Travel Modeling 101

Sustainable Communities Policy Forum 3
Improving the Models
March 5, 2014

Caroline Rodier, Ph.D.
Urban Land Use and Transportation Center,
Institute of Transportation Studies, UC Davis
What are models?

“The image of the world around us, which we carry in our head, is just a model. Nobody in his head imagines all the world, government or country. He has only selected concepts, and relationships between them, and uses those to represent the real system.”

Jay Wright Forrester

(aka Father of Systems Dynamics)
Could you hold my balloon while I'm in class?
Significant Travel Time and Costs That Vary by Modes, Routes, and Origin-Destinations
Destination Choice (or *Do You Really Want to Shop at Nordstrom?*):
Downtown Plaza or Arden Fair Mall
Destination Choice (Maybe Pottery Barn too?): Sunrise or Roseville Mall
Individual and Household Attributes Drive Travel Choices
Activity Patterns
Use of Travel Infrastructure
Spatial Data

- Transportation
- Land Use
- Census Tracts
- Structures
- Postal Codes
- Raster Imagery
Types of Data Used by Travel Models

Surveys
- Travel Behavior Surveys/Diaries
- National Household Travel Survey
- Census
- American Community Survey
- On-Board Surveys
- On the Map
- Freight Analysis Framework
- Commodity Flow Survey

Observed
- Sensor and Loop-Detectors
- GPS data
- On the Map
- Parcel data from assessors
- Property information from commercial vendors
- Google Earth
- General Plan and Zoning
- Transportation Plans
Planning and Analysis
What to Expect?

• Best available data, theory, and methods to represent system effects of policies.
• Plausible direction and magnitude of change, but not precise predictions.
• Unbiased estimates that reasonably account for key policy effects in the system.
• Optimal approach given the need to take quick action to improve critical outcomes.