When Travel Demand Models Behave Badly

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June 30, 2020

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When TDMs Behave Badly

Agenda

• VMT in California
• Travel Demand Models and VMT
• Other Tools
  • Big Data
  • Routing and Logistics functions
  • Project Data
  • Survey Data
  • Geographical Information Systems (GIS)
  • Sketch Planning Tools

• Take-Aways
VMT in California

- LOS application has been tied to
  - Urban Sprawl
  - Impacts to active transportation
  - Induced demand

- VMT seeks sustainability and GHG reduction by
  - Denser infill development
  - Reducing single occupancy vehicles
  - Improved alternative modes (biking, walking, transit)

- VMT basis for a “transportation significant impact” determination
Travel Demand Models and VMT

• Their original design was not to forecast VMT
• Calculating VMT on a land use basis
  • Time intensive
  • Complex
  • Often indirect
    • 4-Step
    • Activity-Based
• Not a primary validation focus
• Truncation is a problem
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VMT TOOLBOX

- Travel Demand Model
- Routing and Logistics Methods
- Geographical Information Systems (GIS)
- Sketch Planning Tools (off-the-shelf)
- Sketch Planning Tools (custom)
- Big Data
- Qualitative (presumptions)
- Manual methods
Big Data

- Teralytics
  - Cell-phone triangulation
  - Origin-Destination by census tract
  - Provides trip purpose, time-of-day, and day of week
  - Large data sets

- Streetlight Data
  - Micro-level origin-destination data using location based services
  - Intuitive UI
  - INRIX/others
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**Project Data/ Routing and Logistics**

- TransCAD point to point routing
- Allows for O-Ds outside model boundaries
- Can supplement TDMs
- Can include more detailed roadway network
- Does not consider congested speeds
Survey Data

- Census data available that provides information about workforces including:
  - Employment O-D Stats
  - Job-to-Job flows
- Used to help estimate potential worker locations by industry
GIS

- Can be used for screening
- Can also be used to support qualitative analyses
- Used with limited project or land use information
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Sketch Planning Tools

VMT CALCULATOR

TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES

AIR QUALITY OUTPUT

COMMUNICATION & INFORMATION STRATEGIES

MEETING STRATEGIES

COMMUTABILITY STRATEGIES

SEGREGATION STRATEGIES

WEIGHTED DEMAND STRATEGIES

REGULATORY STRATEGIES

2020 Annual Meeting
Joint Western & Mountain Districts
Sketch Planning Tools

Sketch Planning Differences

• Same assumptions
• 3 different models
• Significant results differences

Source: https://escholarship.org/uc/item/08k3q8m5
Take-Aways

• TDMs work well for many uses, but still require other methods to fully account for trip lengths
• A variety of tools can be used to determine VMT based on analysis needs
• There isn’t one tool/method that works for all land uses
• Be skeptical of methods and sketch planning tools
• Work collaboratively to provide the best solution