

Regional Economic Models, Inc.

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# Exploring the Capabilities and Features of REMI TranSight

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# Presentation Objectives

- About REMI and TranSight
- Custom Results
- TDM Integration
- Benefit-Cost Analysis
- Effective Distance Scenarios
- [Model Demo] TranSight 4.3: Features Highlights

# About Us

Regional Economic Models, Inc. (REMI) was founded in 1980 on a transformative idea: ***government decision-makers should test the economic effects of their policies before they're implemented.*** We are the nation's leader in dynamic local, state and national policy modeling.

Our clients use REMI models to perform rigorous economic analysis that critically influences local, state and national policies.

Our team of research economists and software developers are dedicated to continued model innovation.

Our success is measured by the success of our clients. We provide unlimited expert and professional technical support to our users.

# What is TranSight?

**TranSight** is the premier software solution for comprehensive evaluations of the total economic effects of transportation policy. Decision makers depend on TranSight to demonstrate the economic contributions of transportation investments.

TranSight is also constructed with extensive data on:

→ Income      → Employment      → Demographics      → Output

# TranSight Applications

**TranSight depicts the effects of transportation improvements on employment and economic development.**

Our users rely on TranSight to validate their:

- Long-range Planning
- Project Prioritization
- Economic Impact Analysis
- Transportation Financing
- TIP and STIP Planning

# “ Model Methodology

REMI's 35-year history of rigorous academic research and software development has led to the development of the industry standard in macroeconomic research methodology:

**General Equilibrium**  
**Input-Output**  
**Econometrics**  
**Economic Geography**

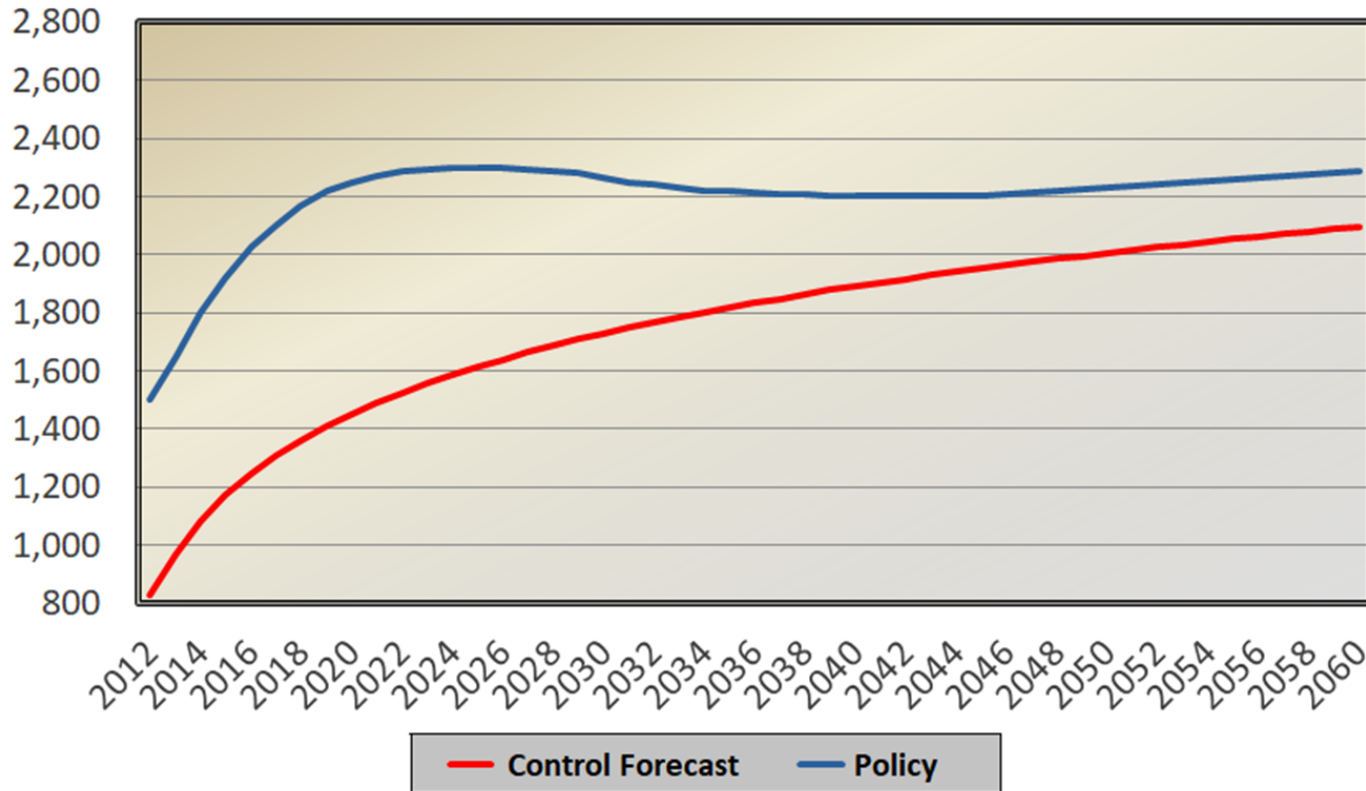


**Integrated REMI  
economic modelling  
approach**

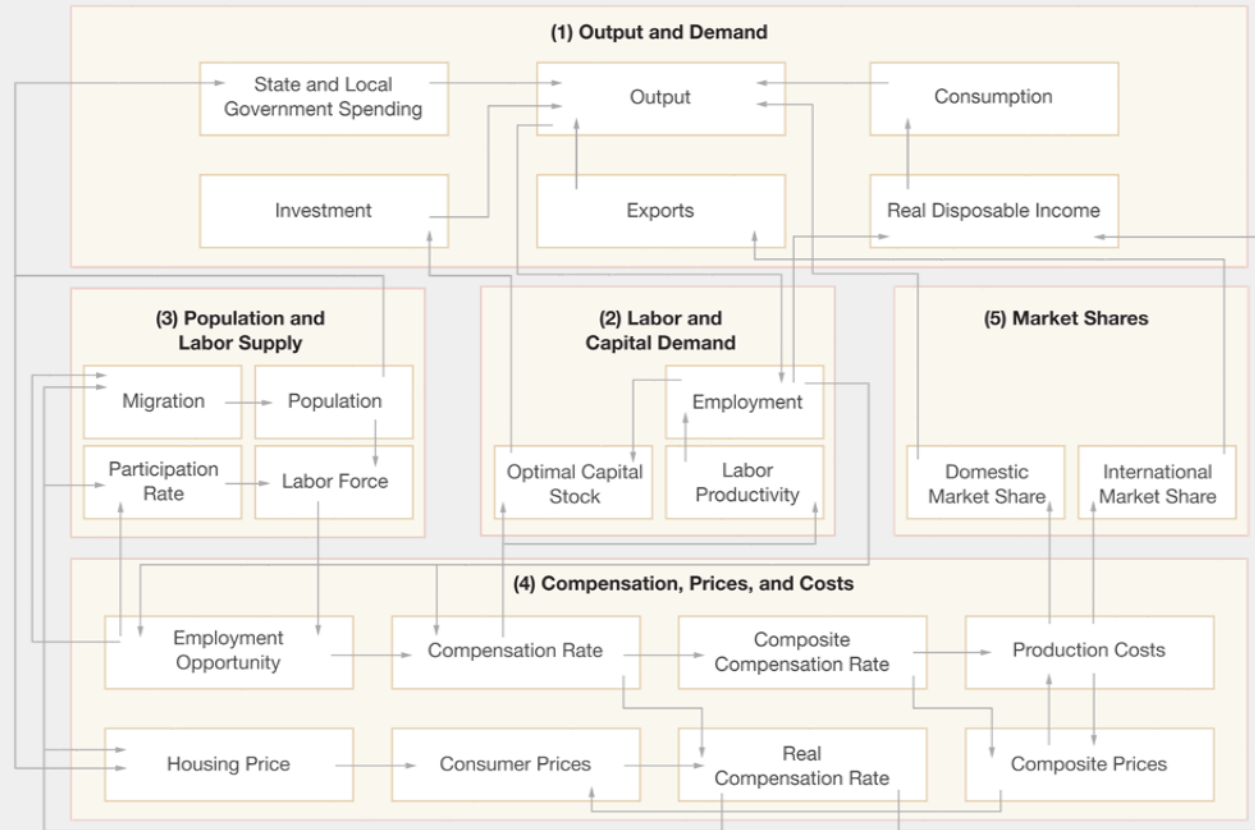
Our clients include:

- AECOM
- Michigan Department of Transportation
- Cambridge Systematics, Inc.
- Illinois Department of Transportation
- Atlanta Regional Commission (ARC)
- Southern California Association of Governments (SCAG)
- New York State Department of Transportation
- United States Army Corps of Engineers Great Lakes District
- Houston-Galveston Area Council (H-GAC)

# Dynamic Analysis



## REMI Model Linkages (Excluding Economic Geography Linkages)



# Model Structure

# Key Advantages of TranSight

## Proven Accuracy

Validated by REMI's peer-reviewed model equations, TranSight can answer “*what if...?*” questions about your economy by producing various forecasts and impact analyses of transportation investments.

## Intuitive Software

TranSight is a desktop application with extensive user service and support functions. These are combined with unlimited assistance and professional training provided by REMI's expert staff members.

## Analysis of Key Variables

TranSight offers a comprehensive suite of variables to provide the most thorough and robust understanding possible of the macroeconomy.

✓ **Employment**    ✓ **GDP**    ✓ **Income**    ✓ **Output**    ✓ **Demographics**

# Static vs. Dynamic Analysis

## Static Analysis

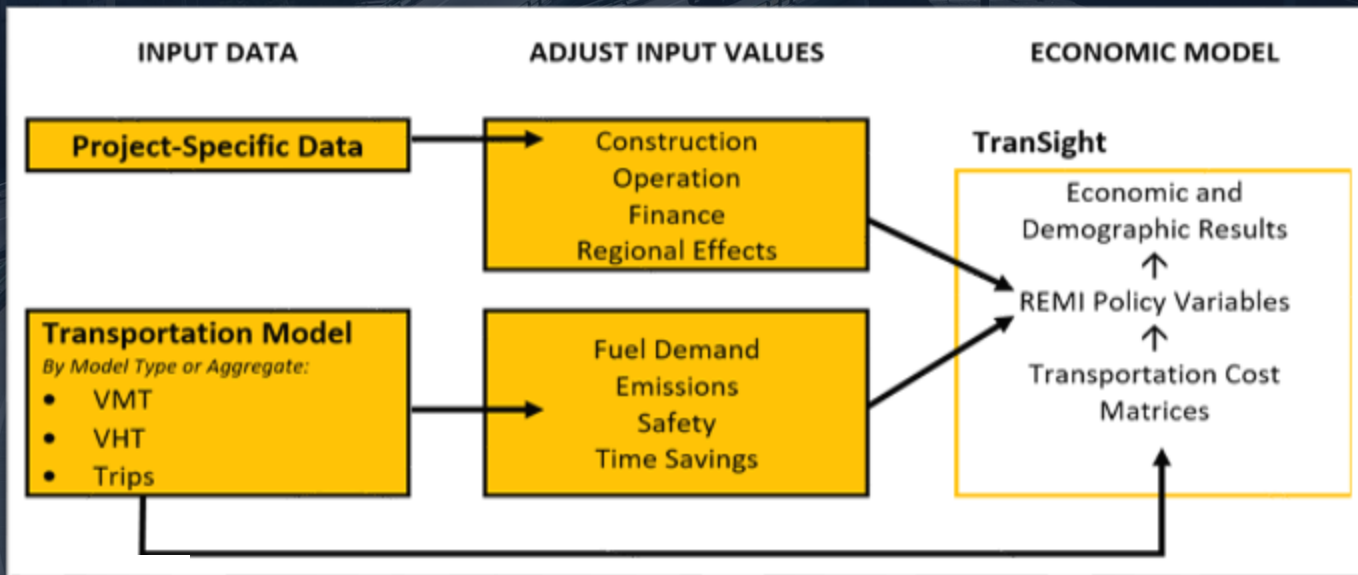
- Construction spending
- O&M spending

## Dynamic Analysis

- Construction spending
- O&M spending
- Travel time savings
- Emissions savings
- Safety improvements
- Population changes
- Fuel expenditures
- Non-fuel VOCs
- Network speed improvements
- Access to labor
- Access to intermediate inputs

**FHWA:** TranSight is among the “best equipped to estimate *productivity* impacts”\*

# Model Structure





# Custom Results

# Constant Factor Adjustment

- Ability to create custom results by additively or multiplicatively adjusting a set of constant factors.
- Can be specified for any dimension or combination of dimensions relevant to the base variable
- i.e. region, industry, year, etc.

# Constant Factor Adjustment

Custom Result Builder

Constant Factor Adjustment

Base Variable

Employment

Select From List

Custom Result Units

Full Time Employment

Detail Dimensions

☒ Region
 ☒ Industry
 ☒ Year

Adjustment Operator

☐ Additive  
☒ Multiplicative

AutoFill with TO Coefficients

Region	Industry	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Forestry and Logging; Fishing, hunting an...	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Support activities for agriculture and fores...	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Oil and gas extraction	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Mining (except oil and gas)	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Support activities for mining	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Utilities	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Construction	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Wood product manufacturing	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Nonmetallic mineral product manufacturing	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Primary metal manufacturing	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Fabricated metal product manufacturing	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Chicago Metropolitan Area		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of East North Central	Machinery manufacturing	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
Rest of the U.S.		0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700

Save

Cancel

# Custom Equation Definition

- Custom results that are defined by a user-specified equation.
- More simply, two result variables can be combined
- Chaining multiple custom result variables together can create more complex equations
- The equation previewer shows how the variables are fitting together.

# Custom Equation Definition

Custom Result Builder

Custom Equation Definition

Base Variable

Population

Select From List

Base Variable Units

Individuals

Change Units

Interacting Variable

International Migrants

Select From List

Interacting Variable Units

Individuals

Change Units

Interaction Operator

☐ Addition

☒ Subtraction

☐ Multiplication

☐ Division

Combined Result Units

Individuals

$$[New\ Custom\ Result] = (Pop101_{c,r,g} - InternationalMig18_{c,r,g})$$

*For Age c, Race r, Gender g*

Click variables to view descriptions

Save

Cancel

# Weighted Detailed Spreading

- Custom results where numbers are disaggregated according to a user-specified weighting.
- Base result variables can be spread along any available detail dimension
- Weighting factors are entered for each new detail subcategory according to user's outside research

# Weighted Detailed Spreading

Custom Result Builder

Weighted Detail Spreading

Base Variable

Gross Domestic Product (GDP)

Select From List

Spreading Dimension

☐ Total

☒ Region

☒ Year

Dimension Label

Dimension Label (Optional)

Spreading Tools

Synchronize Subcategories

Add Subcategory

Delete Subcategory

Open In Grid

Spreading Categories and Weights

Detail Category	2021	2022	2023	2024	2025	2026	2027	2028	2029
Chicago Metropolitan Area	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Rest of East North Central	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Rest of the U.S.	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Save

Cancel

# TDM Integration

Travel Demand

Baseline

Adjusted

Select Baseline

Import Baseline

View Baseline Travel Demand

View Baseline Parameters

Select Adjusted

Import Adjusted

View Adjusted Travel Demand

View Adjusted Parameters

Advanced Parameters

Add to Inputs

Cancel

Select a method for entering your Baseline Travel Demand data. The Baseline data should represent your transportation network as you would forecast it without any special projects or changes besides regular maintenance.

Option	Information
<input checked="" type="radio"/> Import from Travel Demand model	<div>Add new Layout</div>
<input type="radio"/> Default CSV (Annual values)	<div></div>
<input type="radio"/> Import from a previously saved .tdd file	
<input type="radio"/> Enter data manually	

# TDM Integration

Travel Demand

Baseline

Adjusted

Select Baseline

Import Baseline

View Baseline Travel Demand

View Baseline Parameters

Select Adjusted

Import Adjusted

View Adjusted Travel Demand

View Adjusted Parameters

Advanced Parameters

Add to Inputs

Cancel

Baseline File/Folder Imported:

Export to Travel Demand File (\*.tdd)

Here you can review and edit your travel demand data. Please note that if you choose to import this data again, any previous changes you made will be lost.

Highway

Transit

Vehicle Miles Traveled

Road Modes

Time Period

Destination

Auto

All Day

Chicago Metropolitan Area

View Aggregated Values

Regional Aggregation: Regional

Comparison: Levels

View

Graph

# Benefit-Cost Analysis

- Evaluation of a project's economic merit by comparing total benefits with their total cost over a period of time.
- Only the direct benefits and direct costs associated with a project (FWHA Guidelines)
- Possible benefits may include decreases in emissions and corresponding positive environmental changes, vehicle operating cost savings, travel time savings, maintenance costs/savings, safety benefits.

# Benefit-Cost Analysis

Transight: Benefit-Cost Analysis

Inputs

2019 Fixed National \$ (M)

Type	Category	Variables	Detail	Region	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Benefit	Safety Benefits	Non-Pecuniary (Amenity) Aspects	Total	Rest of the U.S.	-1.969	-1.853	-1.736	-1.616	-1.493	-1.369	-1.241	-1.112	-0.979	-0.845	-0.707	-0.569
Benefit	Vehicle Operating Cost Savings	Consumer Spending	Motor vehicle fuels, lubricants, Chicago Metropolita	Chicago Metropolita	-7.550	-8.841	-10.152	-11.483	-12.833	-14.738	-17.027	-19.355	-21.721	-23.507	-25.302	-27.097
Benefit	Vehicle Operating Cost Savings	Consumer Spending	Motor vehicle maintenance and repairs, Chicago Metropolita	Chicago Metropolita	-3.717	-4.025	-4.337	-4.653	-4.975	-5.300	-5.631	-5.966	-6.305	-6.650	-6.999	-7.352
Benefit	Vehicle Operating Cost Savings	Consumer Spending	Motor vehicle fuels, lubricants, Rest of East North C	Rest of East North C	-2.736	-3.028	-3.213	-3.400	-3.589	-3.883	-4.211	-4.543	-4.880	-5.590	-6.534	-7.588
Benefit	Vehicle Operating Cost Savings	Consumer Spending	Motor vehicle maintenance and repairs, Rest of East North C	Rest of East North C	-0.865	-0.973	-1.084	-1.197	-1.312	-1.429	-1.548	-1.669	-1.793	-1.919	-2.047	-2.177
Benefit	Vehicle Operating Cost Savings	Consumer Spending	Motor vehicle fuels, lubricants, Rest of the U.S.	Rest of the U.S.	0.486	0.448	0.410	0.462	0.488	0.459	0.429	0.398	0.367	0.379	0.433	0.487
Benefit	Vehicle Operating Cost Savings	Consumer Spending	Motor vehicle maintenance and repairs, Rest of the U.S.	Rest of the U.S.	0.368	0.314	0.259	0.202	0.145	0.086	0.027	-0.034	-0.095	-0.158	-0.222	-0.286
Benefit	Travel Time Savings	Benefit Cost Analysis	Travel Time Savings	Chicago Metropolita	-0.921	-0.936	-0.948	-0.961	-0.973	-0.985	-0.992	-0.999	-1.010	-1.021	-1.032	-1.043
Benefit	Travel Time Savings	Benefit Cost Analysis	Travel Time Savings	Rest of East North C	-0.131	-0.112	-0.091	-0.071	-0.050	-0.030	-0.010	0.012	0.036	0.061	0.088	0.115
Benefit	Travel Time Savings	Benefit Cost Analysis	Travel Time Savings	Rest of the U.S.	-4.695	-4.455	-4.206	-3.949	-3.703	-3.433	-3.148	-2.854	-2.550	-2.236	-1.915	-1.594
Cost	Custom	N/A	Example	Chicago Metropolita	82.174	77.340	72.506	67.673	62.839	58.005	53.171	48.338	43.504	38.670	33.836	29.002

Custom Benefits/Costs

Edit...

Results for All Regions

Parameters

Discount Rate	7%
Analysis Period	42
Evaluation Year	2019

Evaluation from 2019 to 2060

Total Benefits, Mil PV\$	18031.516
Emissions Benefits, Mil PV\$	72.698
Safety Benefits, Mil PV\$	271.998
Vehicle Operating Cost Savings, Mil PV\$	670.585
Maintenance Costs, Mil PV\$	0.000
Travel Time Savings, Mil PV\$	17016.235
Other Benefits, Mil PV\$	0.000
Total Costs, Mil PV\$	499.726
Design & Construction Costs, Mil PV\$	0.000
Land Acquisition Costs, Mil PV\$	0.000
Custom Costs, Mil PV\$	499.726
Benefit-Cost Ratio	36.083

Total Costs

The present value in the evaluation year of the sum of the costs of a project. This includes only the costs of designing and constructing a project. Maintenance of the project and user costs that may be incurred by construction are not included, instead they are counted disbenefits.

Export Spreadsheet

OK

Cancel

# Effective Distance

Effective distance scenarios can be analyzed as policy variables or as a cost matrix.

- **Commuting Costs (Immediate Market Share Response)**
- **Accessibility Costs**
- **Transportation Costs**
- **Commuting Costs (Lagged Market Share Response)**



# Model Demonstration

# Transportation Policy in the Biden Administration

Tomorrow: Wednesday, January 27<sup>th</sup> 11:30<sub>am</sub> EST

This presentation will describe potential changes to transportation policy in the Biden administration. Policies such as shifts in investments for our nation's roads, bridges, railways, and ports and resulting network improvements will be examined in TranSight.



**Thank you for your interest  
in REMI TranSight**

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