Minimalist Bicycle Modeling at PSRC

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Why Bike Modeling?

• PSRC travel models are great!
  ... but they’re not very sensitive to bikes
• Want to tweak our models to better answer policy questions related to:
  – Induced demand
    • Shifting paths and modes
  – Health
  – Safety
  – Benefit-Cost Analyses
**Model Flow**

- **Model Network**
- **SoundCast (Activity Based Model) <Mode Choice>**
- **Bicycle Trip Table**
- **Bicycle Network Impedance Factors**
  1. Adjacent Facility Type
  2. Bicycle Accommodations
  3. Intersections
  4. Slope
- **Extended transit assignment w/ Emme**
  - Link impedance as a perceived additional travel time
- **Bicycle Volumes and Skims**
Emme Assignment

Extended transit assignment

Runs strategy-based transit assignments with variants and saves the strategies for later analysis.

2. Times and costs

In-vehicle cost

Auxiliary transit time

Perception factor: @imped (30)

Type a number, or search for an attribute by ID or description.
• Impedance is a new metric sent into mode choice model, along with skims
• Applies to all time periods, values of time
• Update utility function to include impedance

Utility(Bicycle) = \( \beta_0 \) + \( \beta_1 \cdot (is\ Male) \) + \( \beta_2 \cdot (age\ over\ 50) \) + \( \beta_3 \cdot (destination\ mixed\ use\ density) \) + \( \beta_4 \cdot (origin\ mixed\ use\ density) \) + \( \beta_5 \cdot (destination\ employment\ density) \) + \( \beta_6 \cdot (bicycle\ impedance\ skim) \)
Calibration

- Calibrate mode choice model and impedance weights to reflect bicycle counts
- Many single-point counts and some automated bike-ped counters in the region
Advantages and Issues

Good
• No new model estimation
• Little additional data required
• Code development minimized

Less Good
• Single user impedance sensitivity
Comments and Suggestions?

http://res.cloudinary.com/sagacity/image/upload/c_limit,w_993/bike-stealing_lwmmlt.jpg