

Usage Example: Trip Diversions from Van Ness Avenue, with Bus Rapid Transit (BRT) Project

Van Ness Diversions, 2010 Base to 2010 Project

Change in Volume at California St.	1700	100%
Traffic diverted onto:		
Parallel streets in corridor	800	47%
Transit or suppressed trips	73	4%
Parallel streets outside corridor	827	49%

Of traffic on streets outside corridor:

About 1/2 are way beyond corridor (19th Ave, Kezar, etc.)
About 1/2 are evenly distributed across grid network

Trips Diverted from Van Ness Avenue, with BRT Project (PM)

	Regional Trips	Local Trips	Total
Divertible	1,823 (19%)	3,168 (33%)	4,991 (52%)
Not Divertible	1,352 (14%)	3,239 (34%)	4,591 (48%)
Total	3,175 (33%)	6,407 (67%)	9,582 (100%)

Green shows streets with less traffic.

Purple shows streets with more traffic.

The removal of one lane of through traffic from Van Ness is a 1/3 reduction in capacity on that roadway. The remaining two lanes are only slightly more congested – 71% of volume remains.

Due to the dense grid system and availability of wide parallel streets, the other streets within the corridor absorb almost 50% of the diverted traffic.

Other city streets absorb the remainder.



Trips Diverted from Van Ness Avenue, with BRT Project

Usage Example: Golden Gate Bridge Destinations



Doyle Drive Users (PM)

Less than 5% of vehicles on Doyle Drive (the access road connecting the Golden Gate Bridge to the Marina District in San Francisco) are traveling to or from the East Bay or South Bay.

The remainder are using Doyle to travel either across town or over the Golden Gate Bridge. Less than 25% come from Van Ness Avenue. Almost 30% use Franklin Street.

Thus about half of the traffic on Doyle westbound comes from Van Ness Corridor. At Lombard, 60% of northbound traffic on Van Ness is destined for Doyle Drive. At Grove, only 14% is destined for Doyle.

The San Francisco Model... in Fifteen Minutes

December 2005

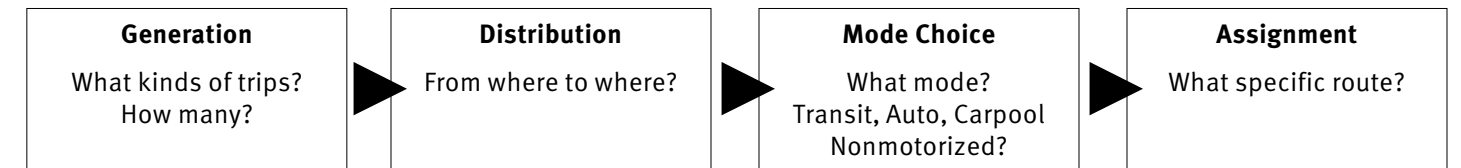


How can models help us test policy questions? System efficiency... pricing strategies... demographic impacts... equity...

Models are just one tool in the planner's kit that lets us compare alternatives, estimate impacts, assess ridership and benefit, and determine winners and losers.

No one tool can do everything – and no tool anywhere can replace good planning judgment. But, an effective model, used properly, is a sharp tool for decisionmaking.

Trip Based Models: Your Father's Travel Forecasting Approach



Criticisms: No relationship between trips (in space, time, or mode!); nonmotorized modes usually missing; biased due to "zonal" aggregation

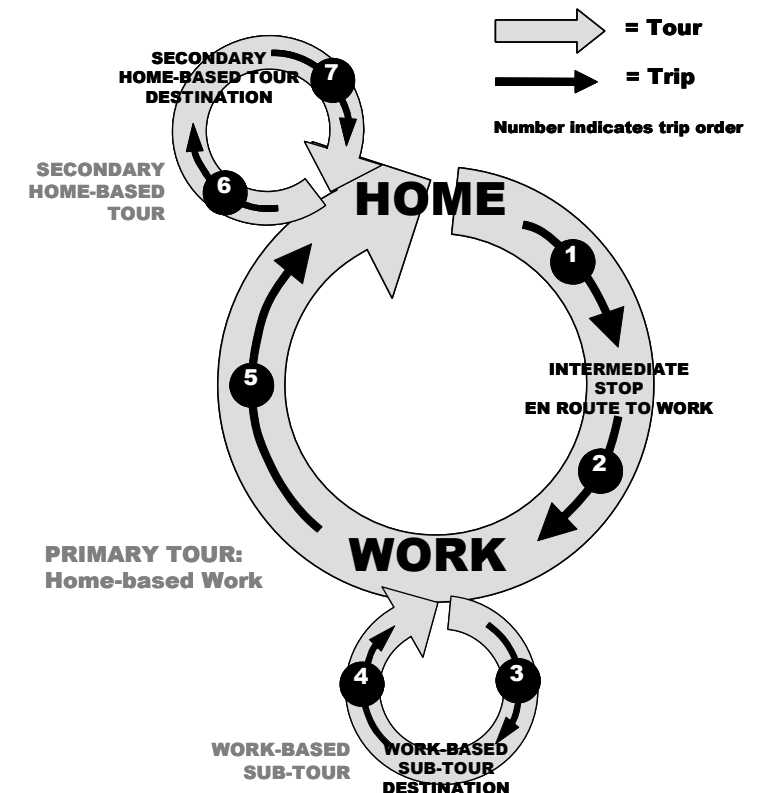
Tour Based Models:

Tour based models predict activities, locations, and times.

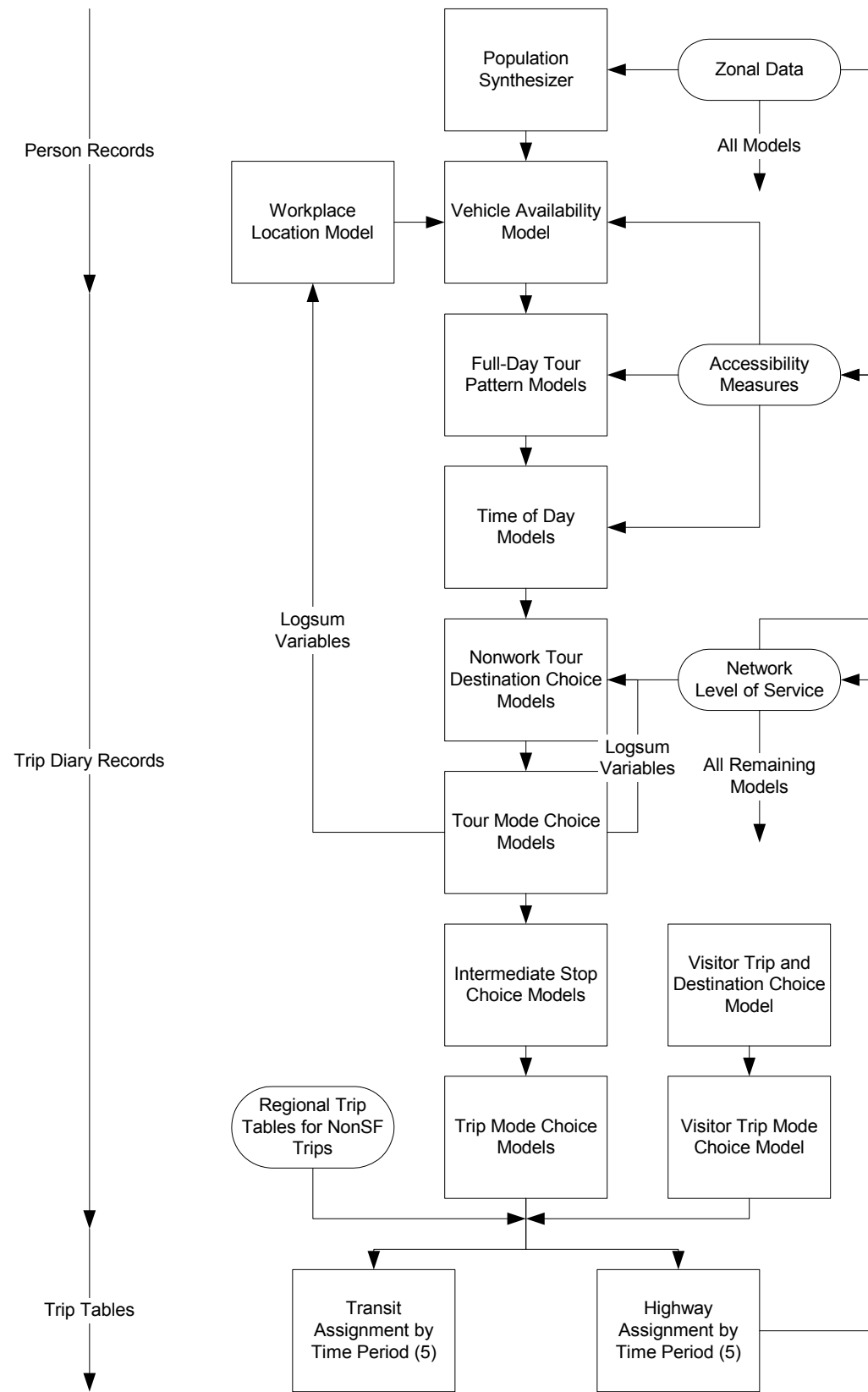
A tour is an entire chain of trips, from a primary origin to all destinations, and then back to the primary origin.

Using chains means trips now have relationships:

- (1) Primary Destination versus intermediate stops
- (2) Consequences of mode availability: e.g. trip mode depends on the full tour mode: Leaving the car at home? Then no driving for any trip on that tour.
- (3) Based on activity diaries for the household ... travel is implicit.
- (4) More able to test key policy questions no non-home-based trips e.g. system efficiency, pricing strategies, demographic impacts.



SF-CHAMP Model Process Diagram

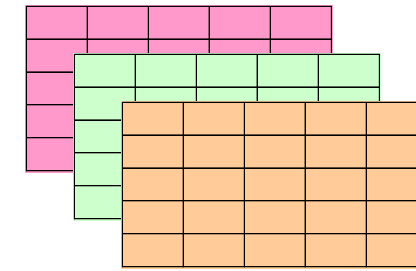


Microsimulation of Individual Behavior

While trip-based models aggregate travel into “zones” and then predict fractional probabilities for each zone and market segment, the San Francisco tour-based model simulates travel choices for every person in every household in the city.

The SF Model uses microsimulation of a “synthetic” population to do this. The dataset is “just like” the real people in San Francisco – based on recent U.S. Census data.

Trip Based Models:



Each market segment is a new set of trip tables.

Rows and columns represent the “zones” that encompass the city.

Tour Based Models:

Household	Person	Income	Jobs	Gender	Age
1	1	3	1	0	24
1	2	3	1	0	23
1	3	4	0	1	3
2	1	2	2	0	32
2	2	3	1	1	34
3	1	3	1	1	56
3	2	1	2	1	49
3	3	2	0	0	15
3	4	3	0	1	18

Each market segment is a new column.

Every “synthetic” person in every household is present in the datafile and is modeled individually.

Future advances in tour based modeling

On the Horizon:

- Model refresh using latest data sets – Muni onboard survey, latest household survey, Census
- Land use growth allocation model
- More refined time-of-day choice models (peak spreading)
- Linking roadway and transit travel times
- Better feedback between components

Someday/Maybe:

- Modeling “Bus Rapid Transit” (BRT) as its own mode
- Linking simulation models with the SF Model (Synchro, VISSIM, and beyond)
- Bicycle and Pedestrian path building and assignment
- More detailed intermediate stop models