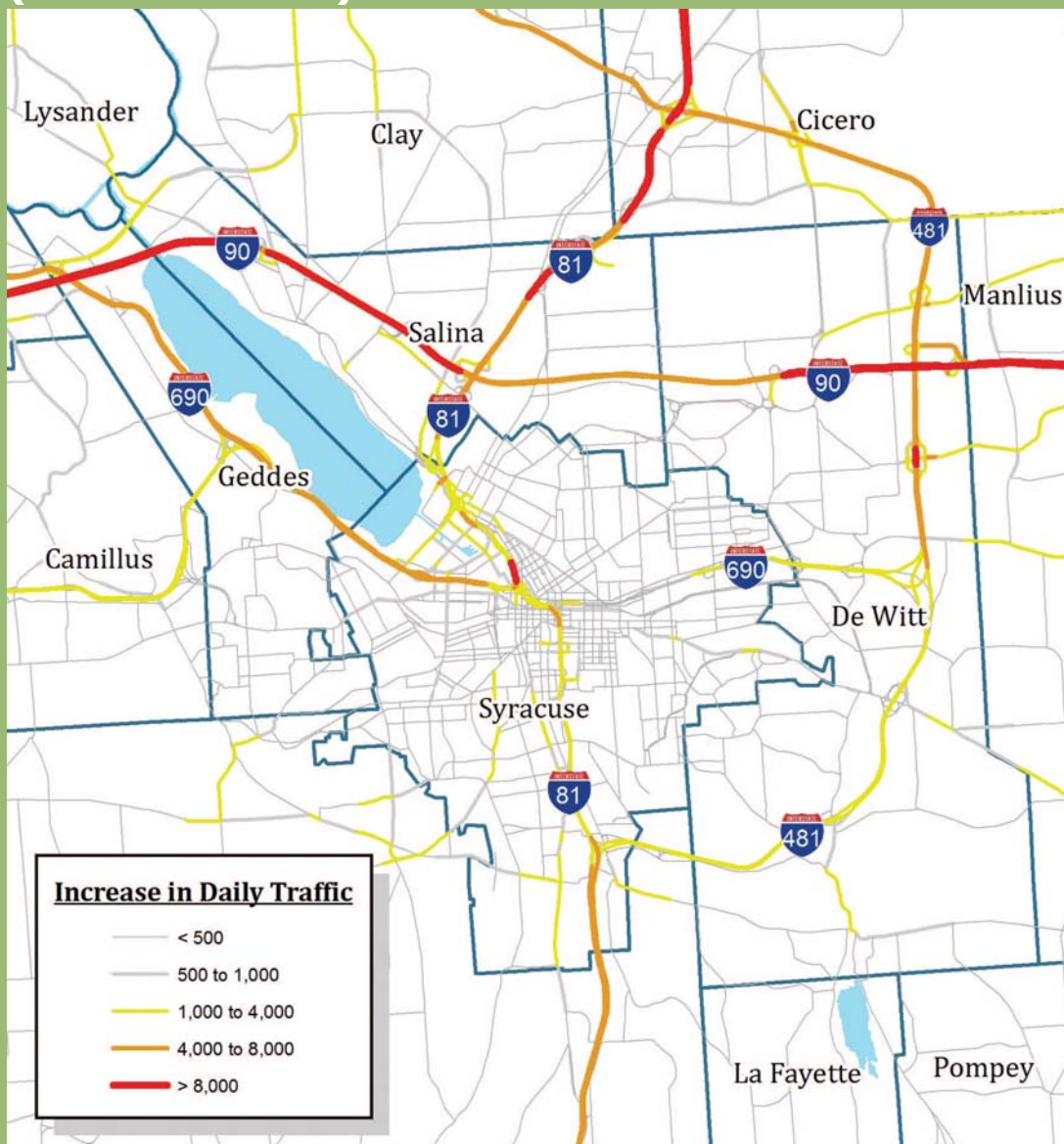
- Number of transit riders
- Number of vehicles
- Travel time
- Number of trips
- Congestion and delay
- Number of miles traveled

The model outputs, to be used in impact analyses to evaluate transportation system alternatives, include the amount of travel, the performance of the transportation system, and mode usage.

Modeling the future

The model can accurately replicate the existing conditions, and it can then be used to predict future travel patterns and demands based on changes in the transportation system, changes in the land use, and changing demographics

PROJECTED GROWTH IN TRAFFIC VOLUMES (2007 TO 2040)*

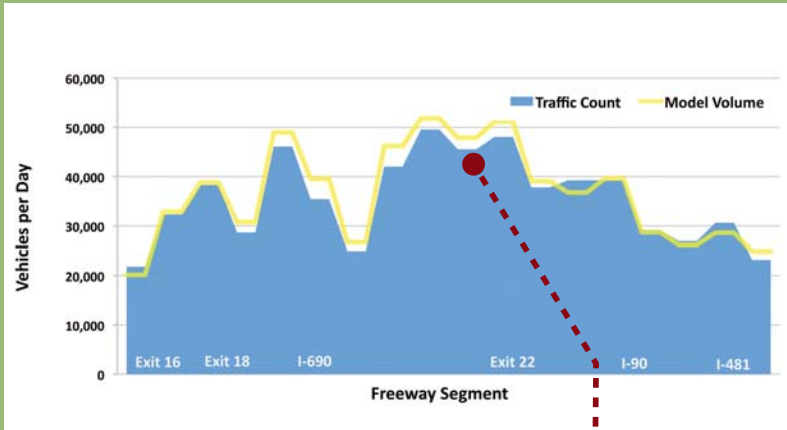


* Assumes no significant changes to I-81

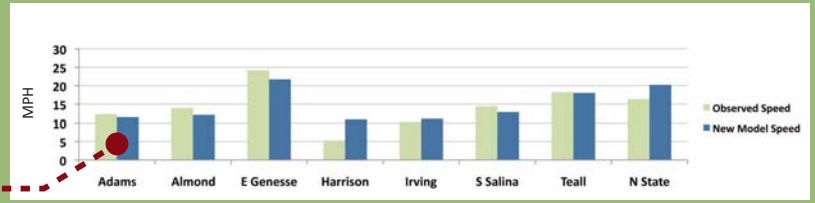
Modeling the present

The first step in using the Regional Travel Demand Model for The I-81 Challenge is to simulate the current “real world”

I-81 NORTHBOUND TRAFFIC FLOWS: TRAFFIC COUNTS AND MODELED VOLUMES



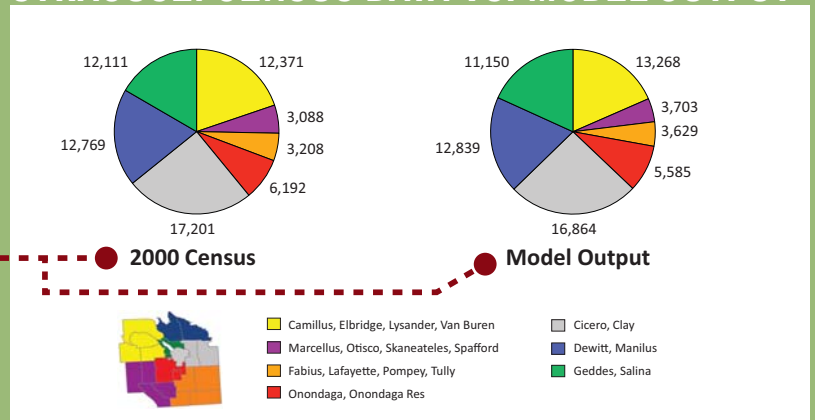
MODEL ARTERIAL SPEEDS COMPARED TO OBSERVED ARTERIAL SPEEDS



WHY THE DIFFERENCE?

Modeling peoples' travel behavior is a difficult undertaking since behavior is variable and complex. Travel models are developed from and compared to a wide variety of data sources, so travel models can't be expected to match any one source exactly.

DAILY WORK TRIPS BY DISTRICT GOING TO SYRACUSE: CENSUS DATA VS. MODEL OUTPUT





Microsimulation model

Microsimulation models allow us to understand detailed operational aspects of our transportation system. We can examine how traffic flows on a segment of highway, around a sharp curve, or through an intersection or interchange. While the regional model looks at overall demand, microsimulation models focus on the interactions and behaviors of individual vehicles.

What can we do with microsimulation models?

- Understand current operations on the highway: “How, why and where does congestion occur?”
- Evaluate the operational impacts of proposed changes: “What would happen if we changed X?”

