

FHWA Office of Planning National Economic Partnerships Pilot Program

Sun Corridor Value Impact Analysis– Webinar

November 18, 2020

Welcome!



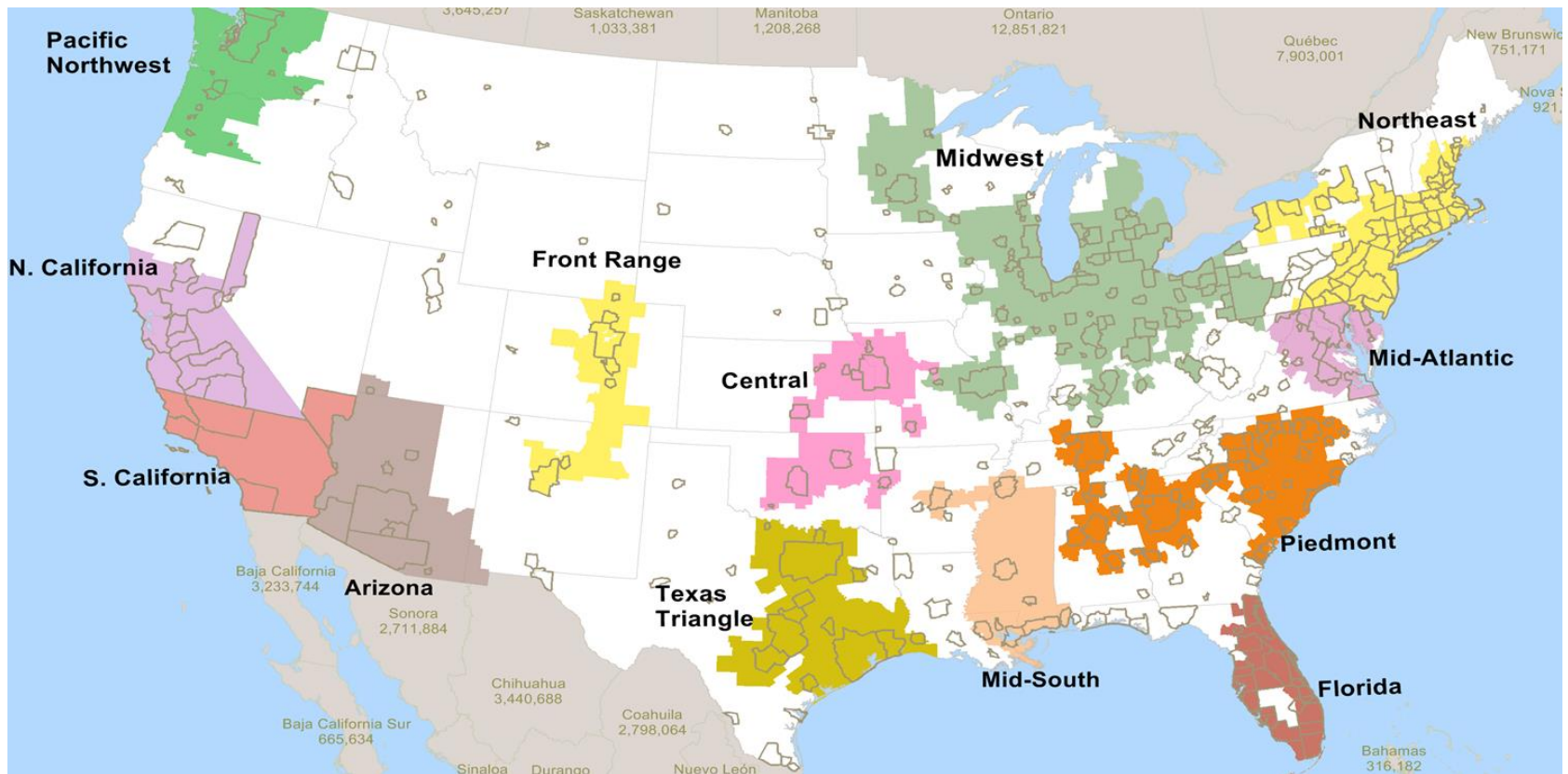
U.S. Department
of Transportation

**Federal Highway
Administration**

National Economic Partnerships

- A collection of urban centers and their surrounding rural areas, connected by existing economic, social, and infrastructure relationships
- Serves as incubator of innovation driving vital parts of U.S. economy that benefit surrounding regions and rural areas
- Continues FHWA's work on Megaregions and Every Day Counts' Regional Models of Cooperation
 - Advances conversations on multi-jurisdictional coordination and collaboration

Examples of Megaregions



FHWA Pilots

- **Maricopa Association of Governments** – Sun Corridor Value Impact Analysis
- **Mid-America Regional Council** – Central Plains Heartland Freight Technology Plan
- **Nevada Department of Transportation** – I-15 Freight Mobility Enhancement Plan
- **Tennessee Department of Transportation** – Future Freight Movement along Freight Alley-The Greater Chattanooga Region

Sun Corridor Value Impact Analysis



A joint project of:



With consultant support from:



The Sun Corridor



★ Phoenix



Tucson ★

Project Purpose

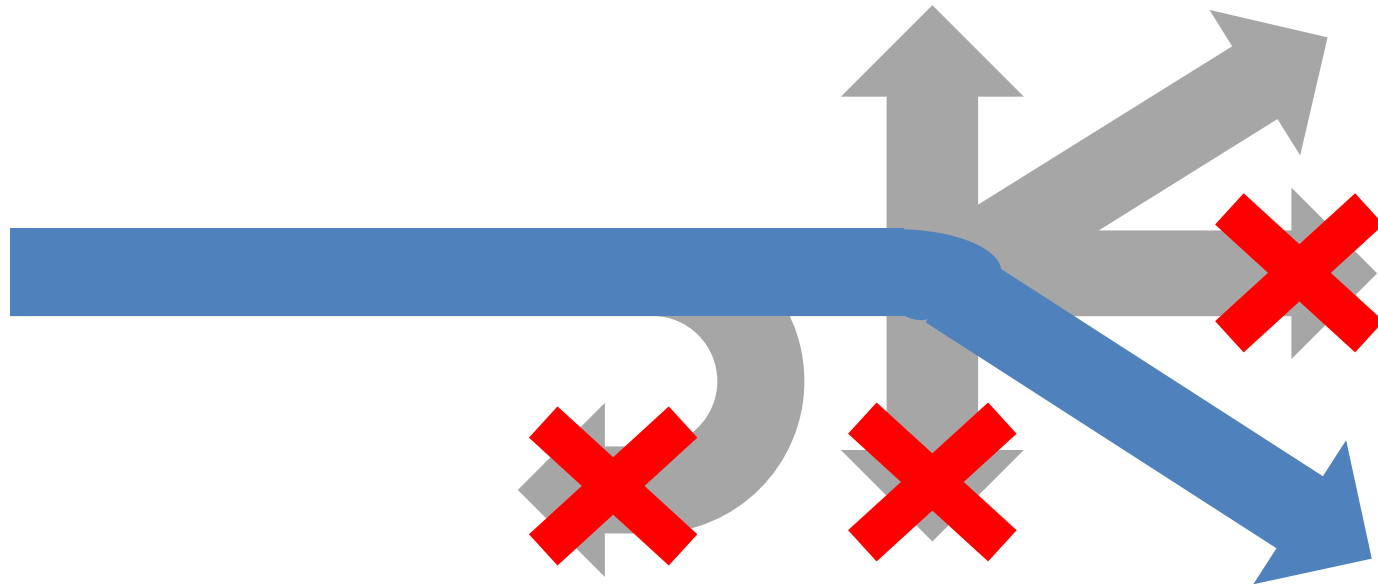


“...develop a methodology to better understand the value and economic benefits of large and high capacity transportation investments in the Sun Corridor.”

-SUN CORRIDOR VALUE IMPACT ANALYSIS RFP

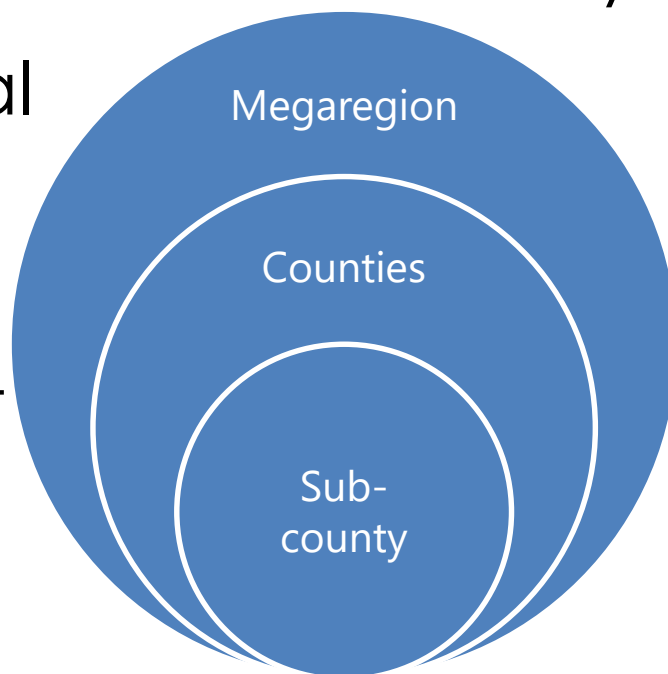
Additional Project Goals

- Improved decision-making data for policymakers.
- Equity analysis for future high-capacity projects.
- Alternatives analysis and packages of projects.
- Convey the value of transportation.
- Regional economic development tool.

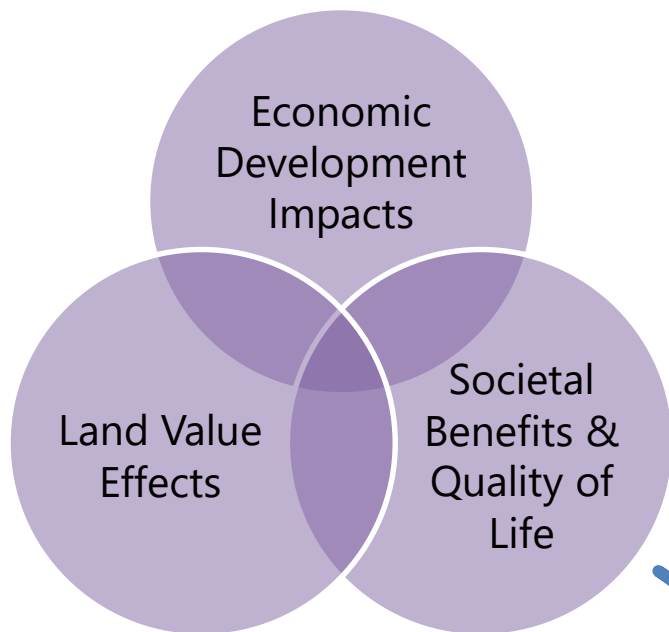


Geographic Scales for Results

- Macro-economic models typically leverage county data
- Data at TAZ and census tract scale (and below) used in analysis
- Reporting at aggregated sub-county districts and help capture MPOs
- Inter-regional relationships key for megaregion perspective



Beyond Transportation Performance



What do transportation improvements mean for Households and Businesses?

- Productivity
- Workforce access
- Reduced costs

Traditional BCA
Equity
Environment
Health
Safety

Existing Tools

Benefit Cost Analysis / Social Benefits / Quality of Life

- Many simple spreadsheet calculators
- MOSAIC
- Cal-BC
- Many old tools

Economic Impact Analysis

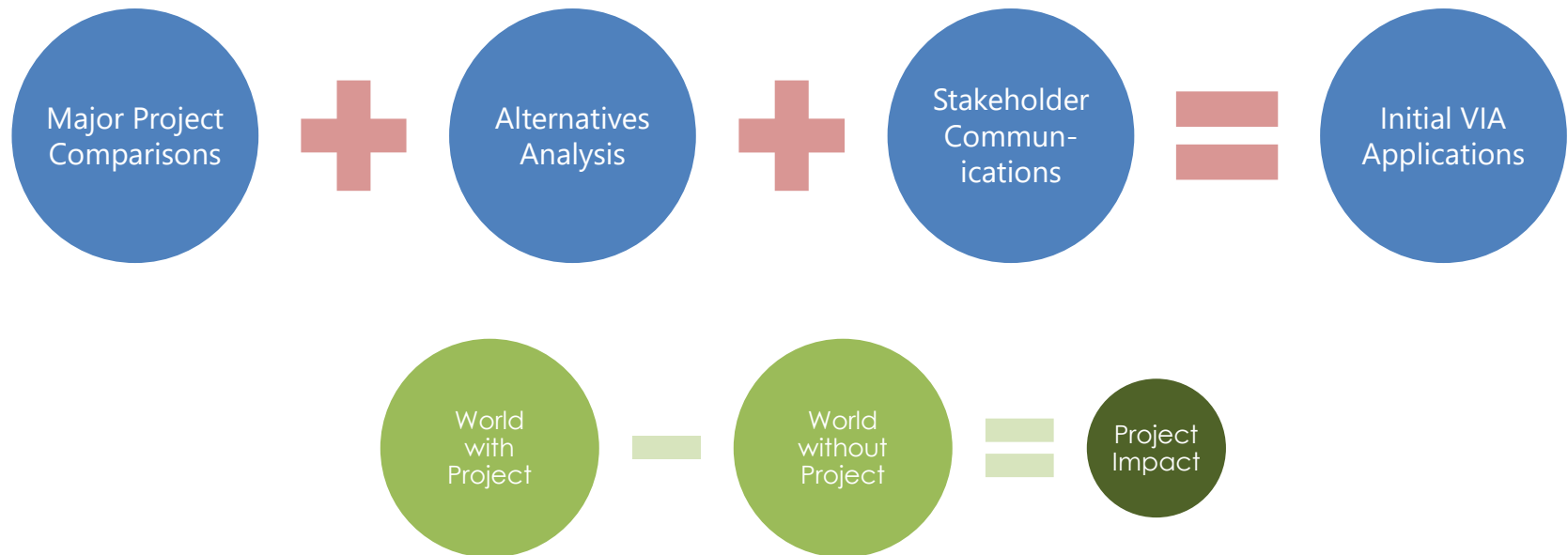
- TREDIS
- REMI
- Research Papers
- Static I/O Analysis

Land Value

- Several big names
- Highly detailed models
- Often complex to use

Focus Applications for Grant Project

- Major project focus for development, case studies, and guidance
- Economic outcomes and other new measures key for some external stakeholders



Where We Ended Up

A comprehensive, megaregional platform combining traditional economic analysis with additional features



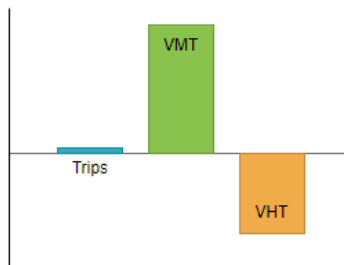
Summary Economic Impact Benefit - Cost Financial Impact Tracing / Validation Freight VIA

South Mountain 202 Loop Sept 8 Presentation 2

Project analyzes 2 years of construction and 31 years of operation with results shown for 2050 (Total Impact)

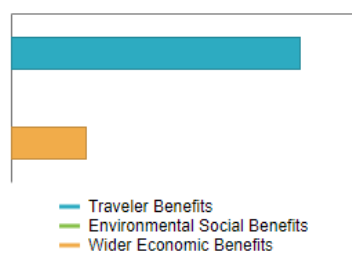
Travel Impact

Project investment of
\$1,767M
results in travel changes



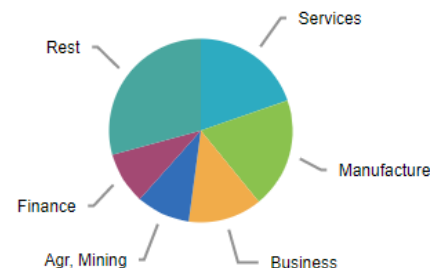
Societal Benefit

Resulting changes in the
transportation system yield
benefits of
\$259.42M



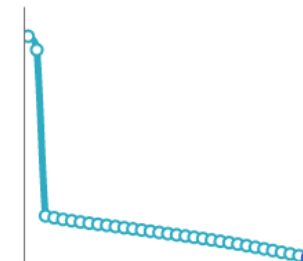
Economic Impact

Project increases
Gross Regional Product by
\$121M



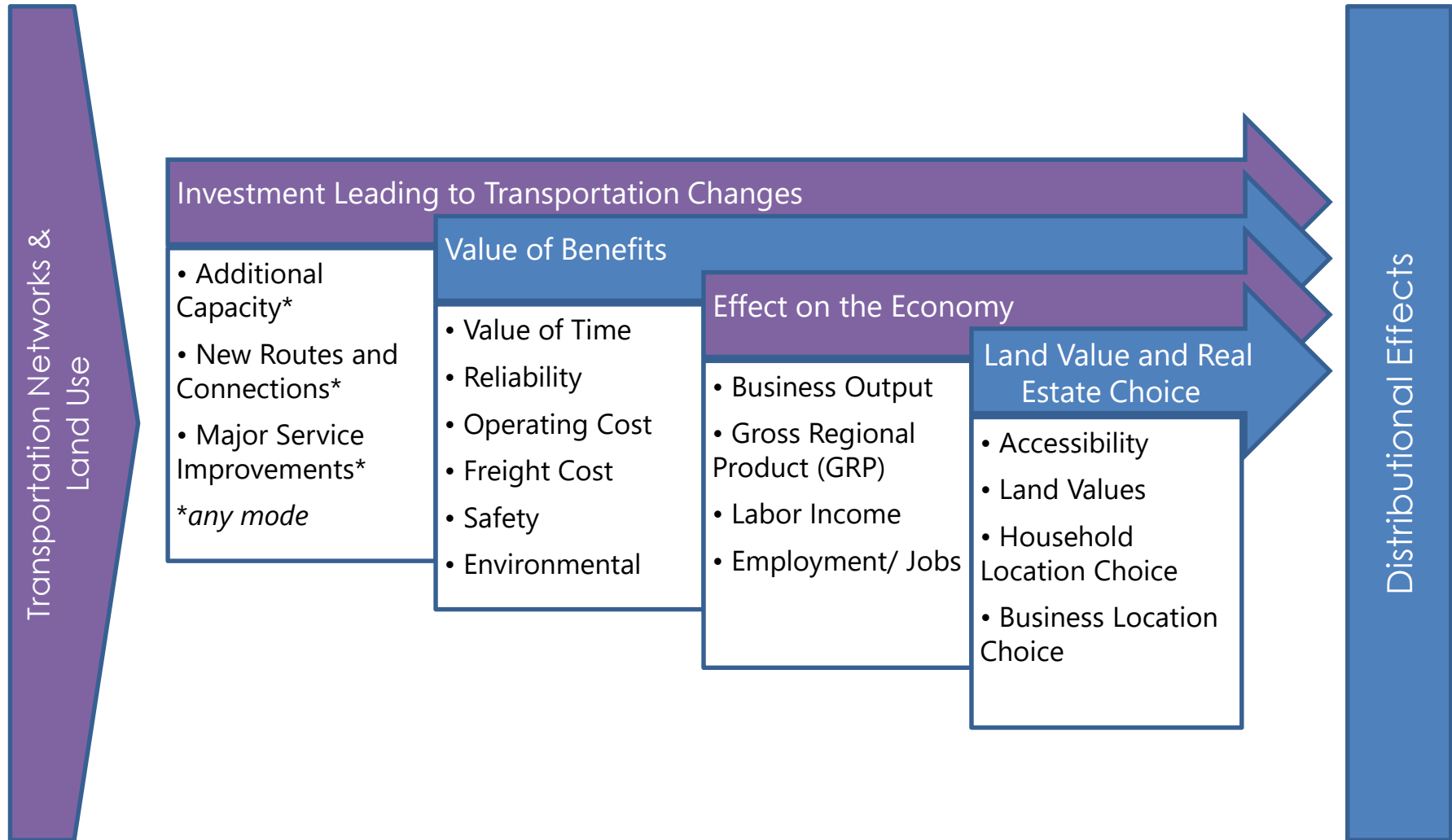
Jobs by Year

Project creates
1,046 jobs, 20%
with above average wages

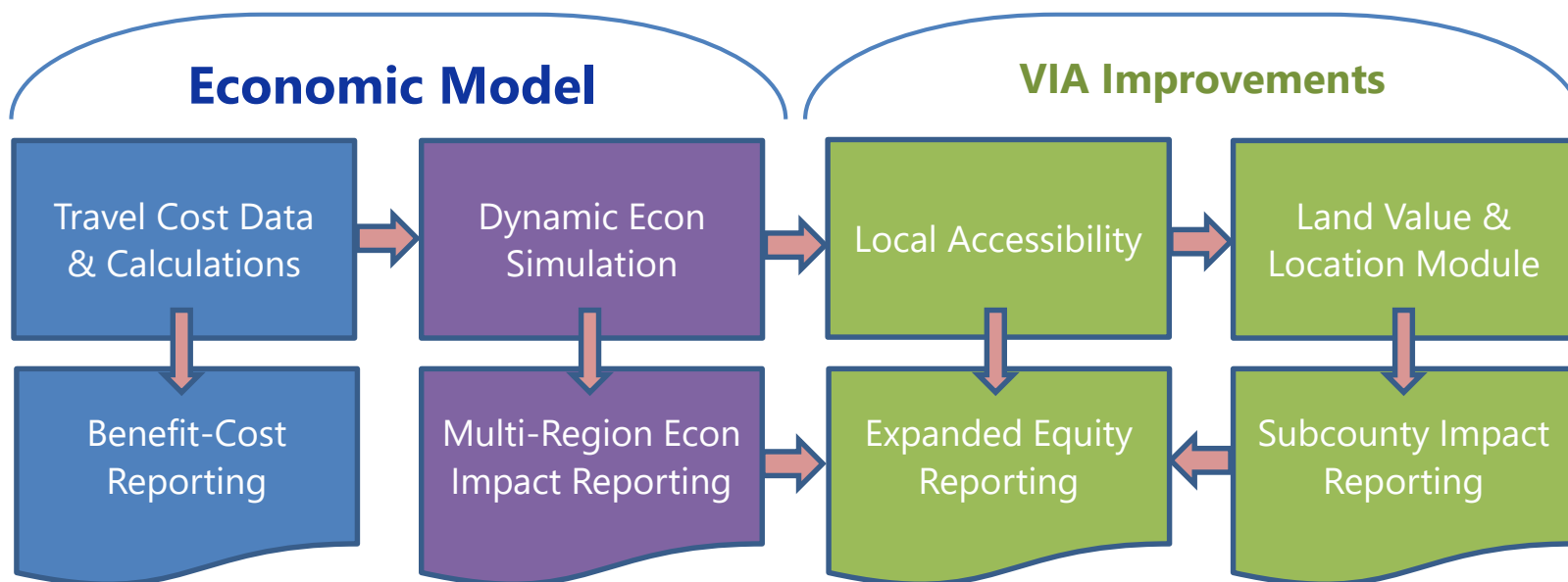


TOOLKIT COMPONENTS AND APPLICATIONS

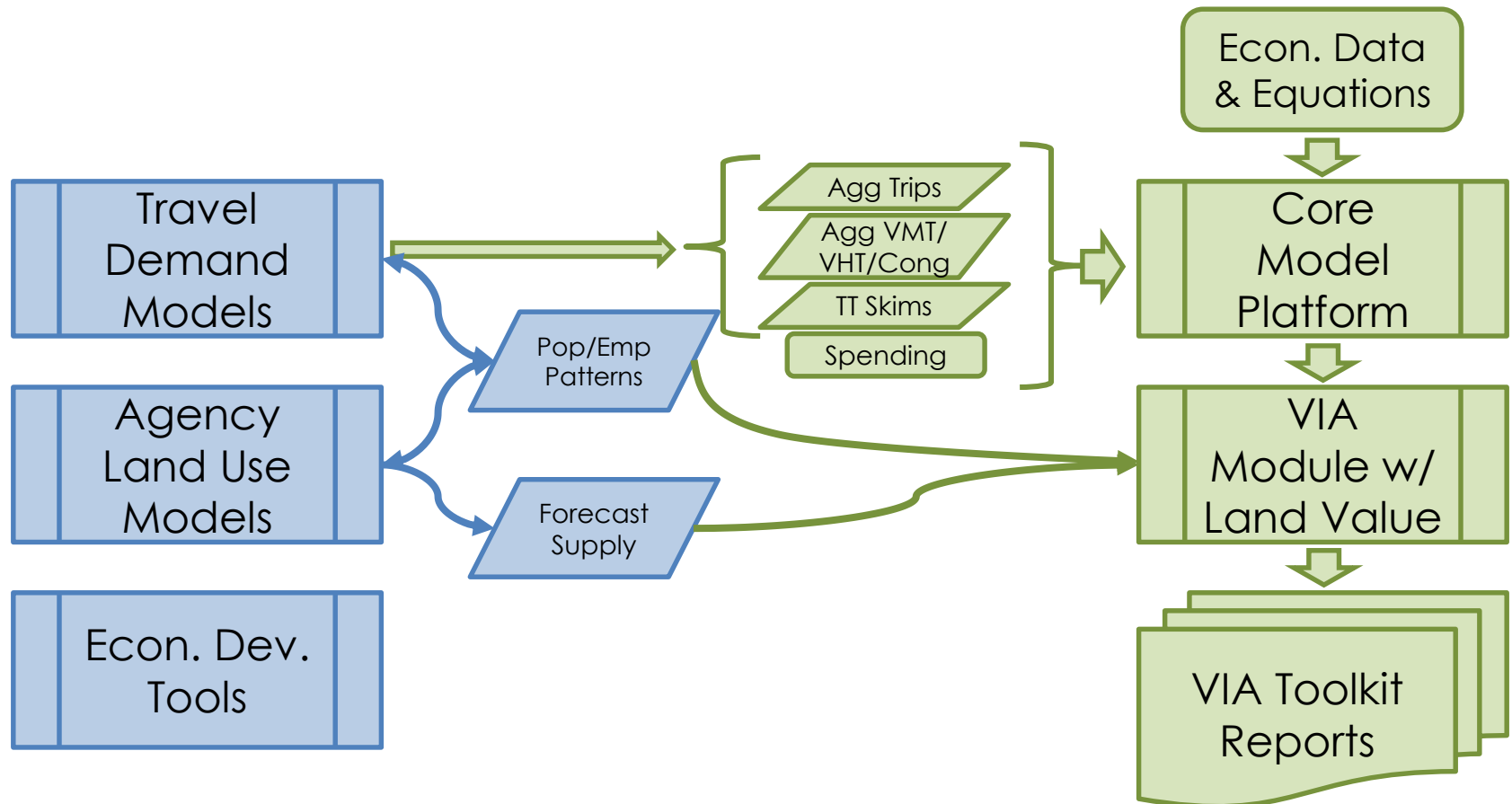
Value Impact Analysis Framework



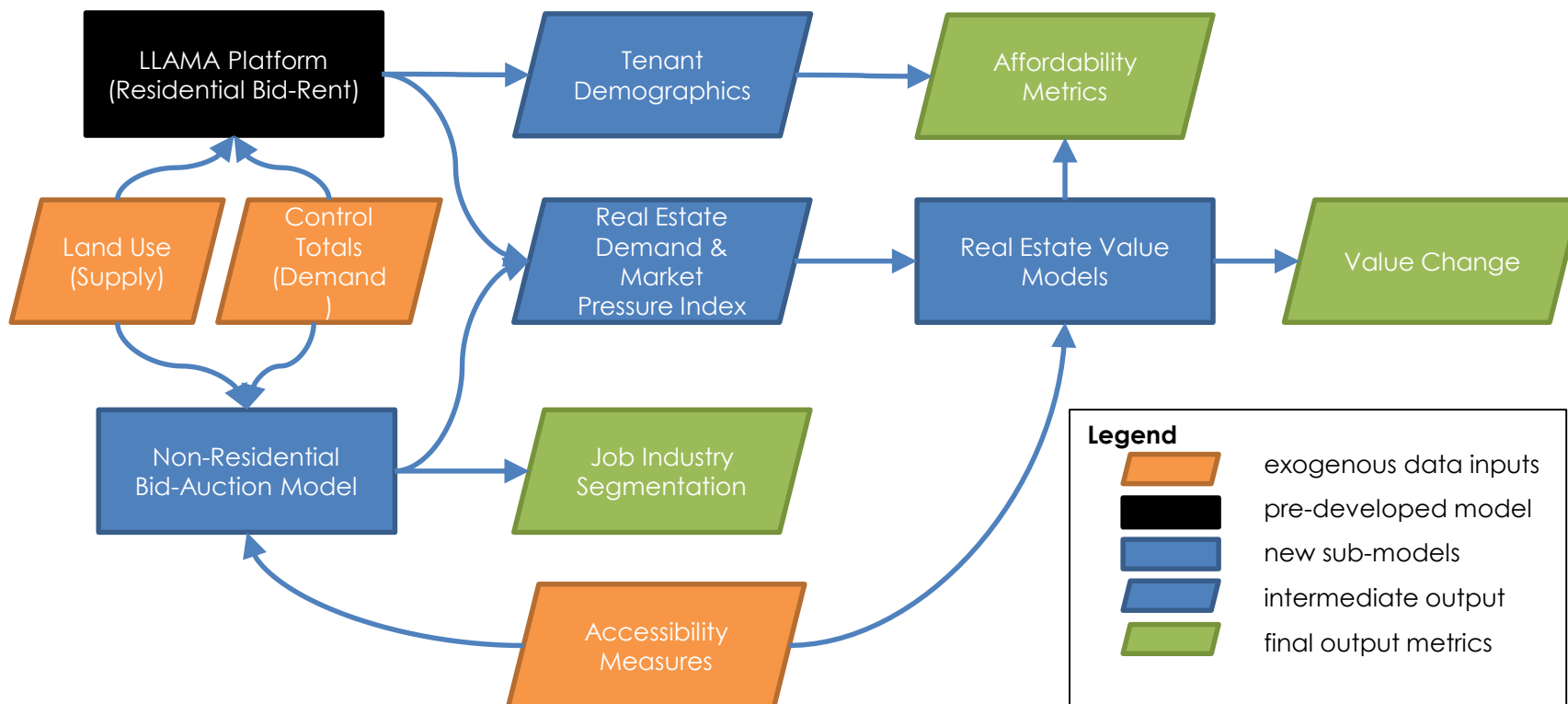
VIA Toolkit Components



Agency Data Linkages to Models

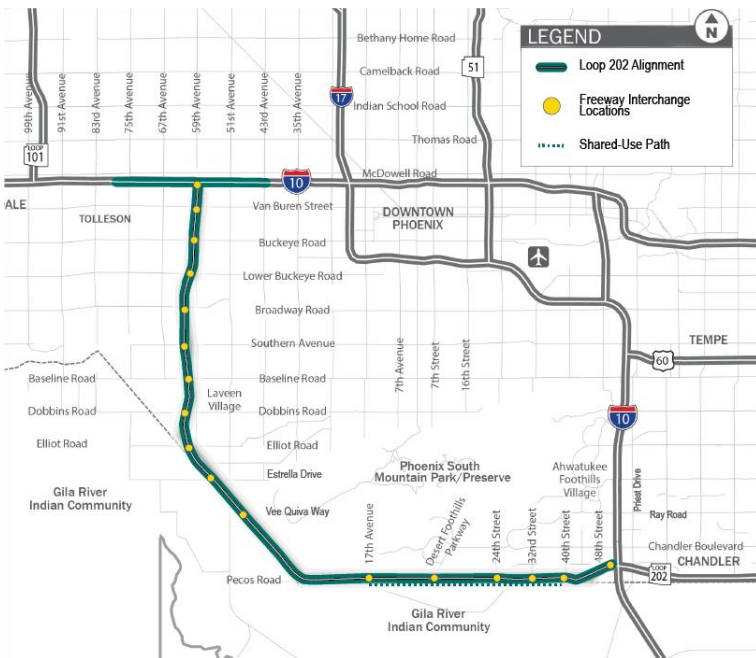


Land Value Module



Case Example

LOOP 202 South Mountain Freeway



LOOP 202 22 miles of new freeway

1
Double Roundabout Interchange

Savings over
\$100 million

Open to traffic
3
years sooner

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

11 miles of sound walls

2 half Diverging Diamond Interchanges (DDI)



Inputs

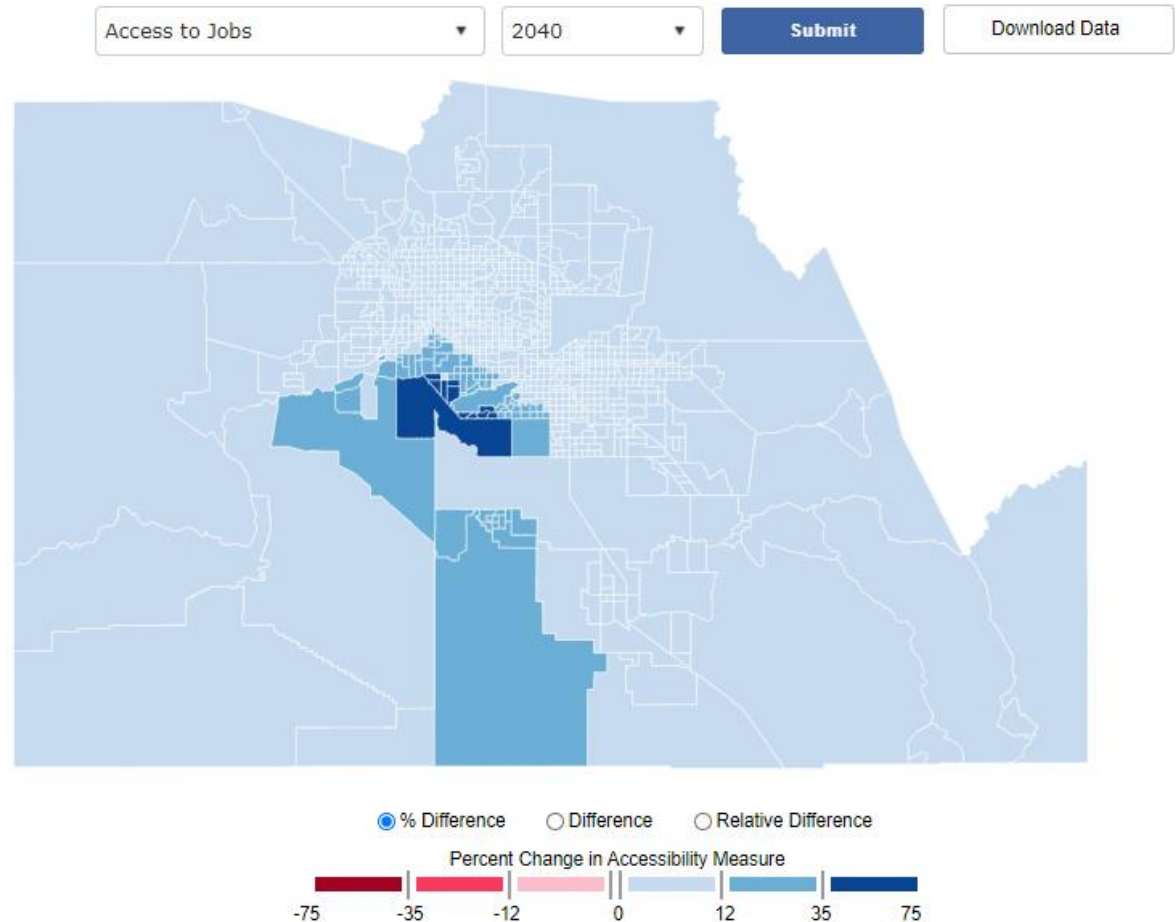
Regional Travel Demand Model summary (full-network totals) information from either the *MAG* or *PAG* 4-step model.

- Trips by mode and purpose
- Vehicle miles traveled
- Vehicle hours traveled
- Percent of VMT congested
- Occupancy factors by mode and purpose
- In-region vs external trips
- Build and no-build alternatives information in 2020 and 2040, additional operations years imputed

Accessibility Data – Preloaded or Custom Skims

Granular Accessibility Inputs

- TAZ O-D
Travel Time
- TAZ Household
and Emp Data
- Access to Jobs
- Business
Access to HHs



Disability Status

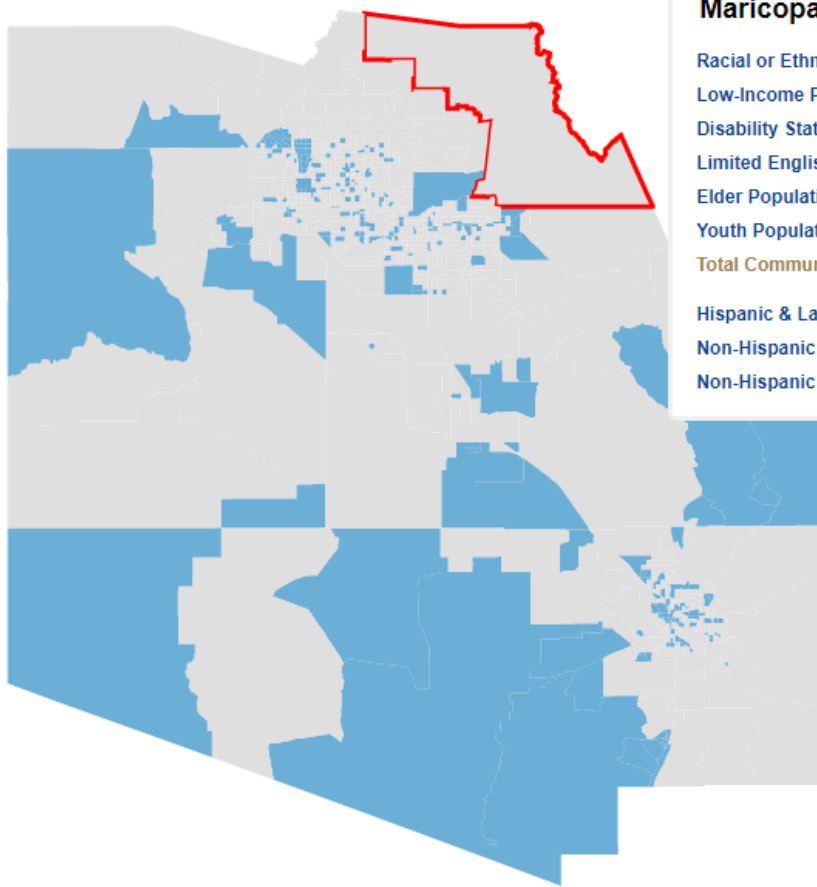
Download Data

Maricopa County, AZ

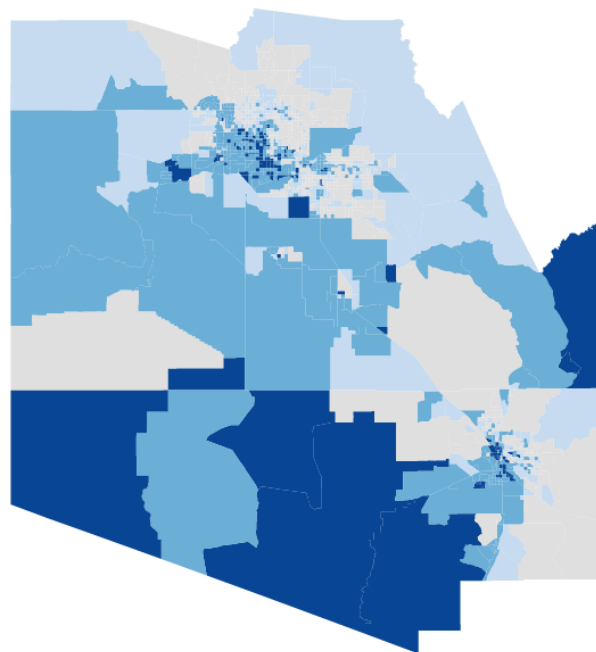
Racial or Ethnic Minority Populations	No
Low-Income Populations	No
Disability Status	No
Limited English Proficiency	No
Elder Populations	Yes
Youth Populations	No
Total Communities of Concern	1
Hispanic & Latino	0.8%
Non-Hispanic Black	0.5%
Non-Hispanic Native American	0%

Communities of Concern

Download Data



+ -



Severity of Concern

None

Some

Medium

Severe

Equity Evaluation

Equity Reporting

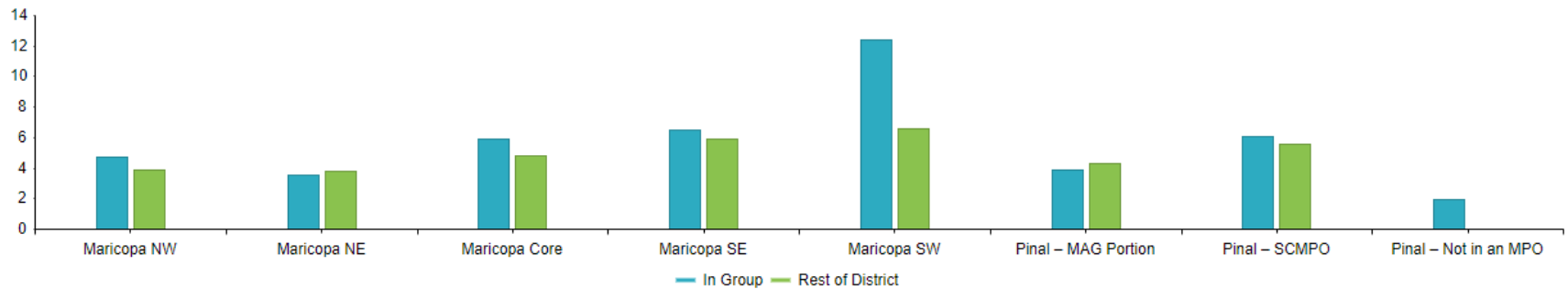
Change in Jobs by Equity Category - 2020

Change in Access to Jobs by Equity Category - 2020

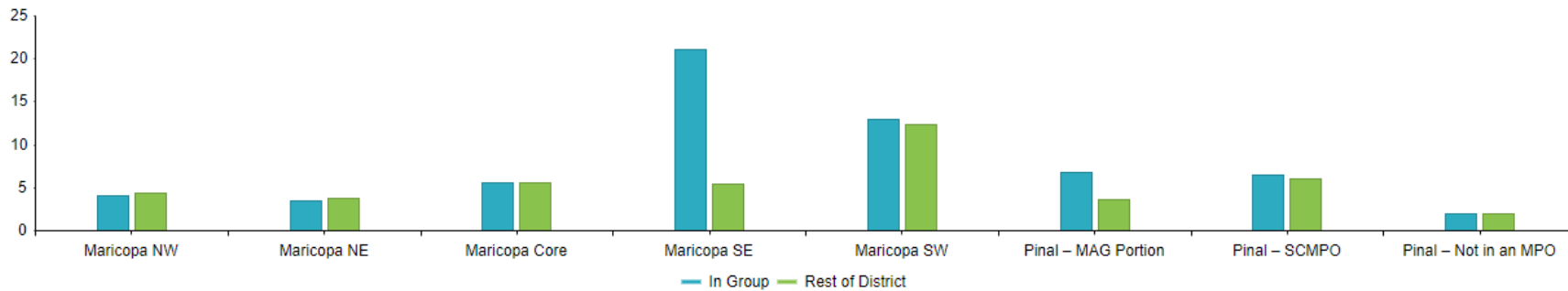
Quality of Jobs by Sub-County Region

Percent Change in Access to Jobs for Communities of Concern Compared to the Rest of their District
 (Empty cells indicate no identified Community of Concern or inappropriate comparisons)

Tracts over Any Threshold



Non-hispanic Native American Individuals

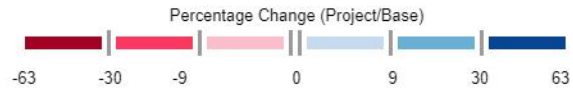
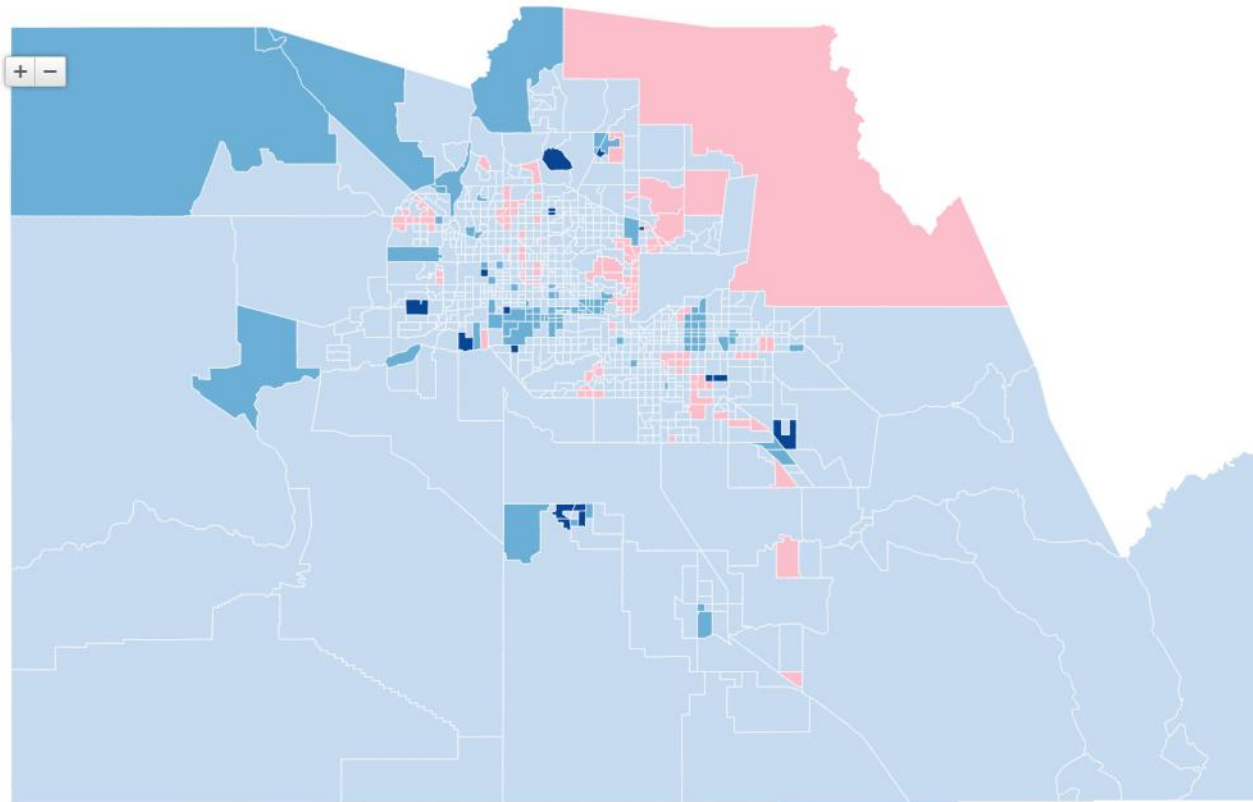


Land Value Results

Percent Change: Value per Sq. Ft. of Other Commercial Space

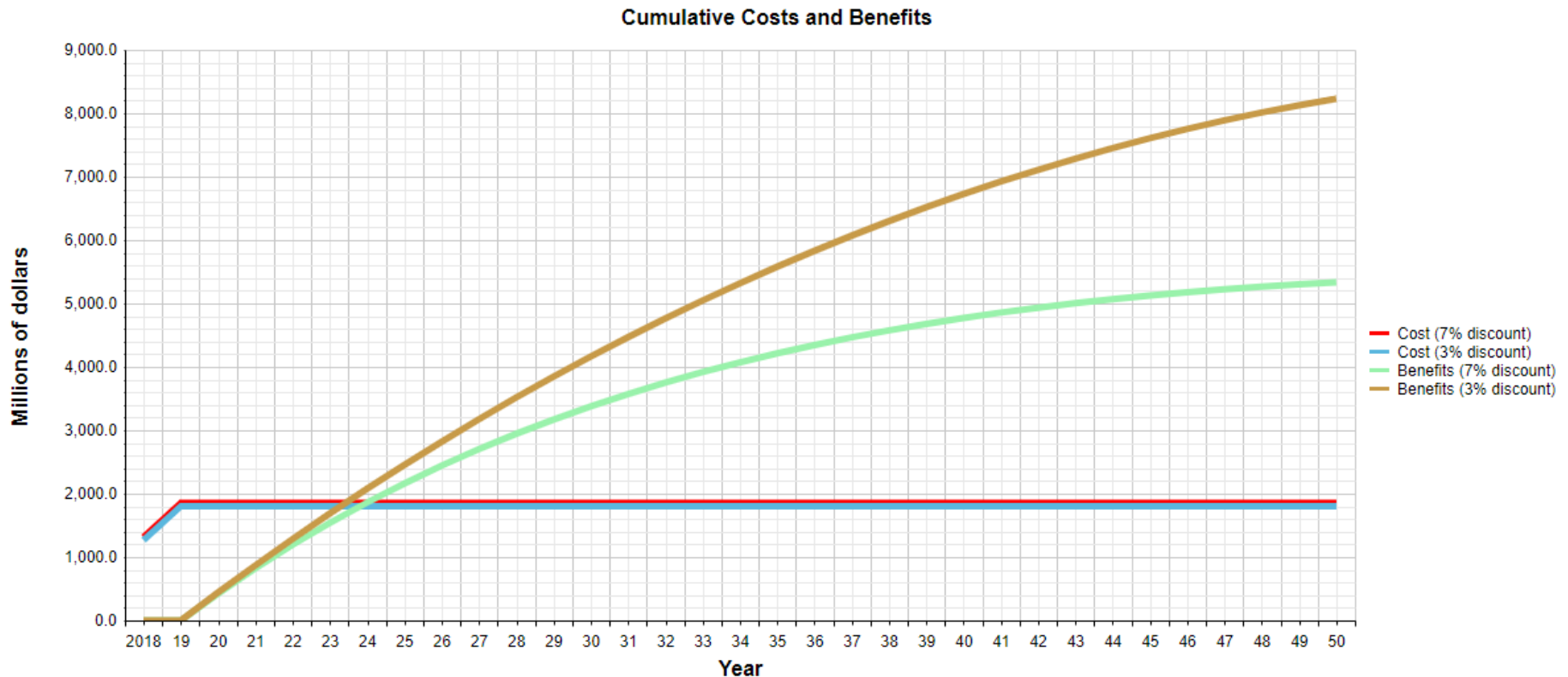
2020

Submit



- Single Detached
- Multi-Family Bldg
- Industrial
- Retail
- Other Commercial
- Housing Burden

Benefit Cost Reporting

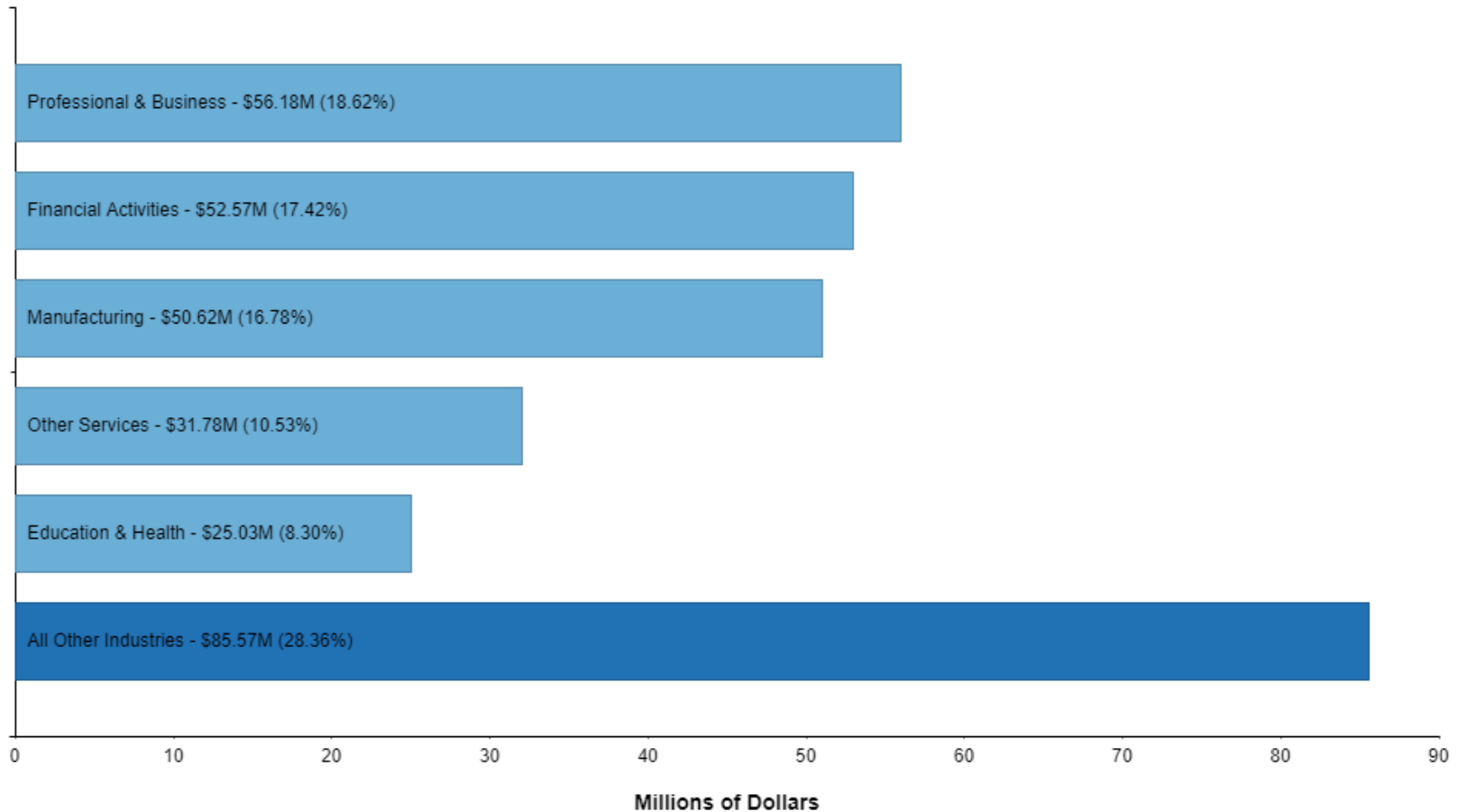


- Drill down into benefit categories and cost line items at different discount rates
- Consider reliability, congestion, freight costs, etc.

County-based Region Econ. Impacts

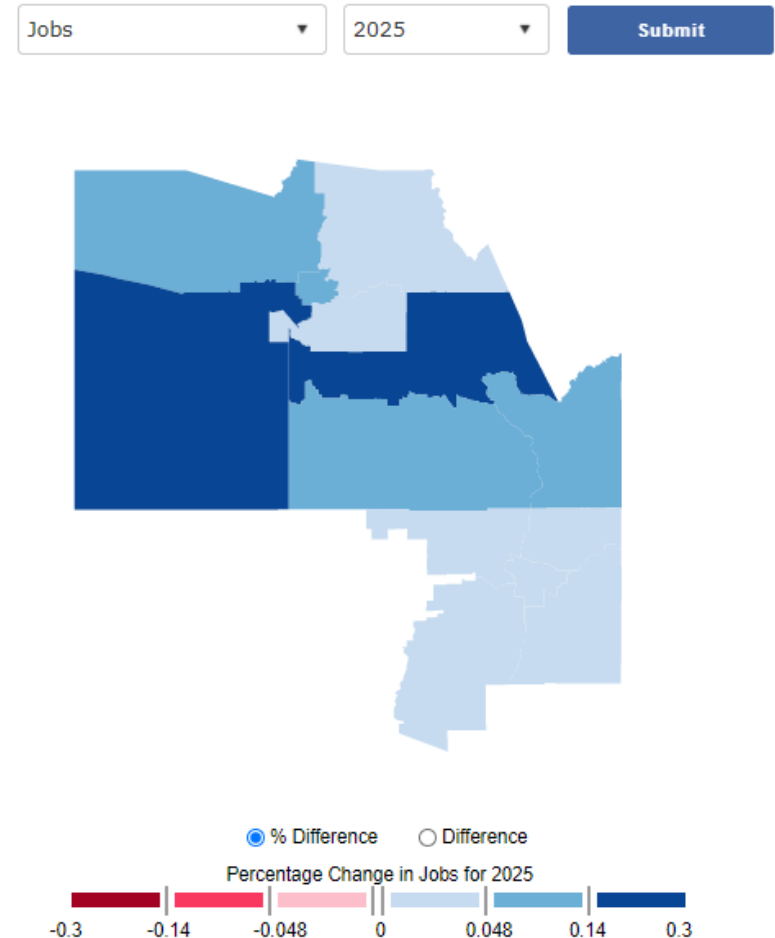
Long Term Economic Impact - Business Output for 2025

Top 5 sectors ▼



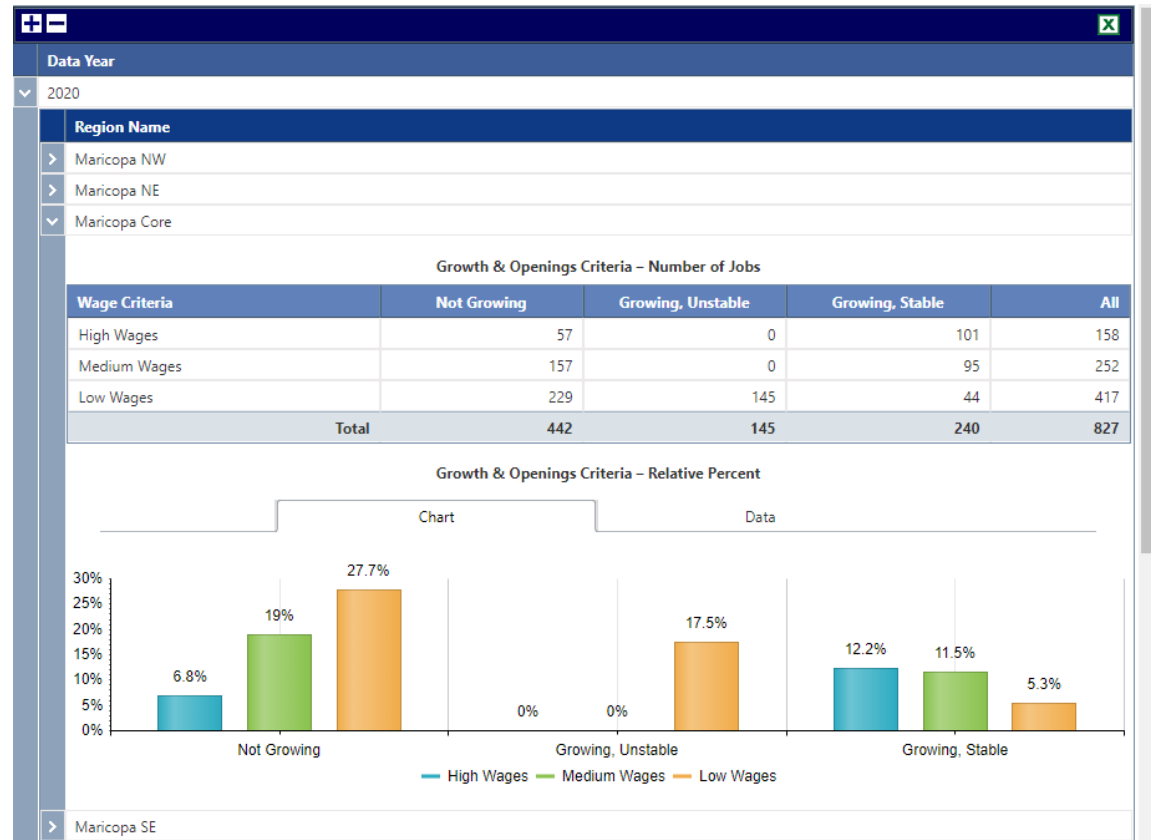
Subcounty Economic Impacts

- Custom Geographies
- Jobs
- Business Output
- Value Added
- Labor Income
- 12 Industries of Detail



Quality of Jobs

- By sub-county district & county-based region
- Quality based on wages (and implied benefits) and job growth potential and turnover/stability



National Replicability

- Builds on nationally available off-the-shelf economic models
- VIA module add-ons require only agency data and publicly available sources
- Established customization process for geographies and land value module
- Toolkit could be reproduced in other platforms or full custom models

NEXT STEPS AND FUTURE CONSIDERATIONS

Challenges & Lessons Learned

- 5 advisory group meetings
- 4 case study examples tested
- Data intensive
 - Inputs and outputs are voluminous
 - Automation is helpful for complex projects
- Intra-agency collaboration key
 - Planning, Modeling, etc.
- Inter-agency opportunities (i.e., travel model automation)

Final Work Products

Sun Corridor VIA User Guide

- Focus on lessons learned and hints
- Reference platform user manual

Sun Corridor VIA Technical Documentation

- Methodologies and variables
- Reference supporting documents

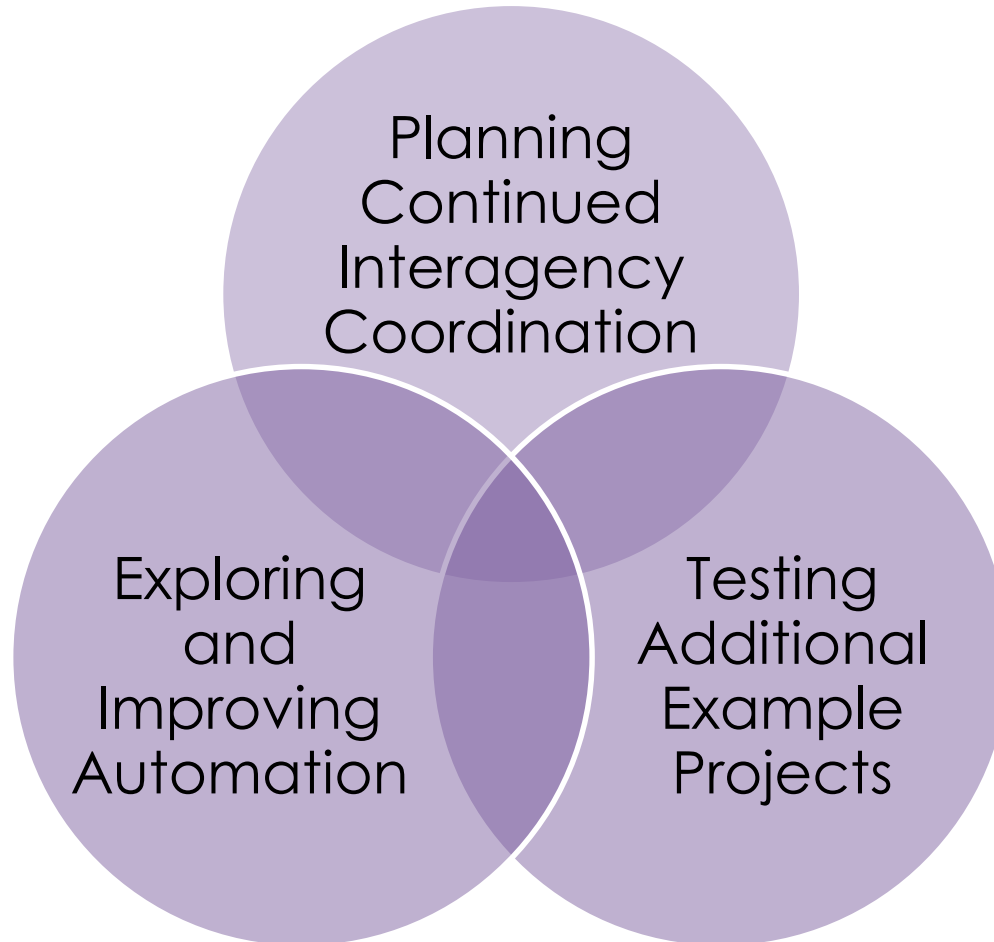
Sun Corridor VIA Case Studies

- 4 initial case study examples including transit and MAG- and PAG-region highways

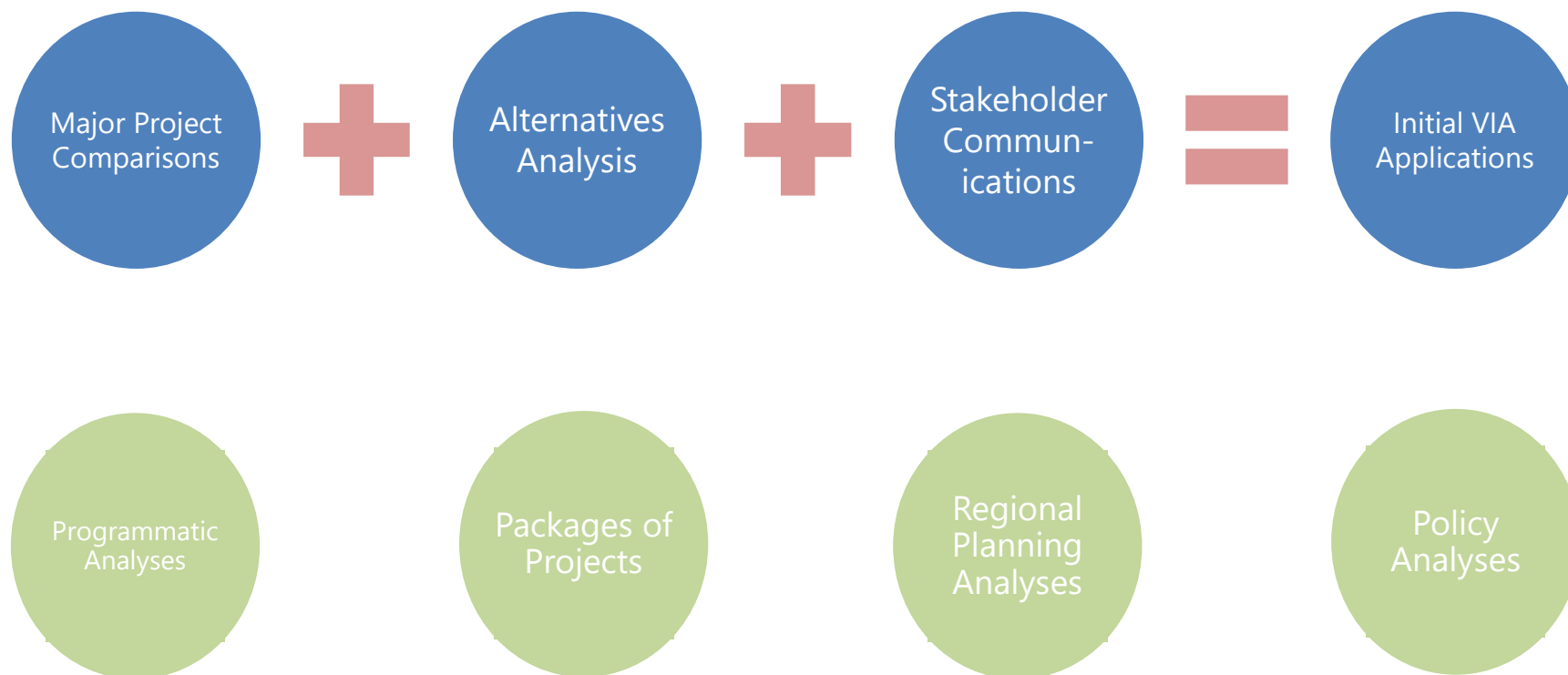
Project Impact & Next Steps

- Further strengthens the presumed connections between our regions as this tool highlighted some positive impacts that cross MPO boundaries
 - Already being used to help illustrate the impacts of large-scale infrastructure projects
 - The equity analysis gives us a new lens to view transportation project impacts
- AZ State Transportation Innovation Council grant for “Phase II” to conduct research into value capture within the state

Ongoing Activities



Future Considerations for Uses



THANK YOU!

CONTACTS:

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National Economic Partnerships Website:

- <https://www.fhwa.dot.gov/planning/megaregions/partnerships/>



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