

What is an Activity Based Model?

Currently Fresno COG and all of the San Joaquin Valley MPOs use the traditional 4 step traffic model (also called trip based models). The 4-step model was first developed in the 50s on main frame computers; of course they have been improved greatly since. In fact the current Fresno 4-step model is the very latest cutting edge 4-step model and will be used for several more years until we complete development of our Activity Based Model.

Four Step Models - Also called trip based models.

The four steps of the classic 4-step model are:

1. Trip generation - uses the land use forecasts to determine the number trips produced or attracted in each zone by trip purpose.
2. Trip distribution - distributes the trips created in trip generation from each zone to all other zones.
3. Mode choice - computes the proportion of trips between each zone by the various travel modes. Modes include: auto, transit, walk and bike.
4. Assignment allocates trips between each zone and mode by route.

Four step models are very good and do a good job of predicting the total trips and VMT over a 24 hour period. Trips are then factored and estimated to represent AM and PM peaks.

Activity Based Models

Activity-based models are another class of models that predict for individuals where and when specific activities are conducted. (By time of day)

Activity-based models are so called because they are based on the principle that travel demand is derived from people's daily activity patterns. Activity-based models predict which activities are conducted when, where, for how long, for and with whom and the travel choices they will make to complete them.

Activity-based models offer more opportunities than four-step models to model environmental issues such as emissions and exposure to air pollution. They can therefore be used to establish relationships between health impacts and air quality more precisely. Policy makers can use activity-based models to devise strategies that reduce exposure by changing the time of activity patterns or that target specific groups in the population.

Having this type of detailed model information at their disposal allows modelers and policy makers to evaluate the effect of alternative policies on individuals travel behavior at a high level of temporal and spatial resolution and select the best policy alternative considering a potential wide range of performance indicators.