SCAG MTF TransCAD Presentation

Caliper Corporation

24th March, 2021

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TransCAD 9.0

Some Recent Caliper Project Work

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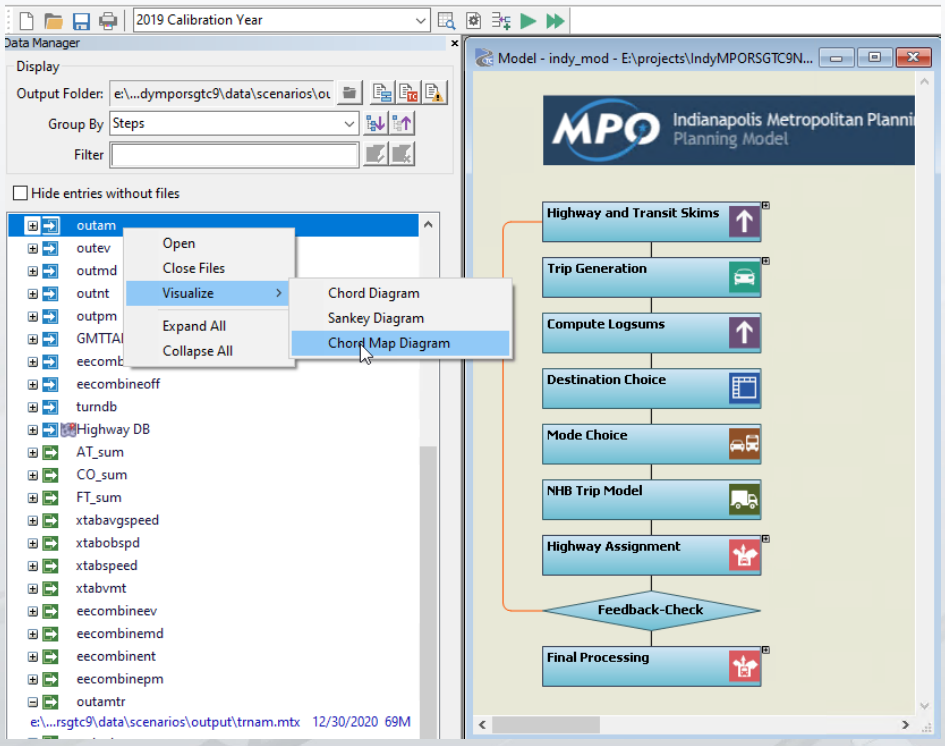
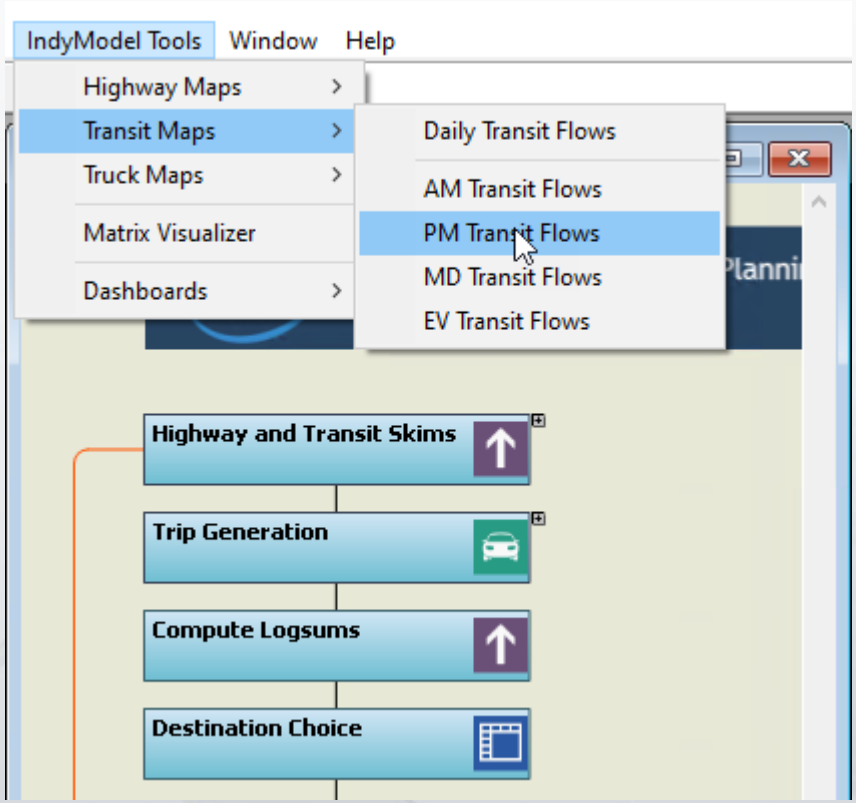
New Features in TransCAD 9.0

- Flowchart Menus, Toolboxes, and Organization
- Web Diagrams
- Dashboards
- Destination Choice Estimation
- Population Synthesis
- Modeling API
- Support for R and Python

New Features in TransCAD 9.0

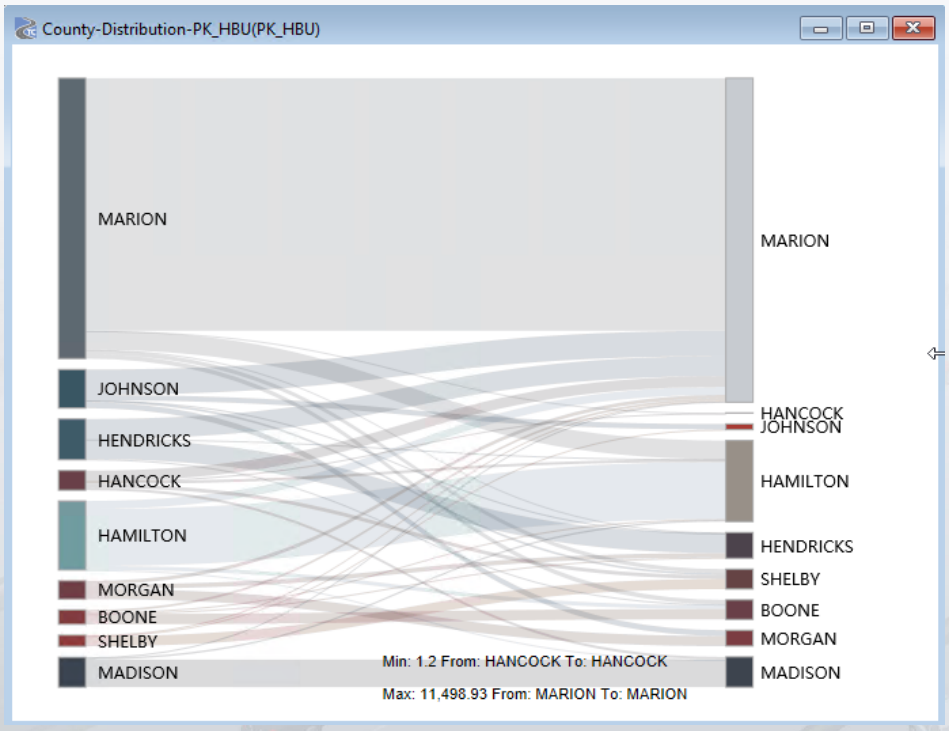
- **Flowchart Innovations**

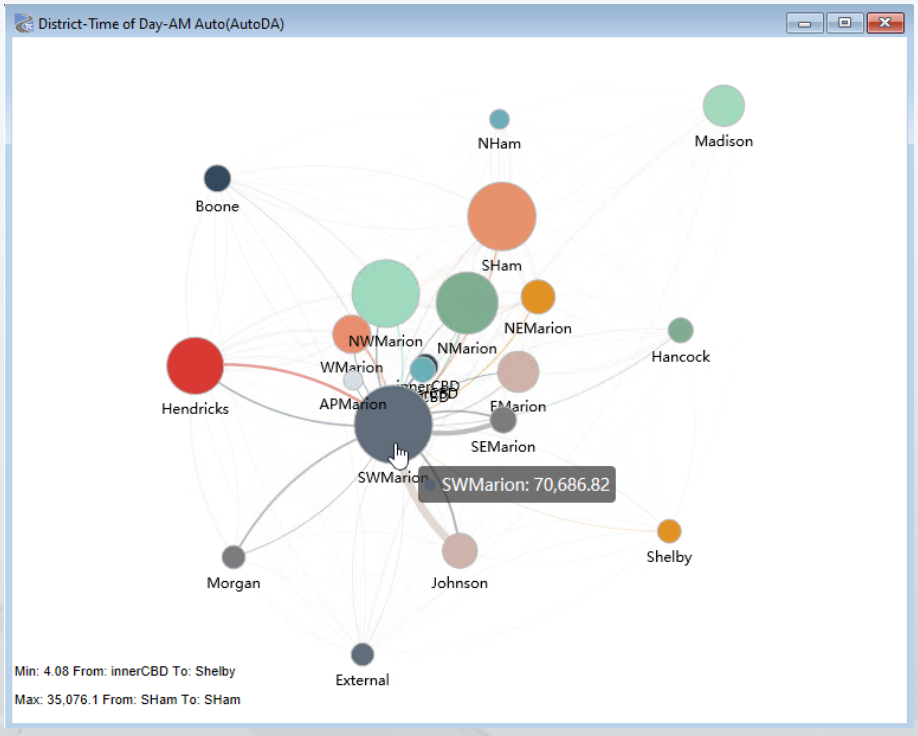




New Features in TransCAD 9.0

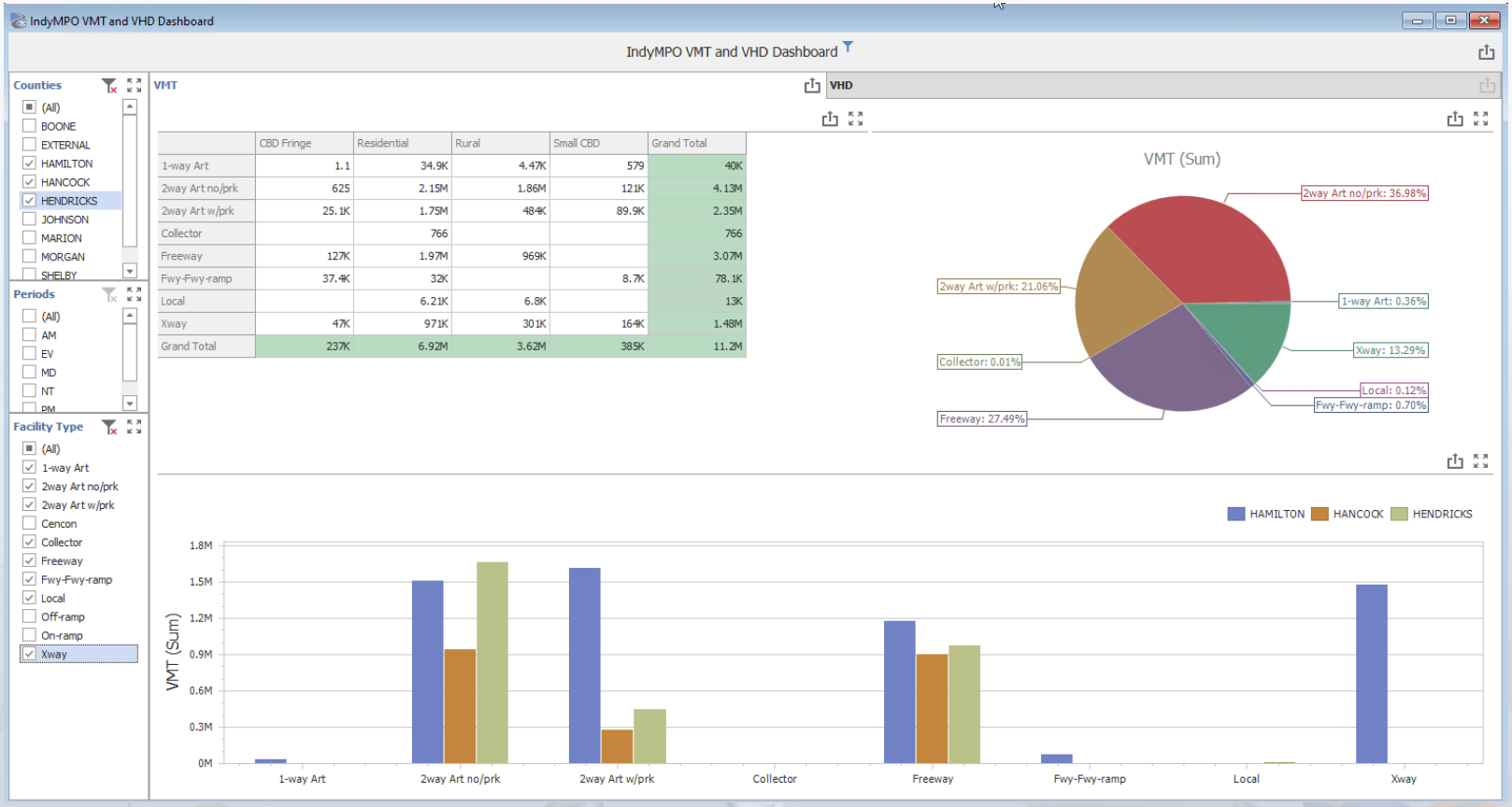
- **Web Diagrams**





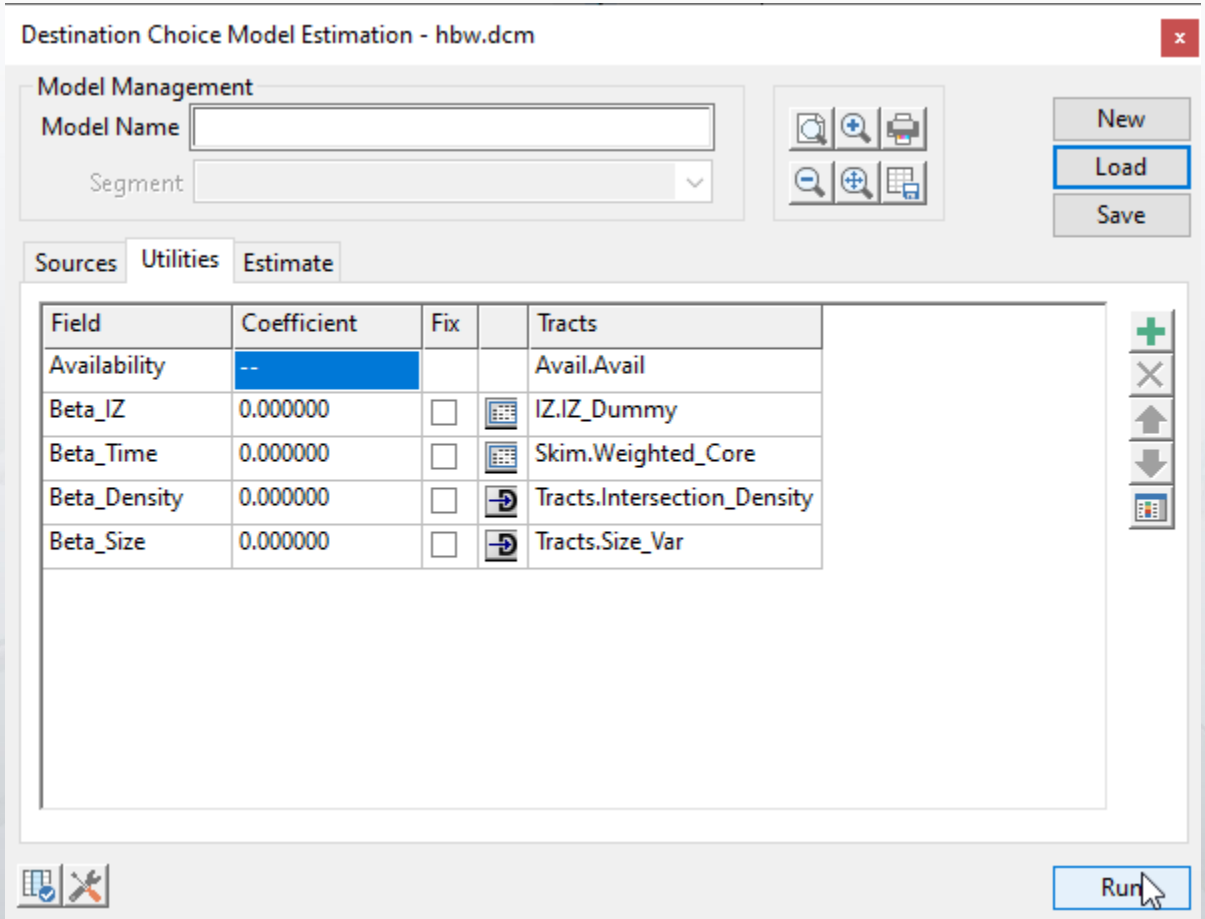
New Features in TransCAD 9.0

- **Dashboards**



New Features in TransCAD 9.0

- **Destination Choice Model Parameter Estimation**



Starting Model Parameters

Parameter	Value	Scale	Fixed	Description
Beta_IZ	0.0000	1.0000		
Beta_Time	0.0000	206.9155		
Beta_Density	0.0000	383.2535		
Beta_Size	0.0000	9.8031		

Maximum likelihood converged after 10 iterations.

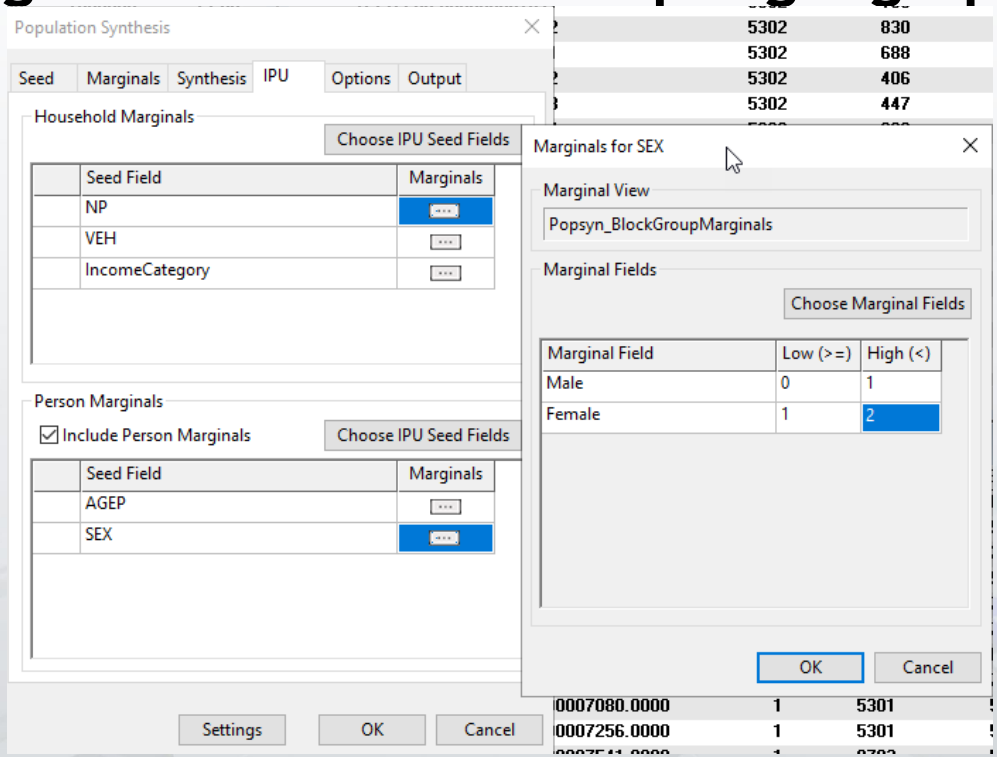
Estimation results

Parameter	Estimate	Std. Error	t Test	Global Corr
Beta_IZ	0.554649	0.134621	4.1201	9.8031
Beta_Time	-0.090034	0.003061	-29.4179	9.8031
Beta_Density	-0.001715	0.000585	-2.9305	9.8031
Beta_Size	0.743687	0.036190	20.5497	9.8031

Log-Likelihood at Zero	-4381.8129
Log-Likelihood at Start	-4381.8129
Log-Likelihood at End	-3266.9062
-2 (LL(Zero) - LL(End))	2229.8133
-2 (LL(Start) - LL(End))	2229.8133
Asymptotic rho squared	0.2544
Adjusted rho squared	0.2535

More Effective and Rapid Population Synthesis

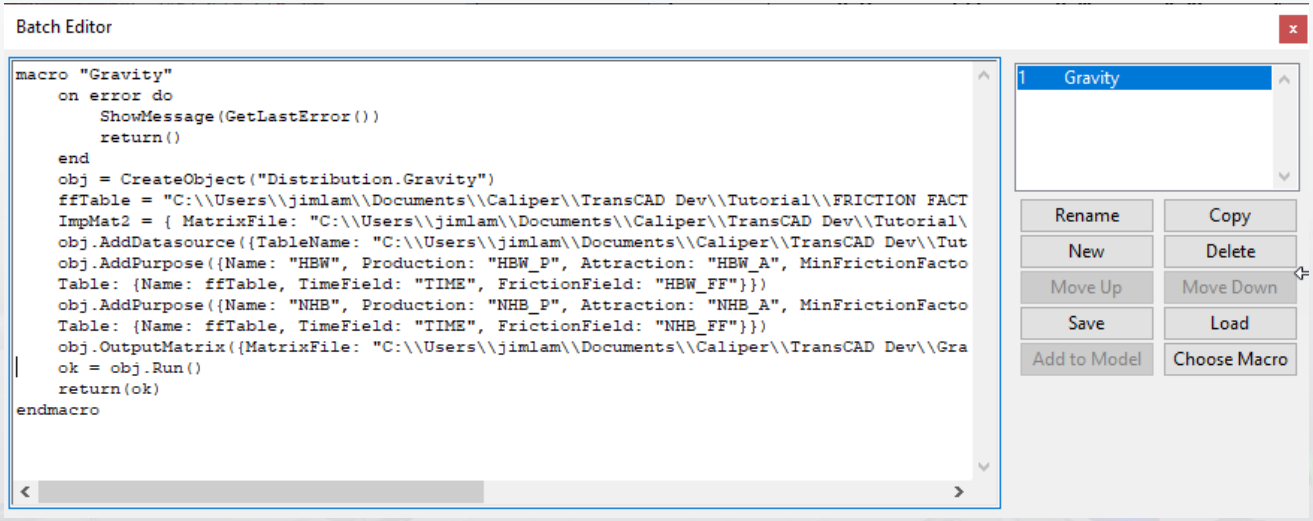
- **Support for matching both household and population marginals as well as multiple geographies.**



- **Create synthetic populations in minutes rather than hours. Update synthetic populations for scenarios.**

Python and R Integration

- Updated API for programming procedures and common TransCAD operations in Python and R
- Integration into Batch Mode evolving



Python and R Integration

- caliperR
  - An R package for running Caliper software
  - Access to any GISDK function or Macro (including your own)
  - Convert caliper views into data frames (and back again)
  - Bring matrices into the R working environment (e.g. skims)
  - Control GISDK classes
  - Fully documented including vignettes
- CaliperPy Module
  - Lets you access not only TransCAD, but also the .NET framework via any program written in 3.x
  - Access to GISDK macro calls, binary and other tables, logging, debugging, vectors, matrices and procedures

Updated and New Datasets

- ACS 2015-2019
- 2020 Census Block geography
- New Caliper national road layer designed for representing external networks for MPOs and use in statewide models and national models
- Up-to-date HERE data for CA and nationwide available for license with all streets, travel speeds, and points of interest
- Lane level networks for U.S. Interstates and major roads of many cities (for TransModeler).

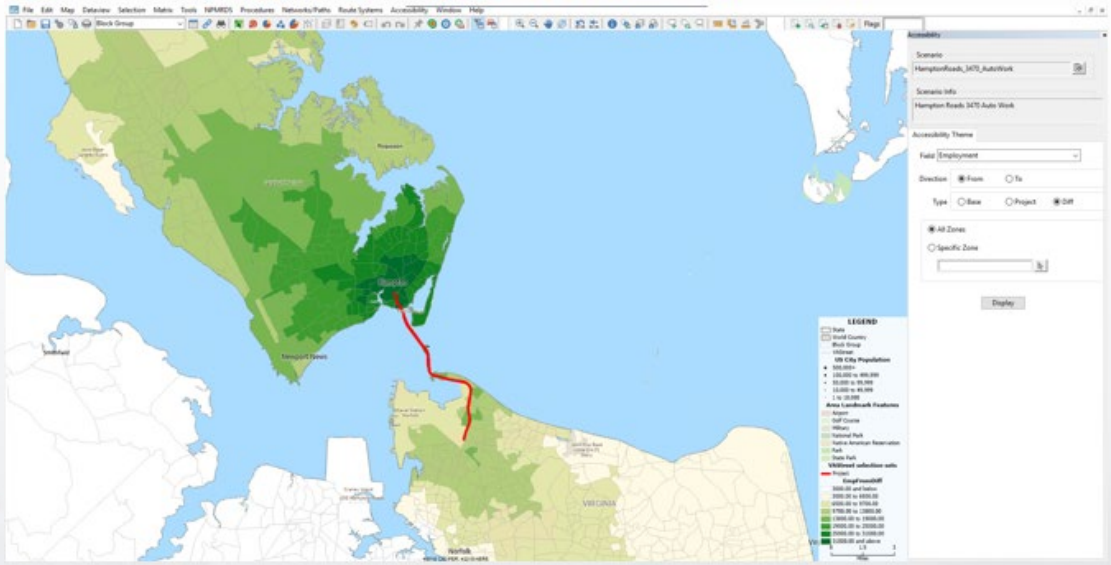
Some Recent & Current Caliper Project Work

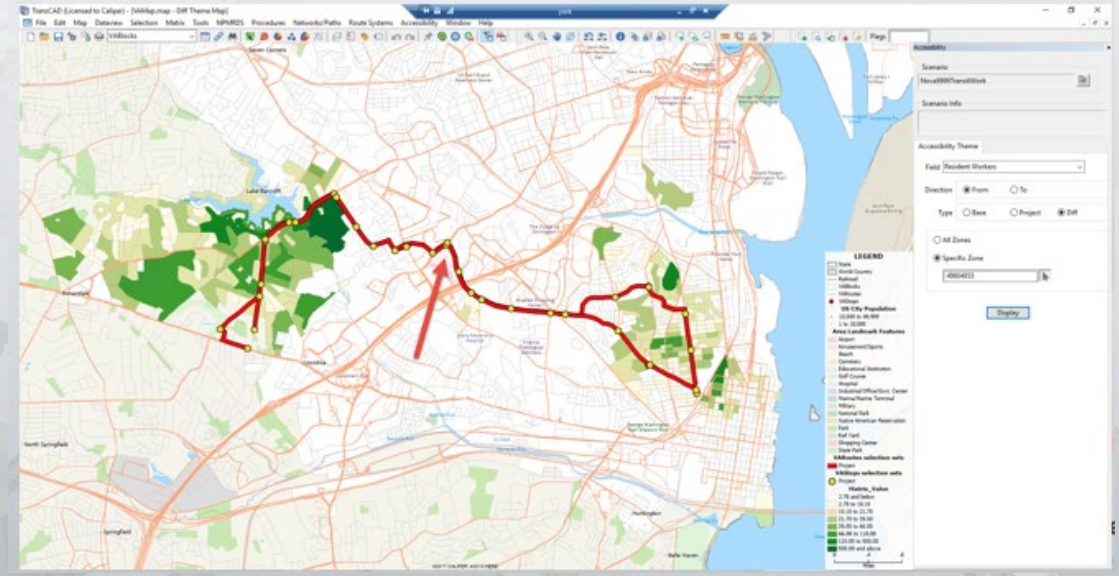
- NPMRDS
- Virginia DOT Accessibility Calculator
- Activity Based Modeling
- Dynamic Traffic Assignment
- FHWA Freight Analysis Framework

VDOT Accessibility Calculator

- Performs SmartScale Project Analysis
- Covers all of Virginia plus 30 mile radius
  - Over 2 million HERE streets, 260,000 blocks, 150,000 points of interest
  - Auto, Transit, Walk and Bike accessibilities
  - Compares project vs no project accessibilities to employment and points of interests

VDOT Accessibility Calculator



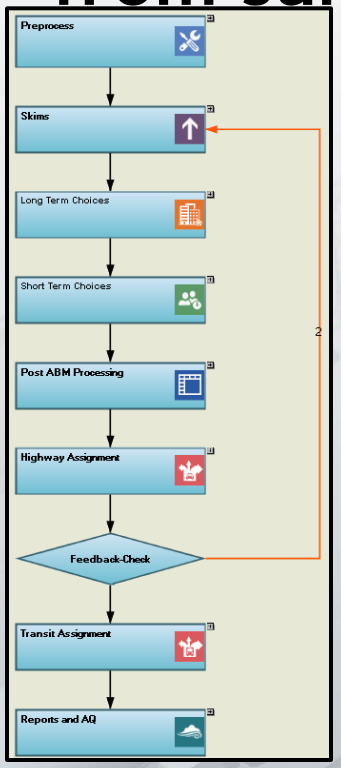


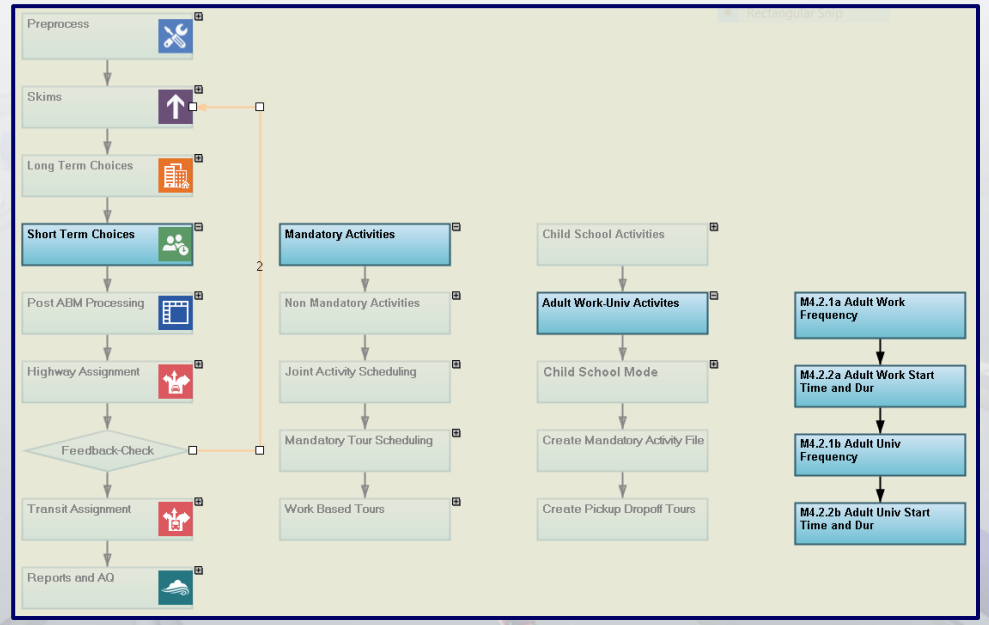
New Native TransCAD ABM Software

- High performance model components
- Can flexibly model all types of ABMs
- A uniquely capable and easy to use UI
- Many types of data visualization
- First implementation is for the three Central CA Coast MPOs

Central Coast ABM

- A more realistic choice structure
- Achieves model consistency w/o iteration
- Model components successively estimated from survey data rather than asserted.





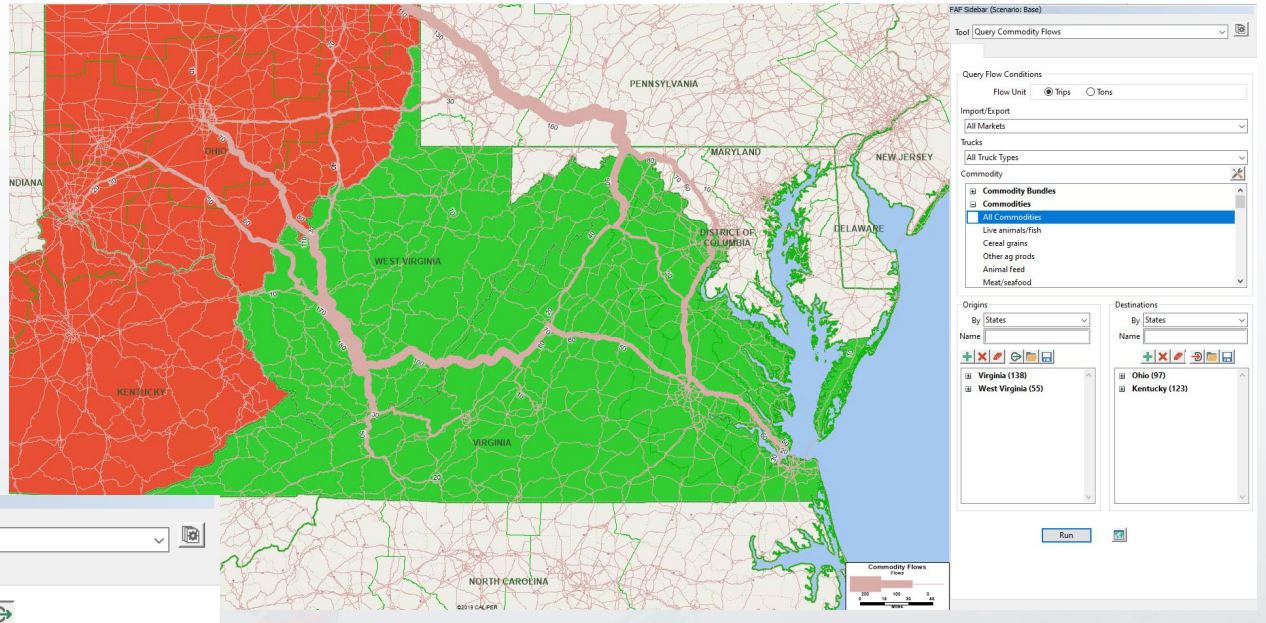
Dynamic Traffic Assignment & Simulation

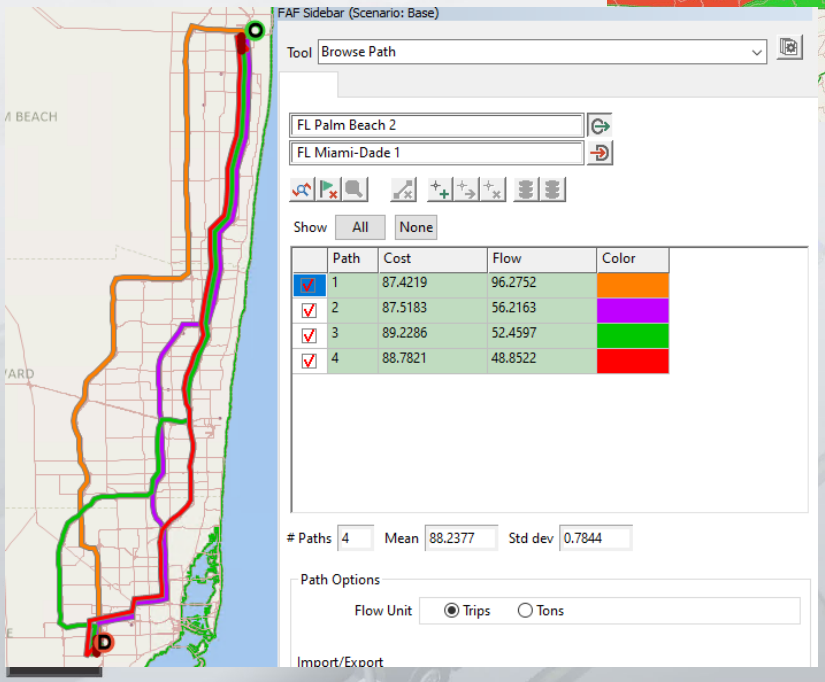
- Many successful and unprecedented wide-area DTA deployments with TransModeler
- Microscopic and Mesoscopic Models with Dynamic Pricing for Managed Lanes
- Support for Connected and Automated Vehicle Alternatives
- TransDNA for the largest meso DTAs
- ABM-DTA Integration now supported

FHWA Freight Analysis Framework

- Disaggregates FAF 5 OD Tonnages into truck trips by counties, subcounties, and ports
- Assignment using logit multi-path assignment method
- Visualizer displays flows and paths by commodities at county, FAF, and state level

FHWA Freight Analysis Framework





For More Information

- See our publications

https://www.caliper.com/press/transportationlibrary.htm

- Our most recent newsletter
  https://www.caliper.com/transcad/newsletter/winter-2020-2021.htm

- Email Jim Lam (jimlam@caliper.com) or
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