



Illinois Statewide Model Development

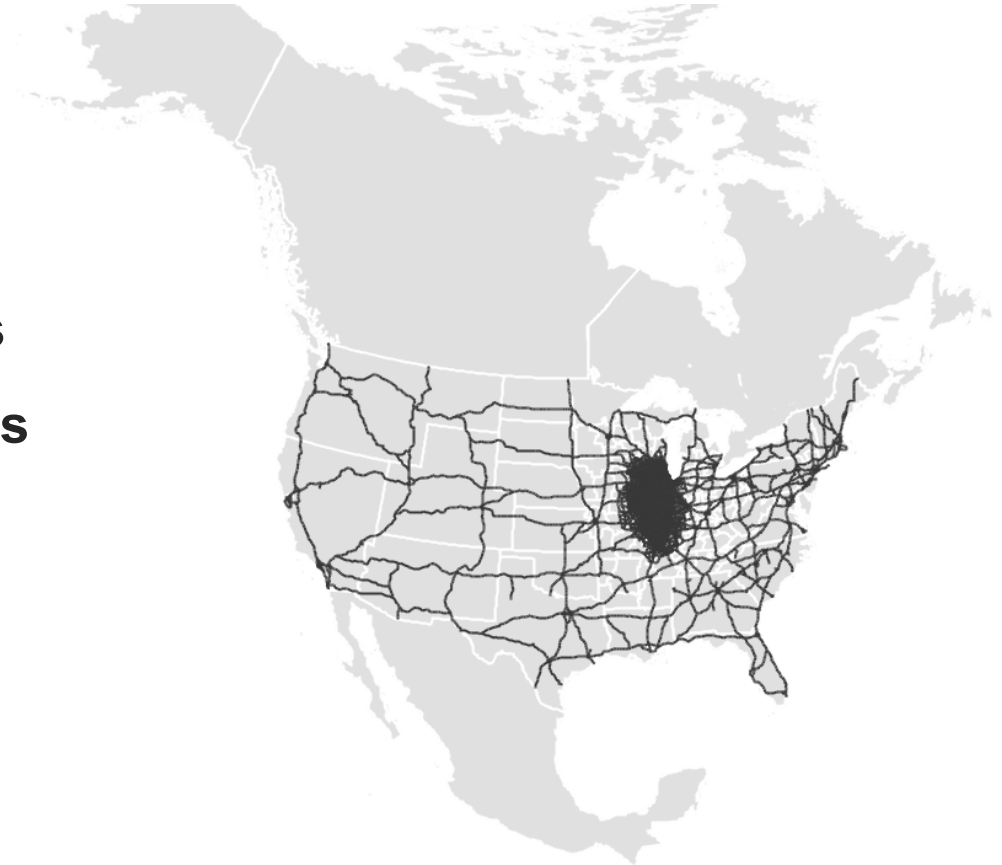


with CDM Smith, Inc. & Lochmueller Group, Inc.

January 11, 2022

Illinois Model Overview

- **First Version (2021)**
- **Passive Data/No Survey**
- **Advanced Trip-Based**
- **Commodity Flow Models**
- **National Network + Zones**
- **Model Outputs**
 - Trip/Commodity Flows
 - Traffic Volumes
 - Speeds/Delays
 - Mode Shares
 - Emissions
 - Crashes



Passive Data Overview

Auto LBS Data

- 5.5M monthly active users
(42% of population)
- 1M daily active users
(7.6% of population)

Truck GPS Data

- 711k unique trucks (IL)
- 1.1B sightings
- 6.0M trips
- 360M VMT



Other Data Sources

Passenger Surveys

- NHTS
- CMAP Survey
- CTPP

National Household Travel Survey

Understanding How People Get from Place to Place



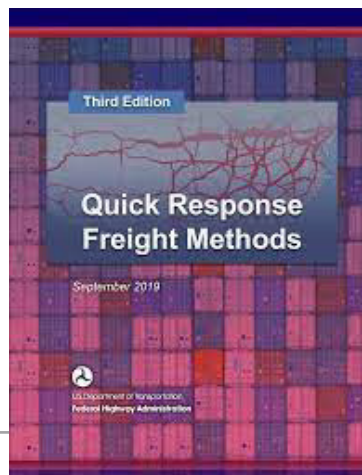
Statewide Model Parameters

- Michigan
- Tennessee

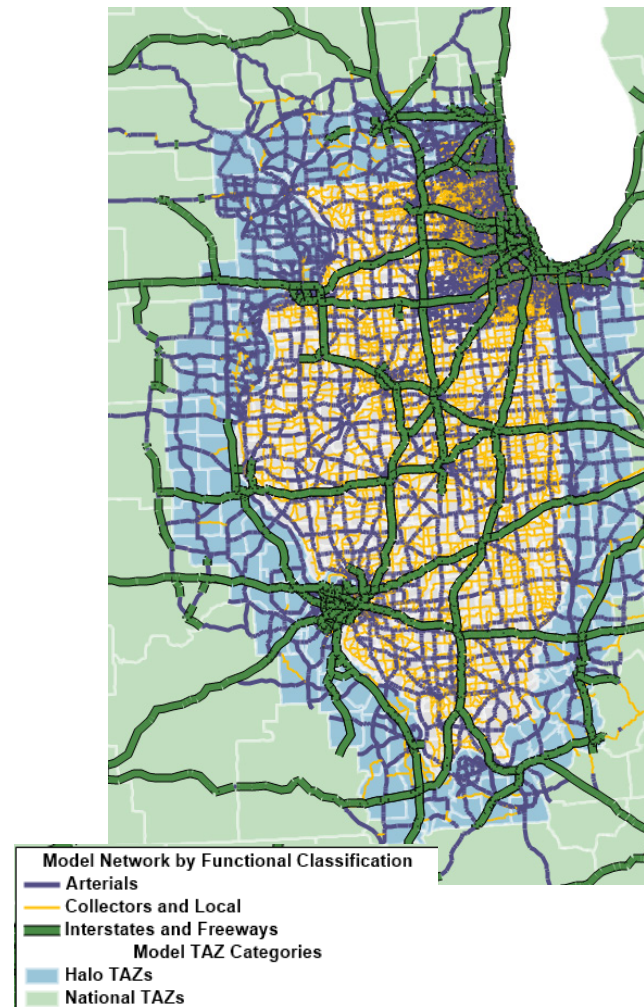
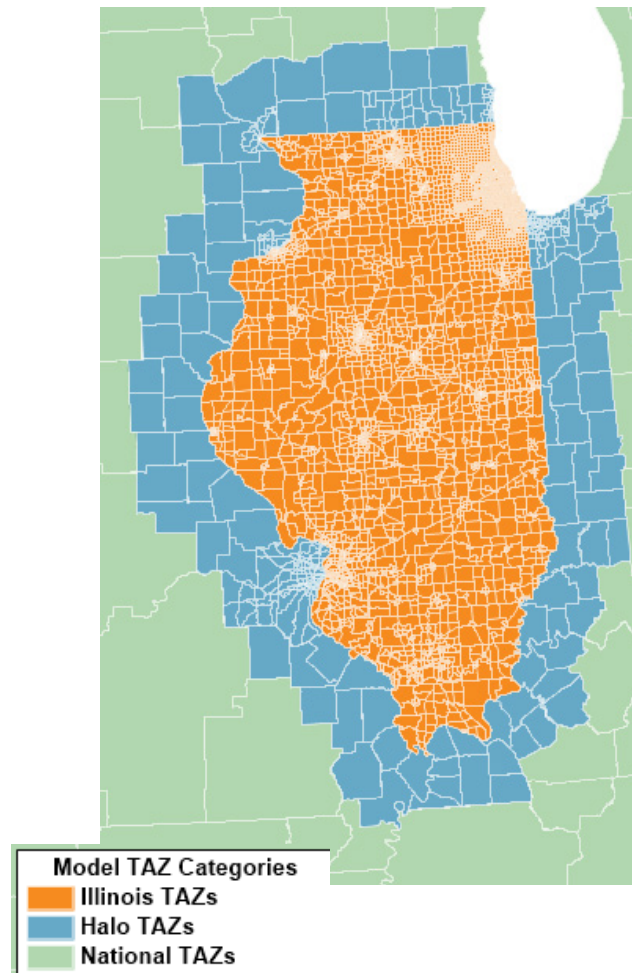


Freight Characteristics

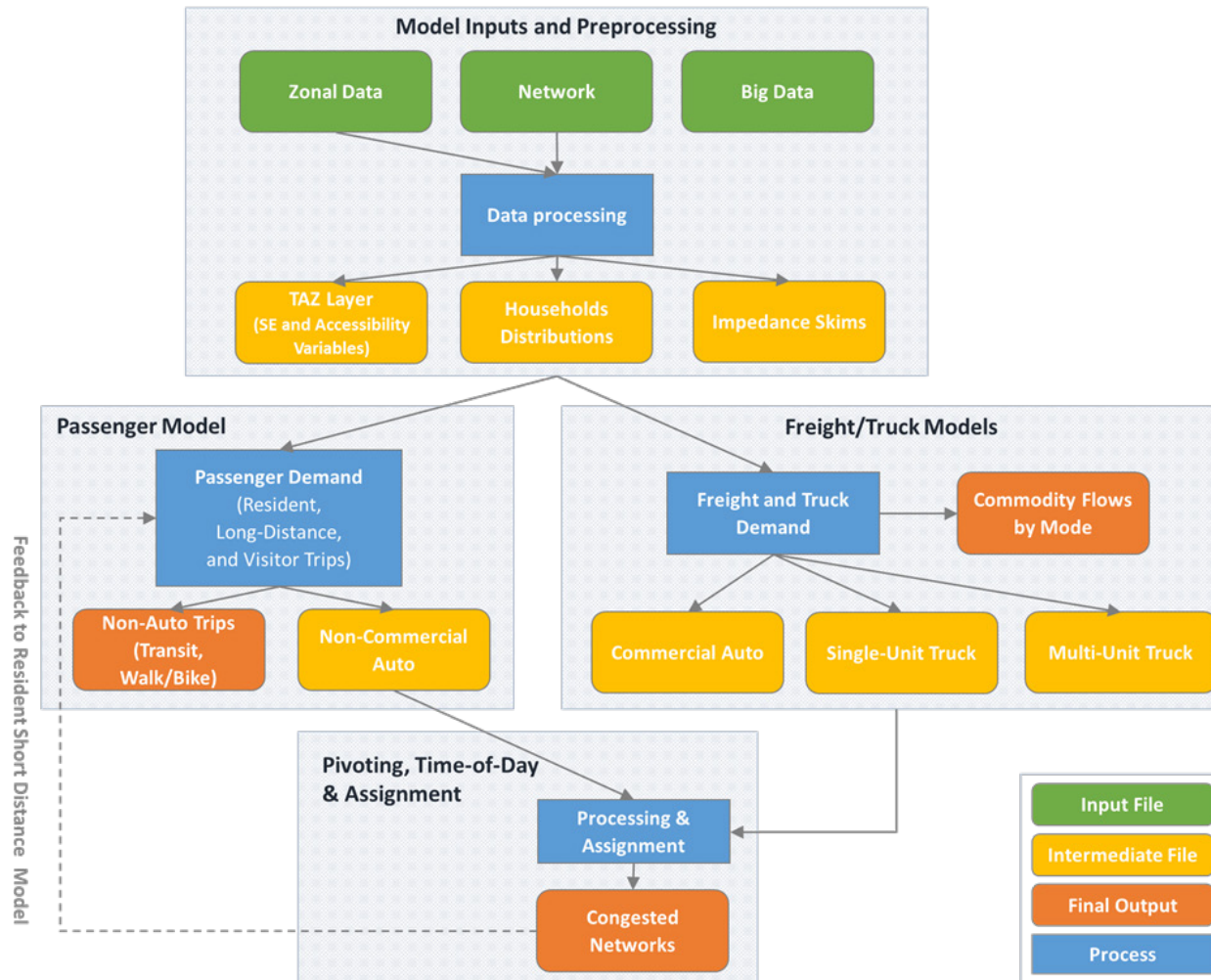
- FAF4
- QRFM III Manual



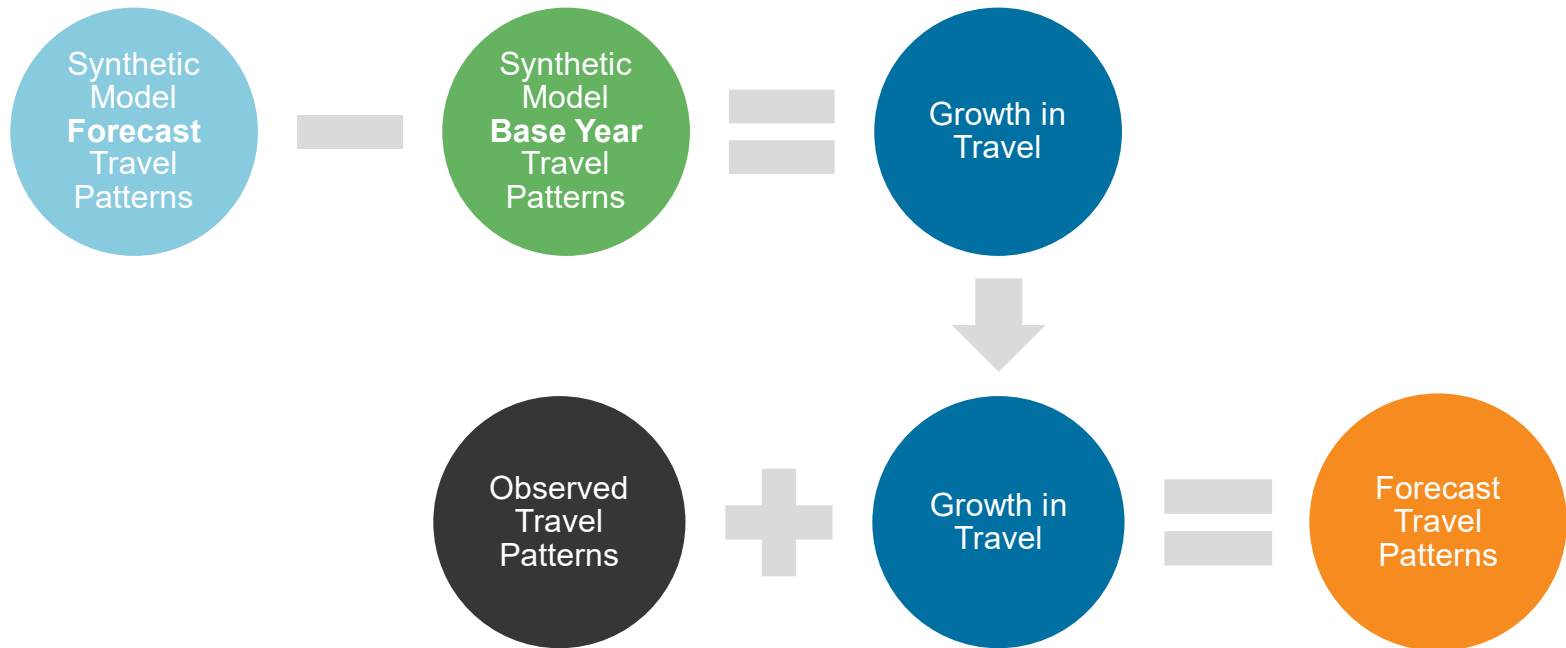
Network and Zone System



Model Architecture



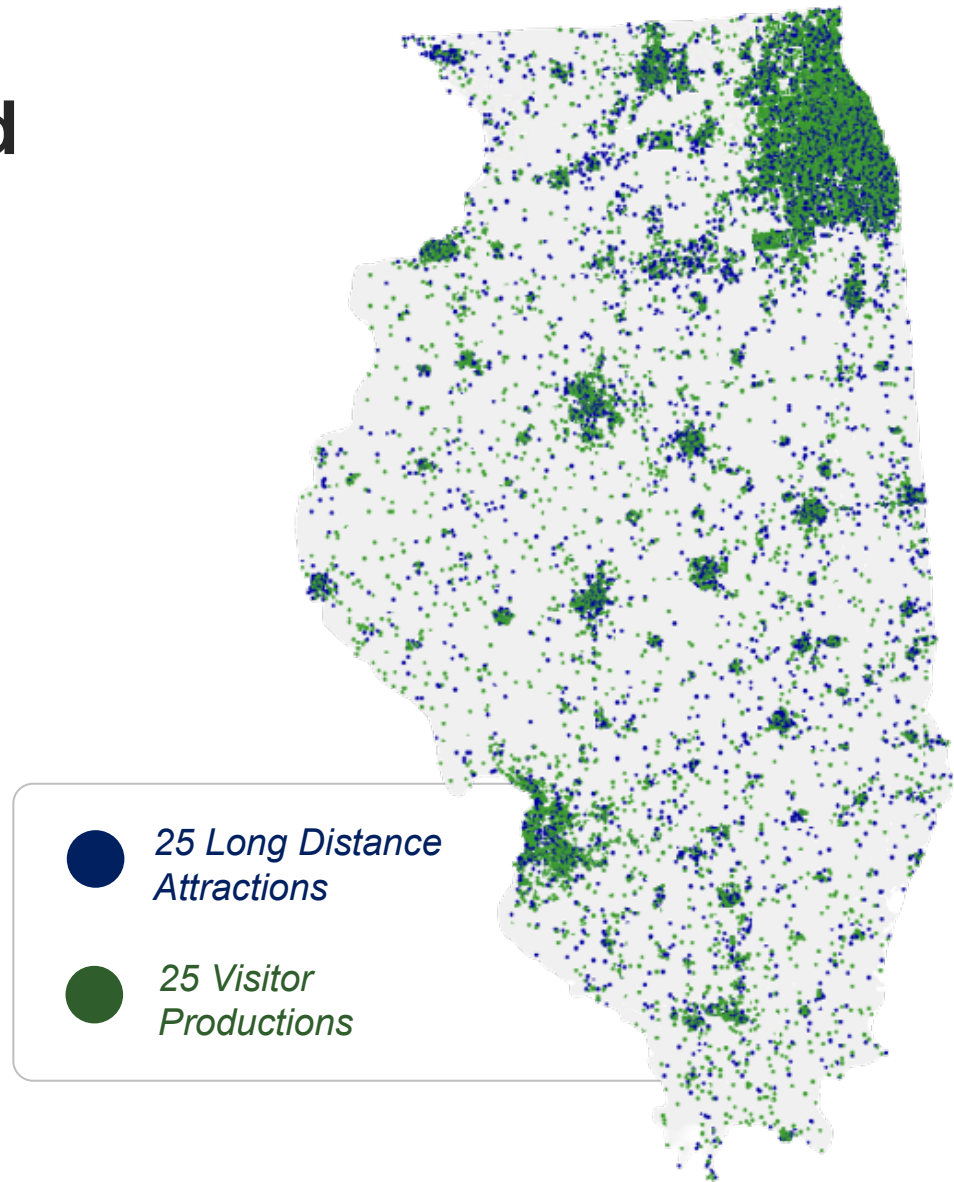
Incremental Forecasts



- Synthetic models are validated to observed conditions in the base year
- Observed travel patterns are from big data

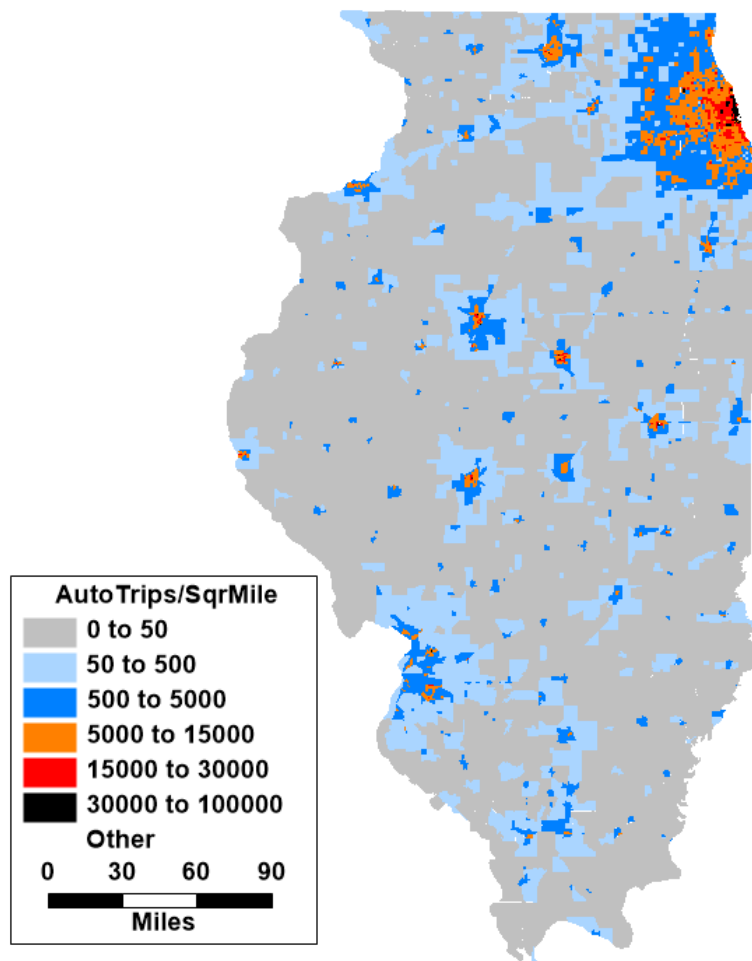
Passive Data for Long Distance and Visitor Model Development

- Derived from rMerge data
- Visitor model uses Long Distance Attractions

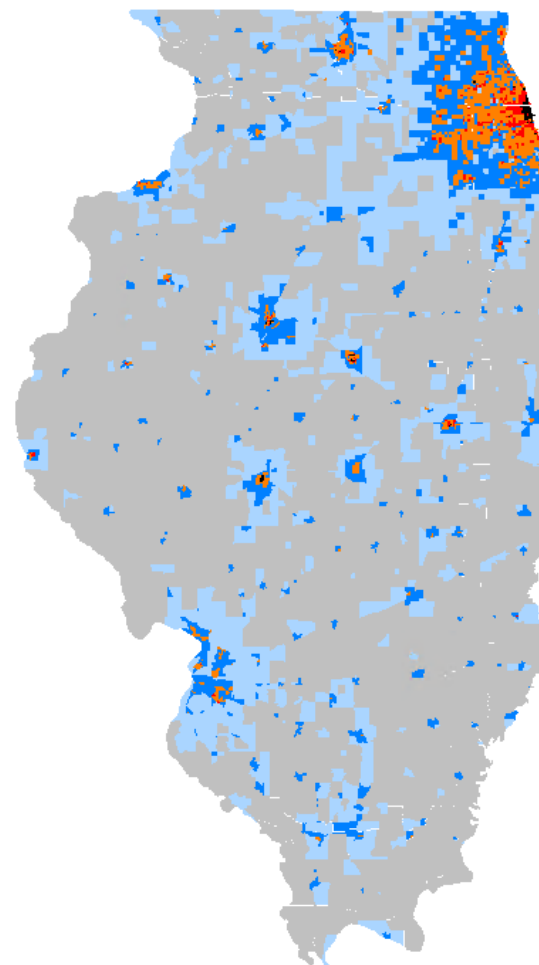


Passive Data for Model Calibration

Passive Data Trips



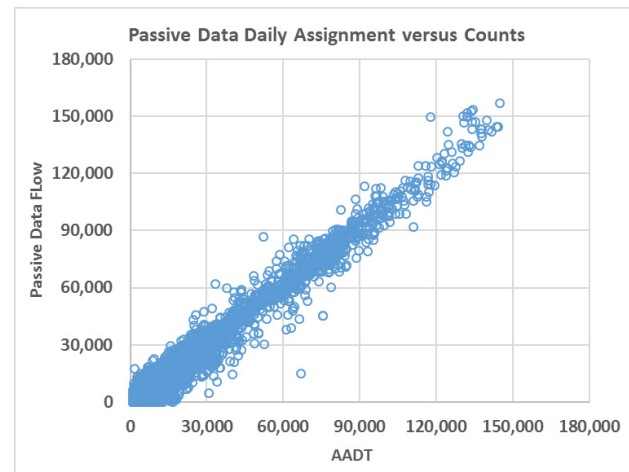
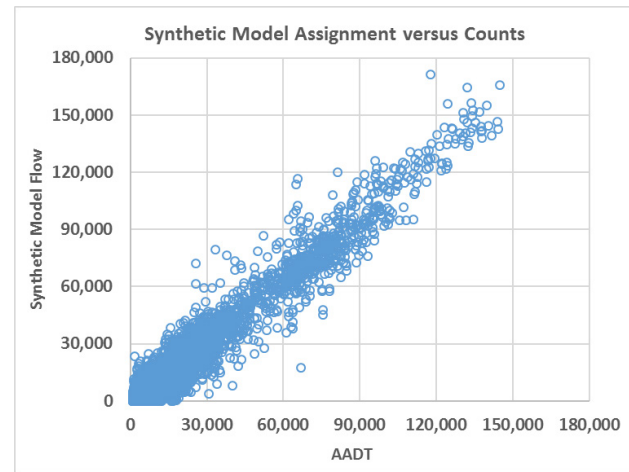
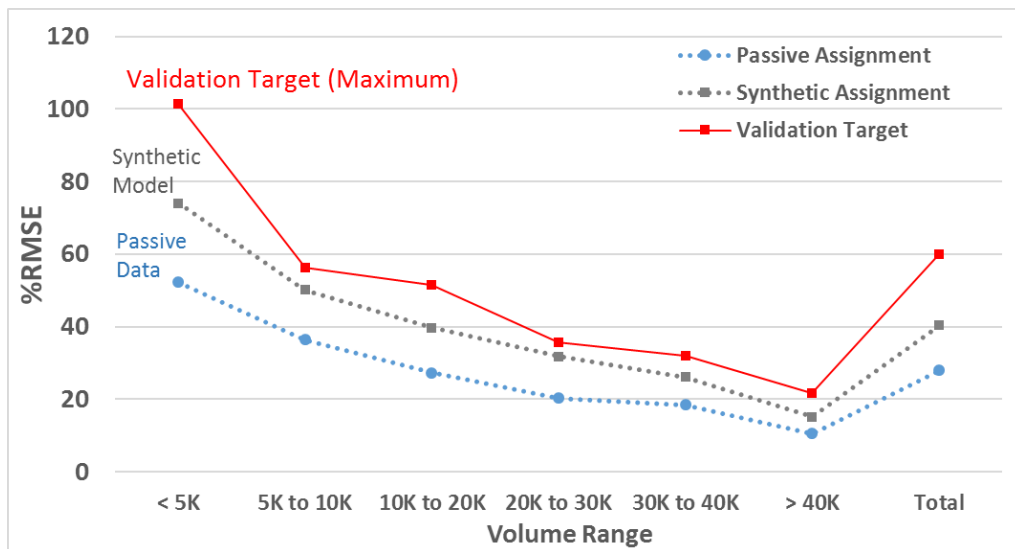
Synthetic Model Trips



≈

Synthetic Model and Passive Data Validation

Validation to Traffic Counts



Model Outputs and Applications

Key Outputs

- Passenger and Freight Flows
- Mode Shares
- VMT, VHT, and Operating Costs based on network volumes (Auto, SUT, MUT)
- Emissions
- Crashes
- Accessibility

Priority Use Cases

- Corridor Planning
- Freight Planning
- Economic Analysis (REMI Integration)
- Project Prioritization
- MPO Support
- Rural Area Forecasting





the science of **insight**



Illinois Department
of Transportation

Stephen Tuttle

SENIOR CONSULTANT

Stephen.Tuttle@rsginc.com

312.605.9203

Maren Outwater

VICE PRESIDENT

Maren.Outwater@rsginc.com

619.269.5263

Sheng Chen

TRAVEL DEMAND MODELING AND
FORECASTING SECTION CHIEF

Sheng.Chen@illinois.gov

312.793.1491