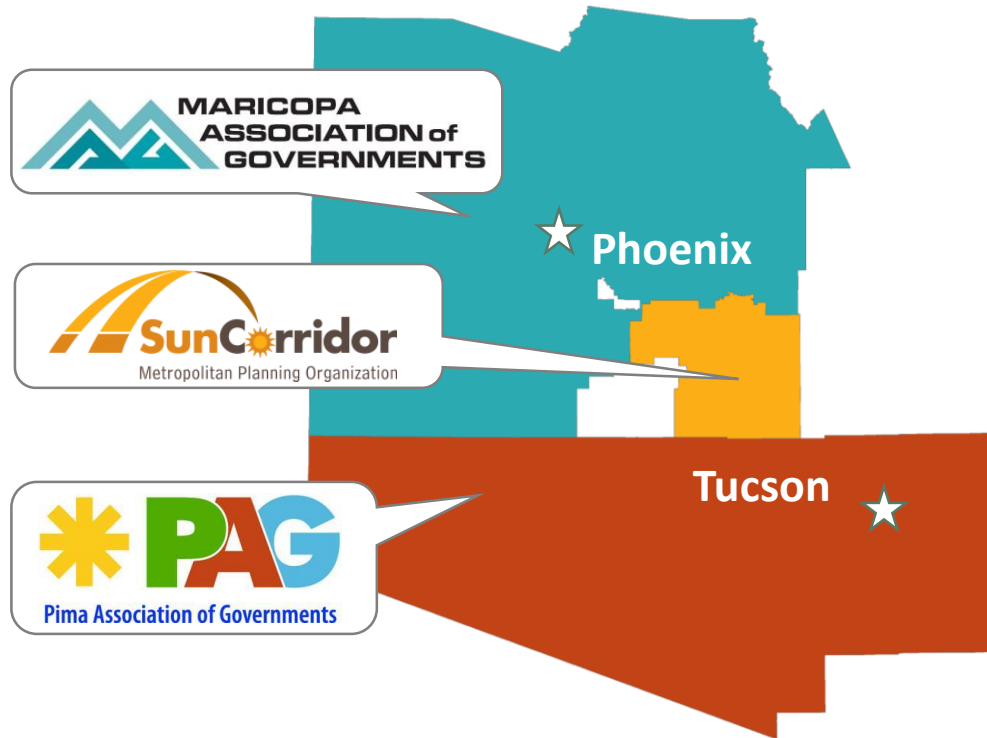# Value Impact Analysis Toolkit
Multifaceted Transportation Scenario Analysis

Consortium on Scenario Planning

Process and Capacity Peer Exchange

November 10, 2020, 12:00PM CST

Kyle Schroeckenthaler, Principal @ EBP

Colby Brown, Founder @ Manhan Group
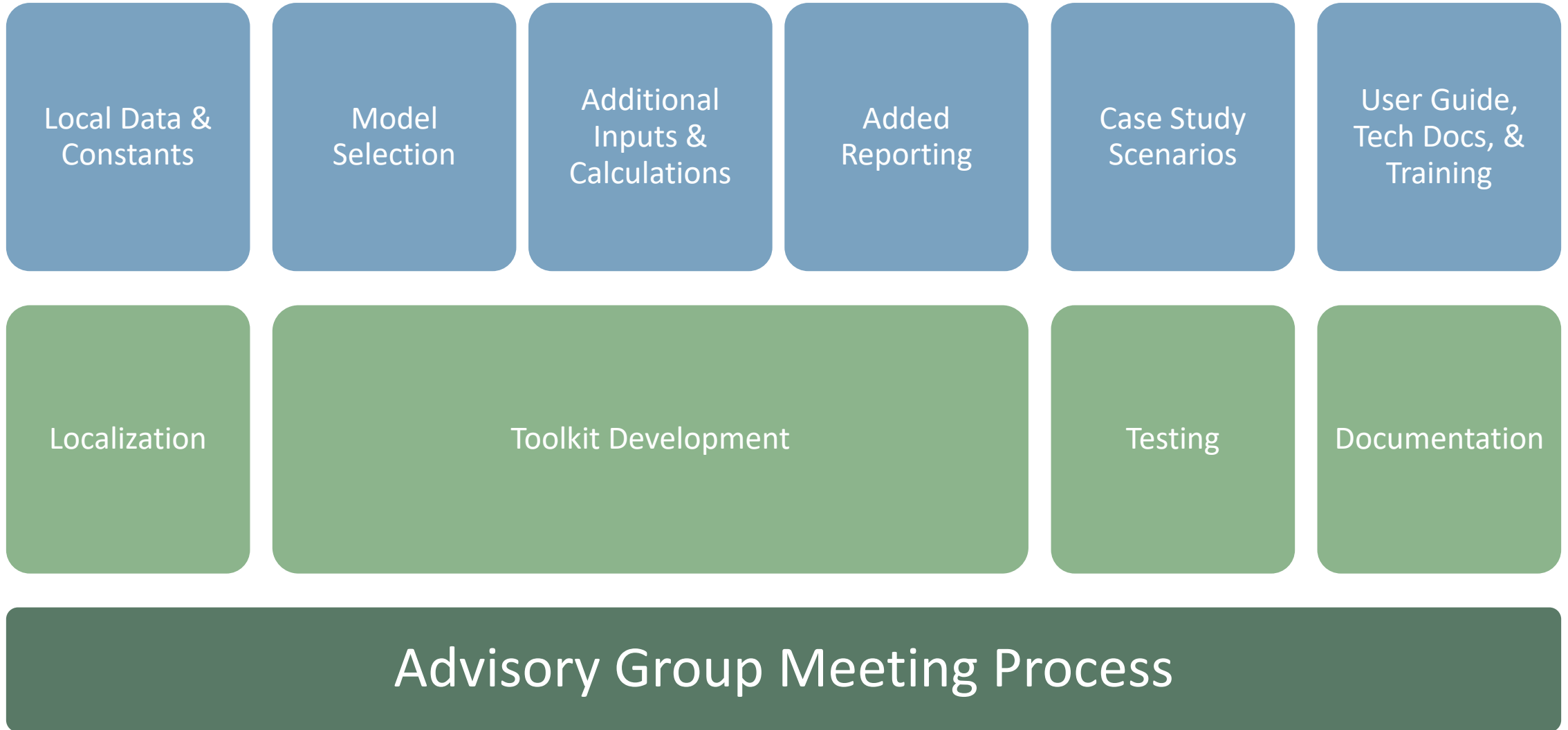
National Economic Partnership Program

FHWA Research Grant Program
- Three freight planning studies also funded for megaregional collaborations

The Sun Corridor Megaregion
- Three Agency Partnership

Project Process

Local Data & Constants	Model Selection	Additional Inputs & Calculations	Added Reporting	Case Study Scenarios	User Guide, Tech Docs, & Training

Localization	Toolkit Development			Testing	Documentation

Advisory Group Meeting Process

Dimensions of "Value"

Economic Development Impacts

Land Value Effects

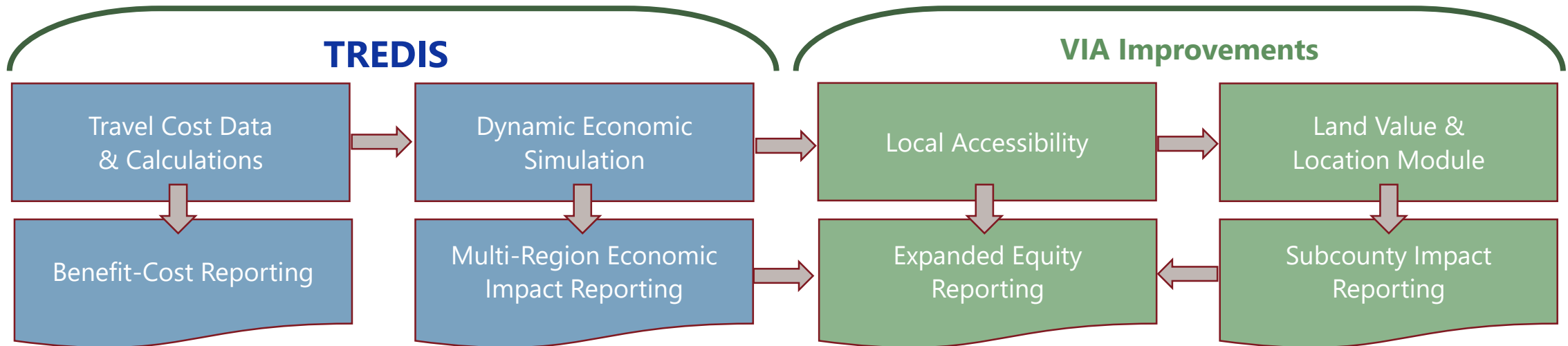Societal Benefits & Quality of Life
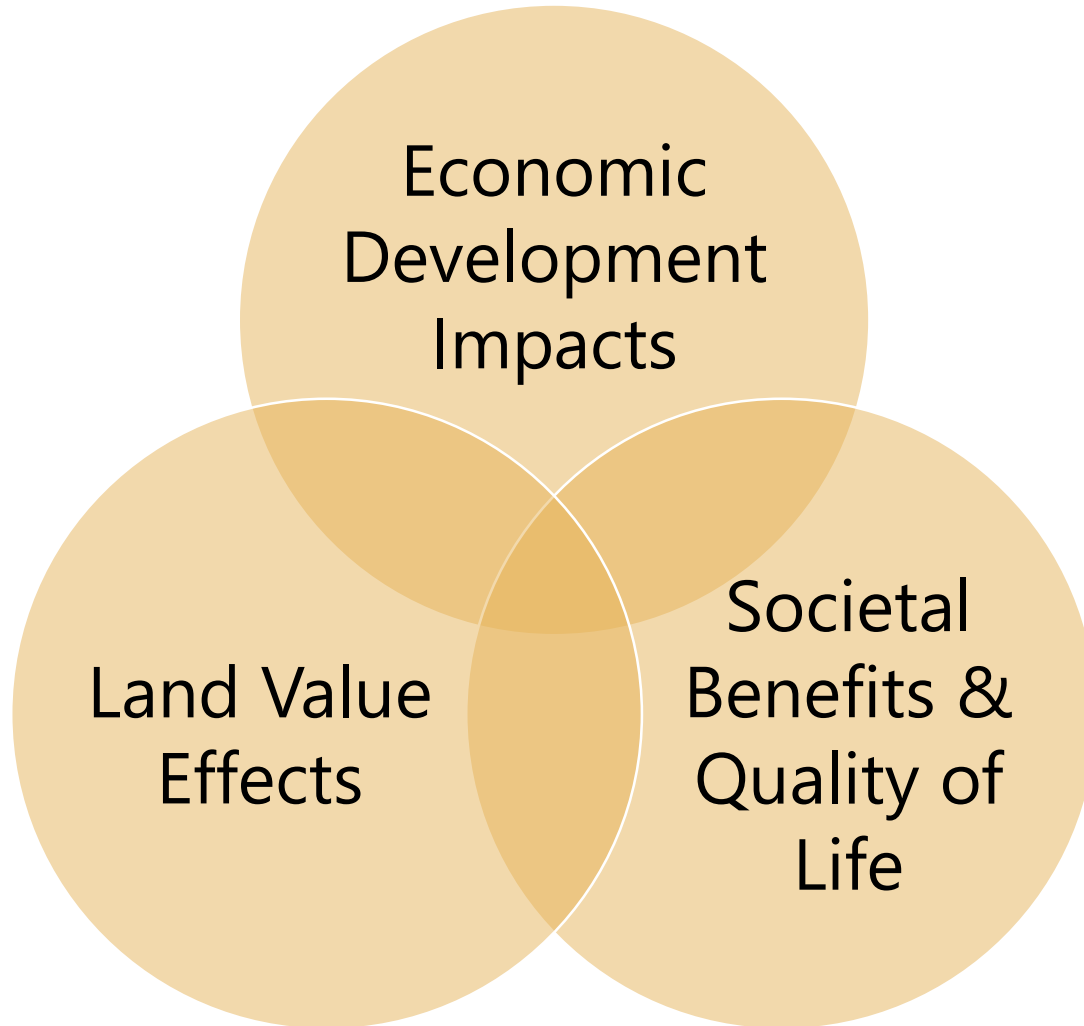
- What do transportation improvements mean for households and businesses?
  - ♦ Productivity
  - ♦ Workforce access
  - ♦ Reduced costs

Traditional BCA
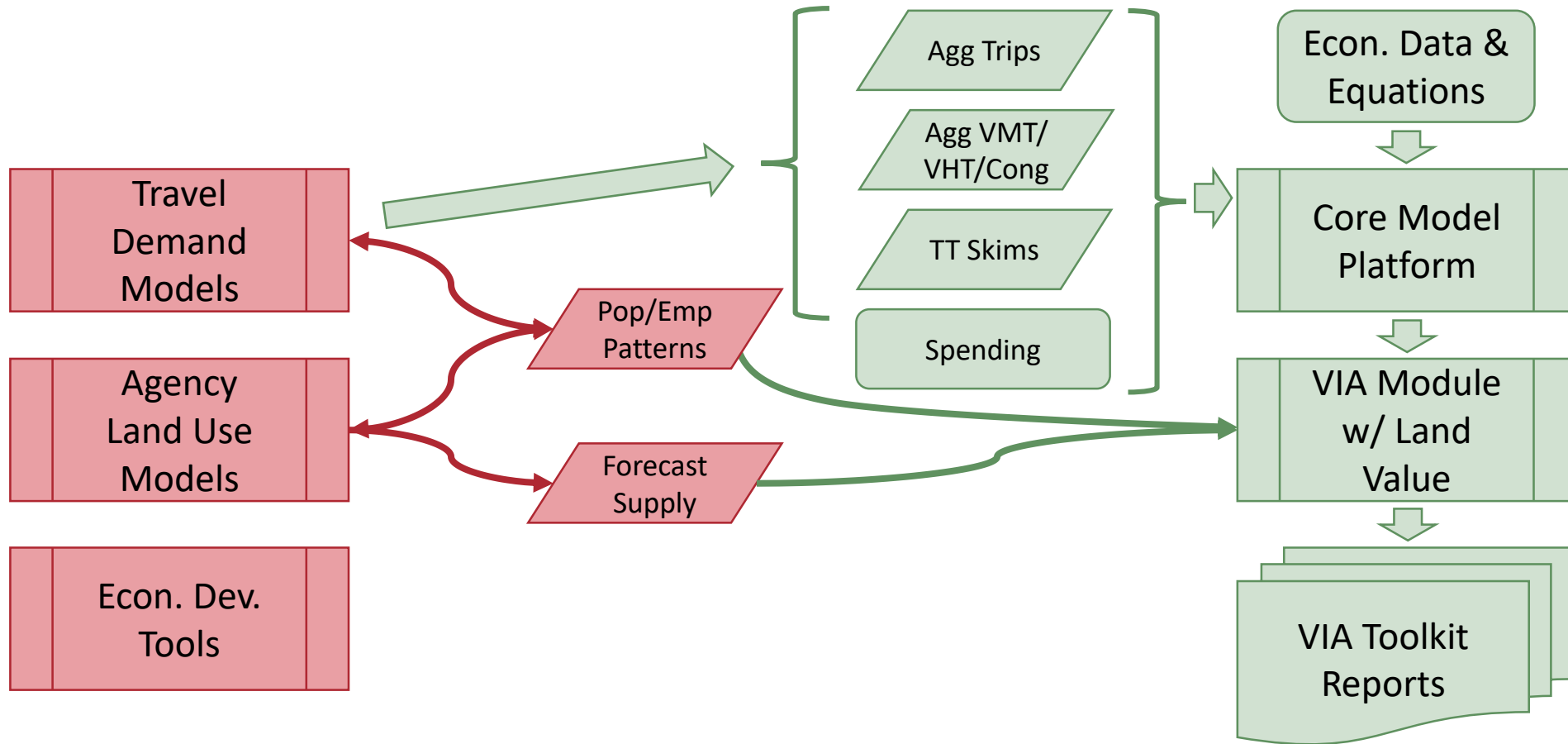Equity
Environment
Health
Safety

An Improved Scenario Evaluation Model

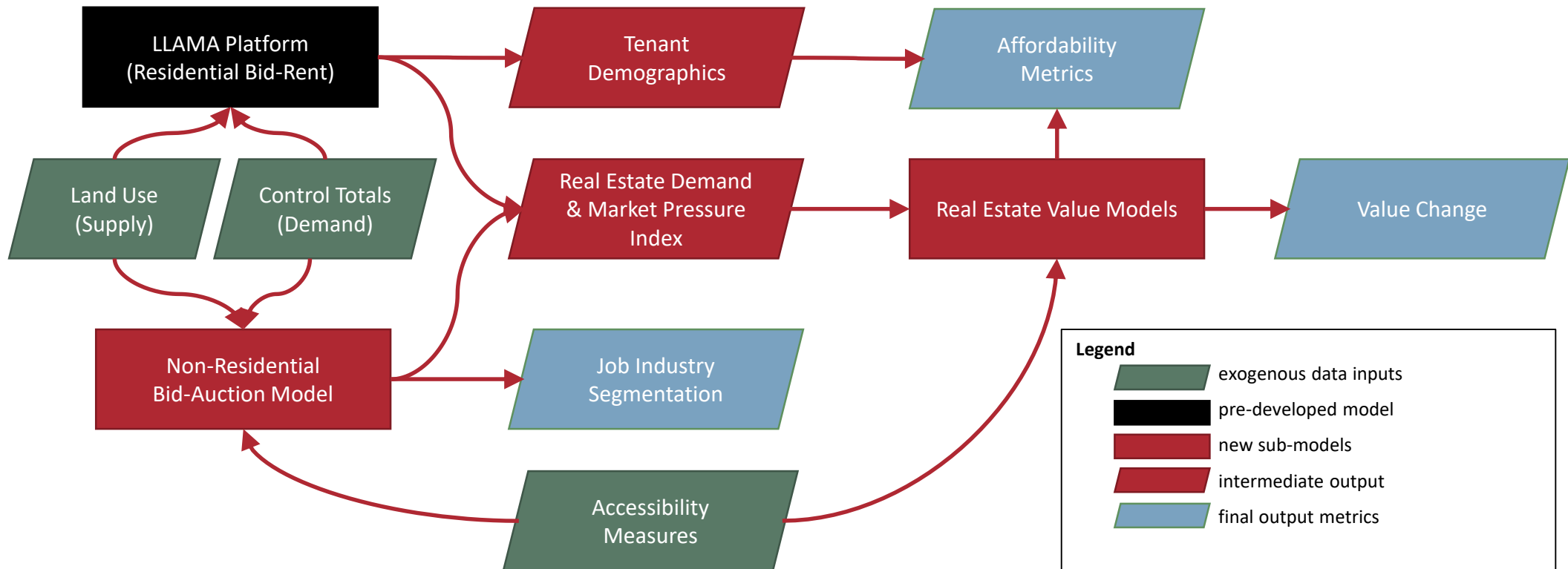Leveraged an existing economic and societal benefit evaluation model

Added greater local detail for economic impacts, equity, and land value

TREDIS

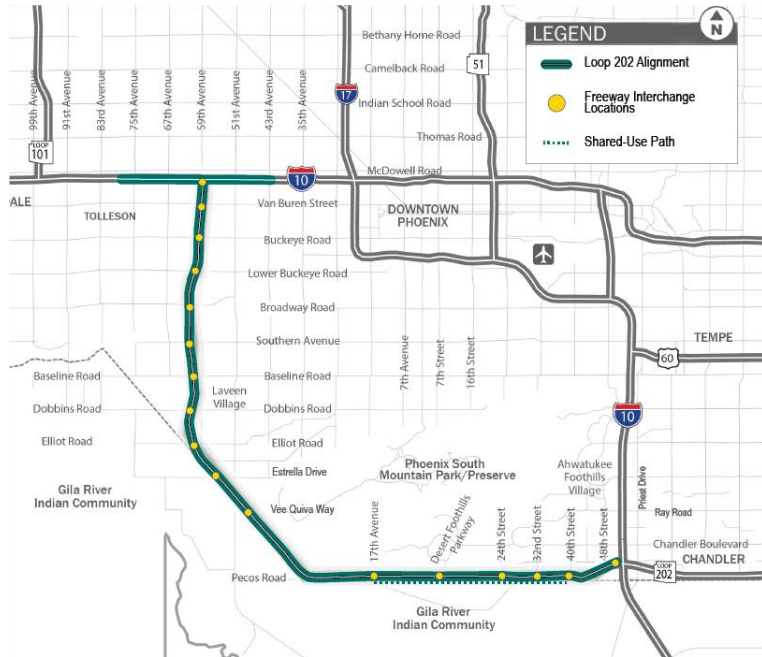|		**VIA Improvements**	
Travel Cost Data & Calculations	Dynamic Economic Simulation	Local Accessibility	Land Value & Location Module
Benefit-Cost Reporting	Multi-Region Economic Impact Reporting	Expanded Equity Reporting	Subcounty Impact Reporting

Agency Data Linkages to Toolkit

Land Value Model

Case Study Scenarios

- Focus of the grant funded study was high capacity regionally significant projects
  - Mega-project scale interstate reconstruction in Maricopa county
  - Mega-project scale new highway project in Maricopa county
  - Highway to freeway conversion in Pima county
  - Major transit corridor in Maricopa county

- However, many other scenario analyses are possible
  - Programs of work
    - Maintenance program
    - Transit service options
  - Packages of projects
    - Regional packages
    - Similar types of projects across the region
  - Full long-term plan analyses
  - Funding policies, EVs, etc.

Case Example

Loop 202 South Mountain Freeway

- **22 miles** of new freeway
- **1** Double Roundabout Interchange
- **Savings over $100 million**
- Open to traffic **3** years sooner
- I-10 **4.5 miles of widening** improvements between 75th & 43rd avenues
- **40 bridges & 1 pedestrian bridge**
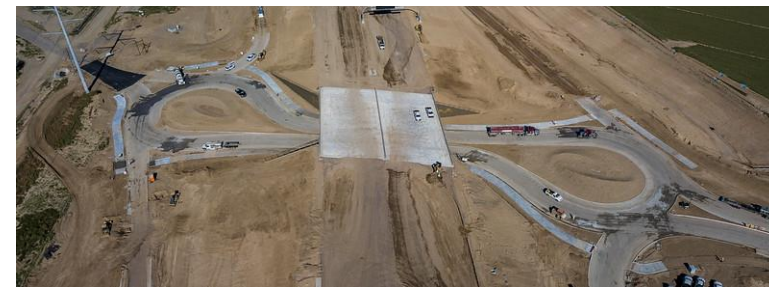- **3** general purpose lanes
- **1** high occupancy vehicle lane
- **6-mile long** shared use path
- **5** multi-use underpass crossings
- **13 interchanges** EXIT
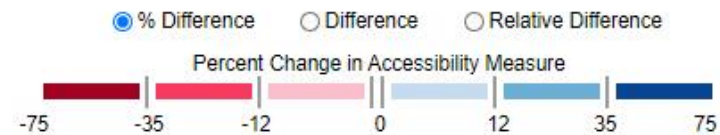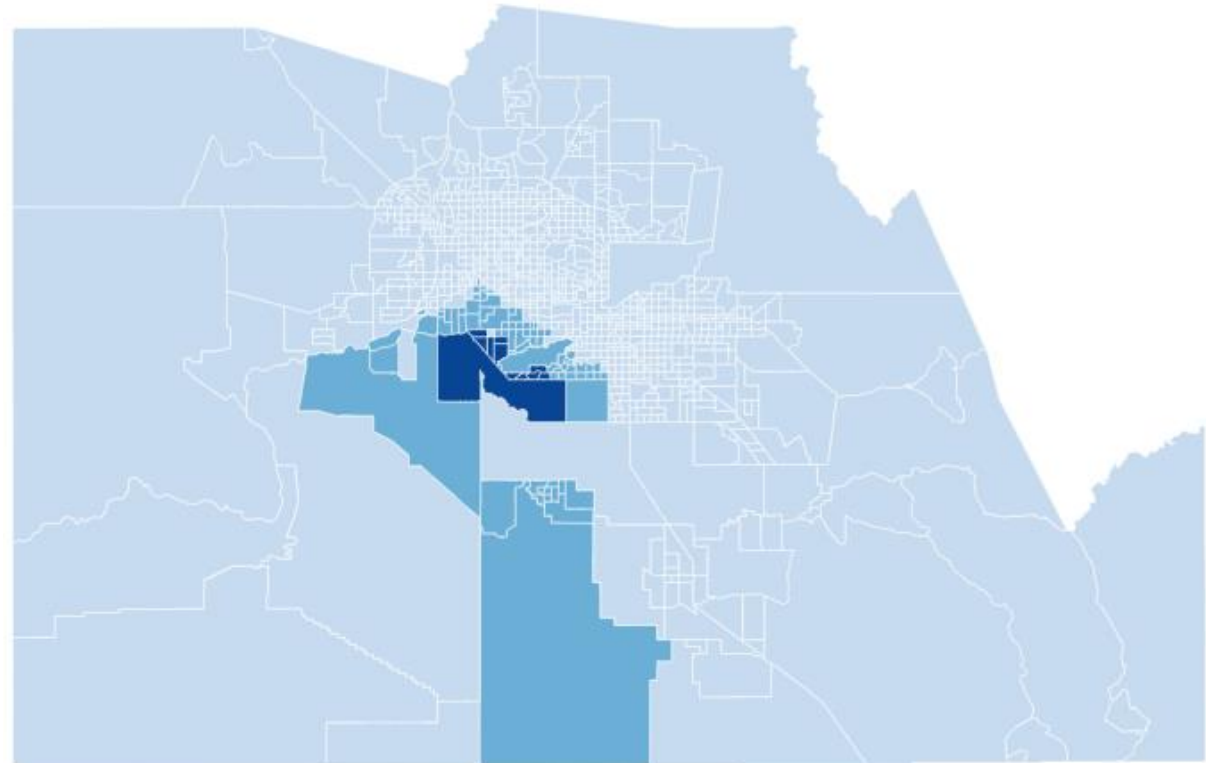- **11 miles of** sound walls
- **2** half Diverging Diamond Interchanges (DDI)

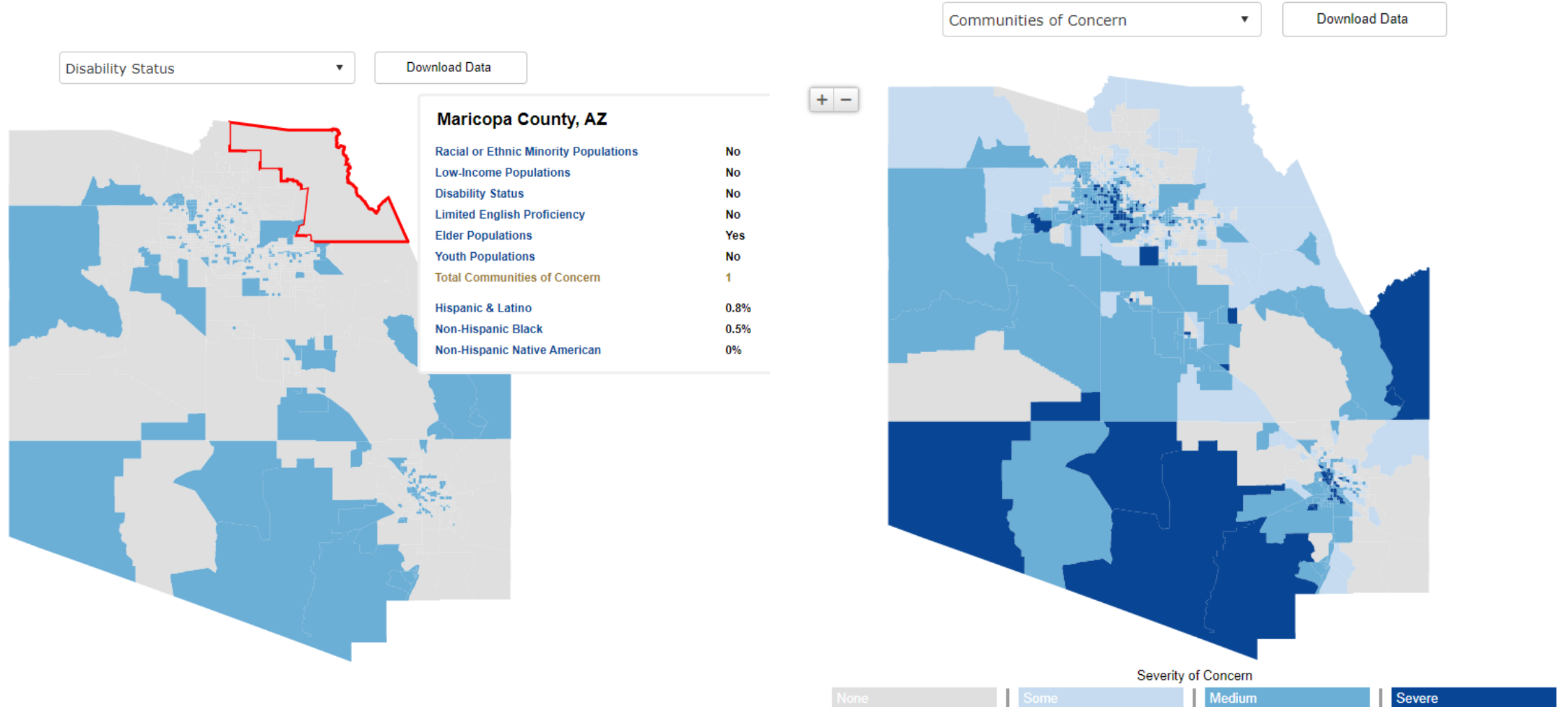# Granular Accessibility Inputs

- TAZ O-D Travel Time

- TAZ Household and Emp Data

- Access to Jobs
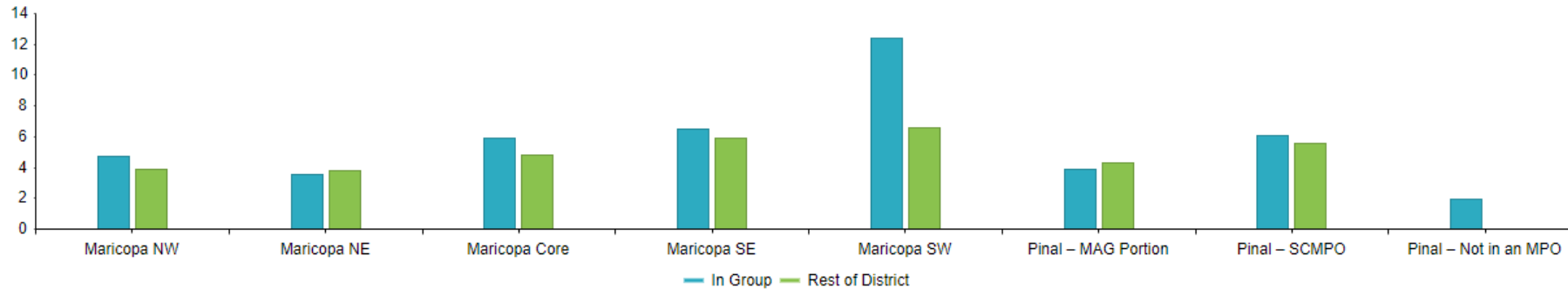
- Business Access to HHs

Equity Evaluation

Disability Status ▼   Download Data

Communities of Concern ▼   Download Data

Maricopa County, AZ

Racial or Ethnic Minority Populations	No
Low-Income Populations	No
Disability Status	No
Limited English Proficiency	No
Elder Populations	Yes
Youth Populations	No
Total Communities of Concern	1
Hispanic & Latino	0.8%
Non-Hispanic Black	0.5%
Non-Hispanic Native American	0%

Severity of Concern

None   Some   Medium   Severe

Equity Reporting

Land Value Results

Percent Change: Value per Sq. Ft. of Other Commercial Space ▾ | 2020 ▾ | **Submit**

Percentage Change (Project/Base)

-63   -30   -9   0   9   30   63
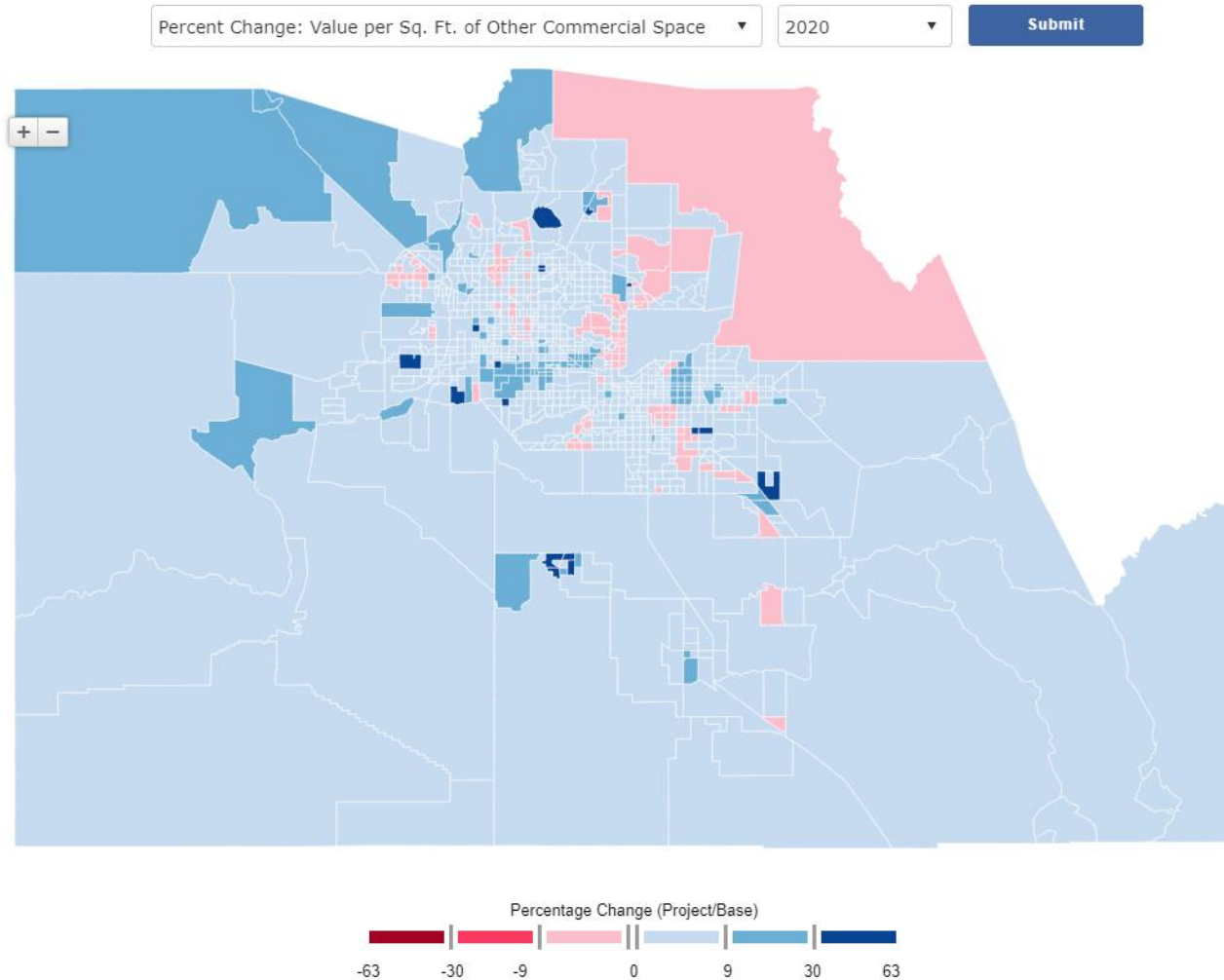
- Single Detached

- Multi-Family Bldg

- Industrial

- Retail

- Other Commercial

- Housing Burden

Economic Impacts – Custom Sub-county Geographies

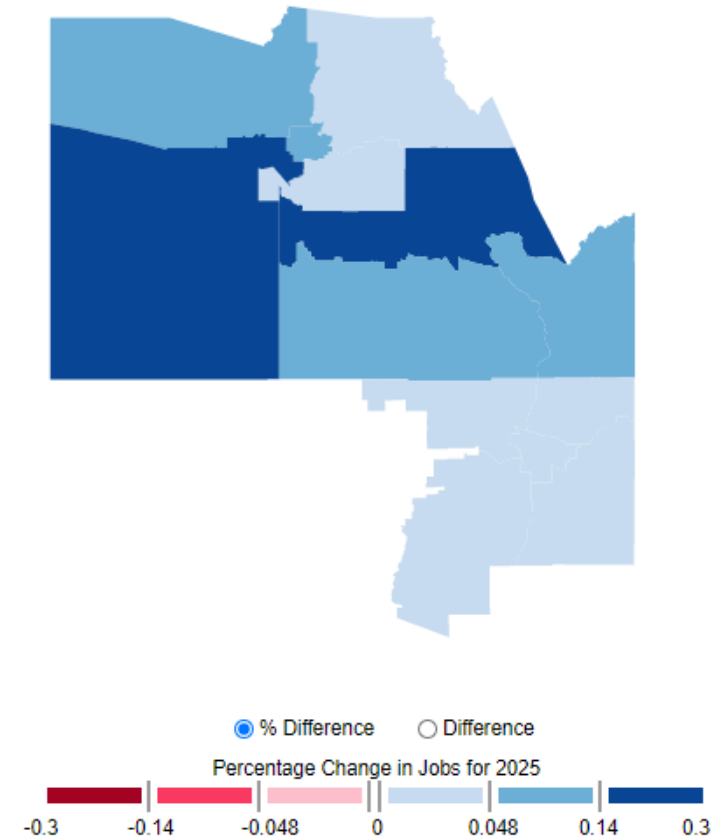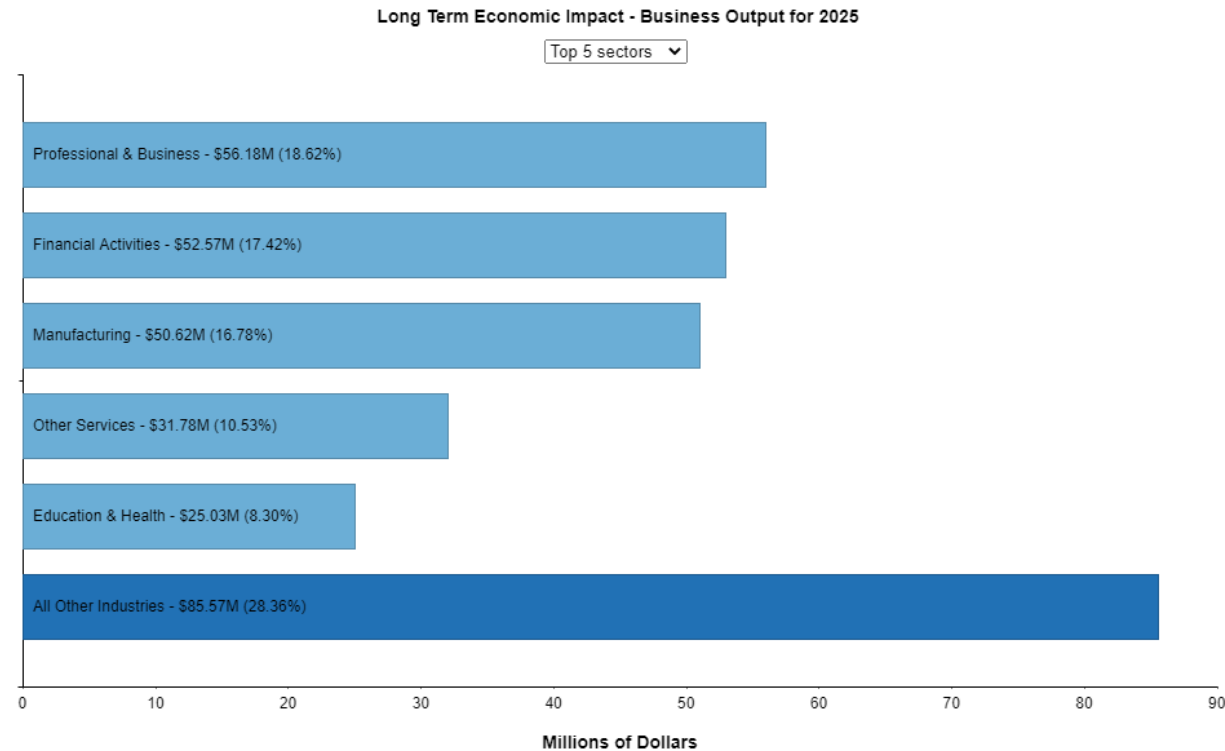- Job Growth & Quality, Business Output, Value Added, and Labor Income

- Industry and Occupational Detail

Jobs | 2025 | **Submit**

Long Term Economic Impact - Business Output for 2025

Top 5 sectors

Professional & Business - $56.18M (18.62%)
Financial Activities - $52.57M (17.42%)
Manufacturing - $50.62M (16.78%)
Other Services - $31.78M (10.53%)
Education & Health - $25.03M (8.30%)
All Other Industries - $85.57M (28.36%)

0 10 20 30 40 50 60 70 80 90
Millions of Dollars

● % Difference   ○ Difference
Percentage Change in Jobs for 2025
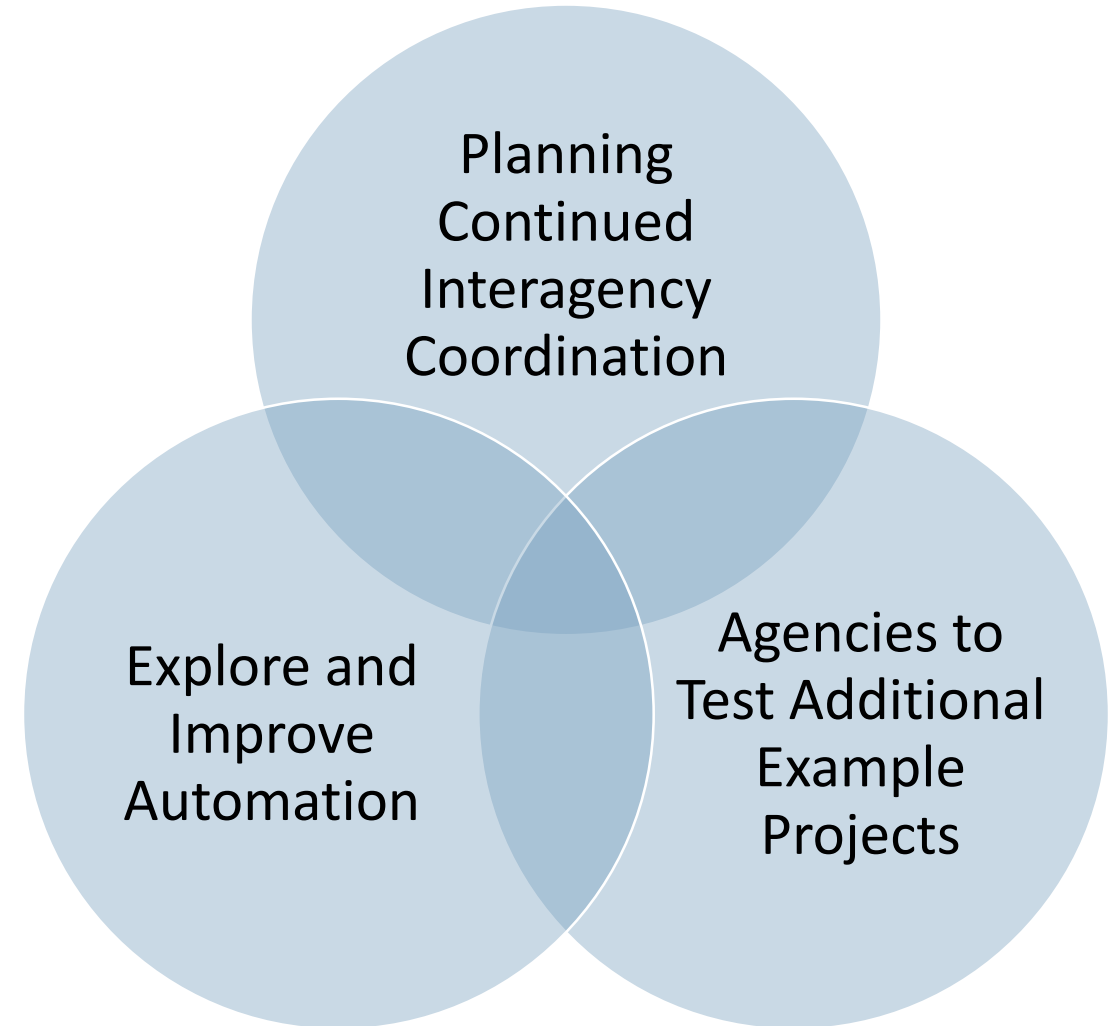
-0.3 -0.14 -0.048 0 0.048 0.14 0.3

National Replicability

- Builds on nationally available off-the-shelf economic models
  - Cloud-based
  - 3 freight & commodity data options
  - Traceable and transparent calcs
  - Endless customization of transportation modes – truly multi-modal
- Established customization process for geographies and land value module

- VIA module add-ons require only agency data and publicly available sources
  - Sociodemographic and economic characteristics of traffic analysis zones
  - Forecasts of real estate supply
  - American Community Survey (ACS) demographic data for equity
  - Can integrate with model processes

Challenges and Next Steps

- Data intensive
  - Inputs and outputs are voluminous
  - Automation is helpful for complex projects
  - Incremental improvements are difficult to assess

- Intra-agency collaboration key
  - Planning, Modeling, Finance, etc.
- Inter-agency opportunities (i.e., travel model automation)
- Value capture follow-on study

Planning Continued Interagency Coordination
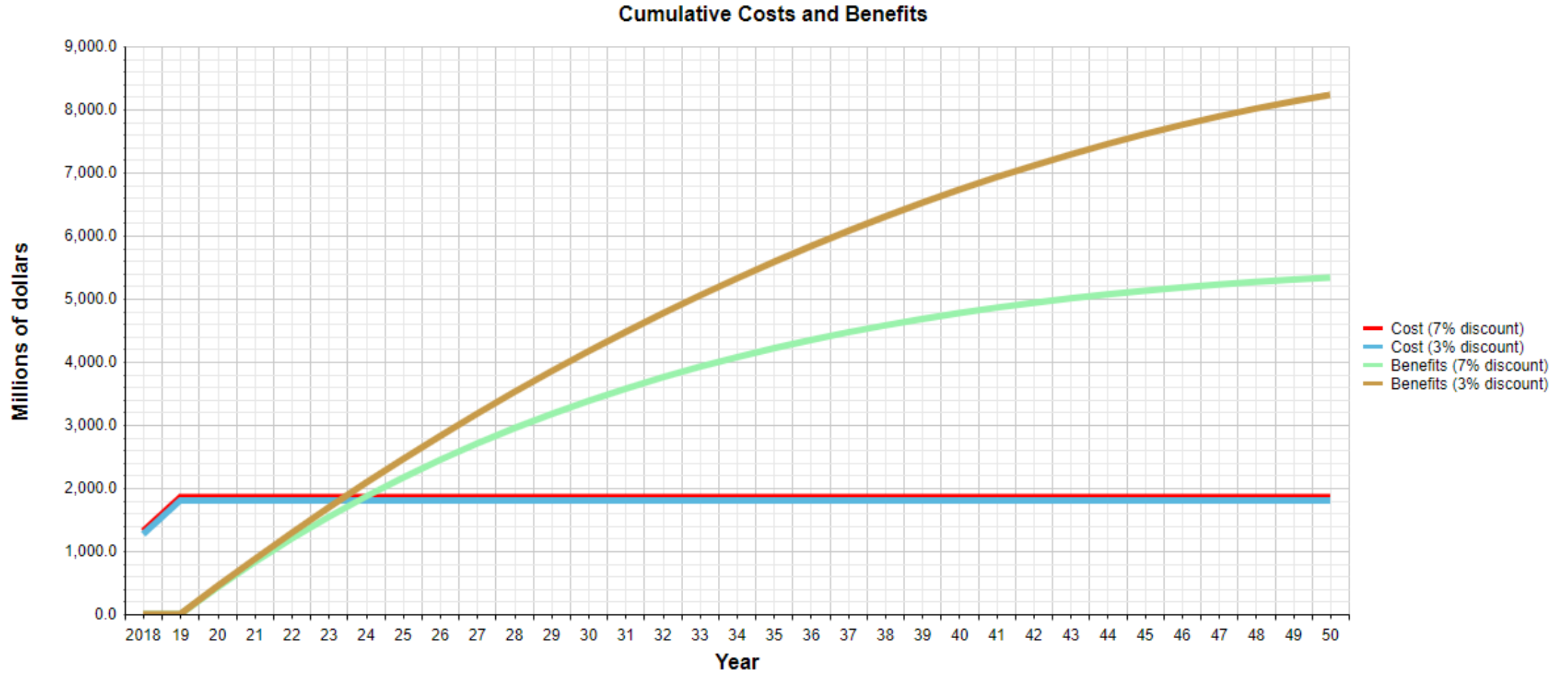
Explore and Improve Automation

Agencies to Test Additional Example Projects

Thank you & Discussion

Further Questions:

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Colby@manhangroup.com

Benefit Cost Reporting

Cumulative Costs and Benefits

Legend:
- Cost (7% discount)
- Cost (3% discount)
- Benefits (7% discount)
- Benefits (3% discount)

Quality of Jobs