SHRP2 C03: Interactions between Transportation Capacity, Economic Systems, and Land Use

Economic Development Research Group

In Association with:

ICF International

Cambridge Systematics, Inc.

Wilbur Smith Associates, Inc.

Susan Jones Moses and Associates

December 4, 2009 – Washington, DC

Economic Development RESEARCH GROUP

SHRP2 C03 Study Objectives

- Identify LONG-TERM Economic Impacts from New/Capacity-Enhancing Highway Investments
- Provide Findings that Illustrate the Interaction between Highway Infrastructure and Non-Highway Investments and Initiatives
- Develop Preliminary Assessment Guidance for Policy-makers and Practitioners
- Design Web-Based Tool for Illustrating and Communicating Kinds of Economic Impacts
- Create Flexible System for Adding New Cases

Economic Development RESEARCH GROUP

Potential Uses of SHRP2 C03

- Compare Proposed Projects to Real-World Examples
  - Use case search to access outcomes of similar projects
- Evaluate Potential Range of Economic Impacts Associated with Proposed Highway Projects
  - Assess effects of key project characteristics
  - Identify potential effects of concurrent investments
- Prioritize Based on Long-Term Economic Development Potential
  - Decide which project types, settings and initiatives produce best overall results

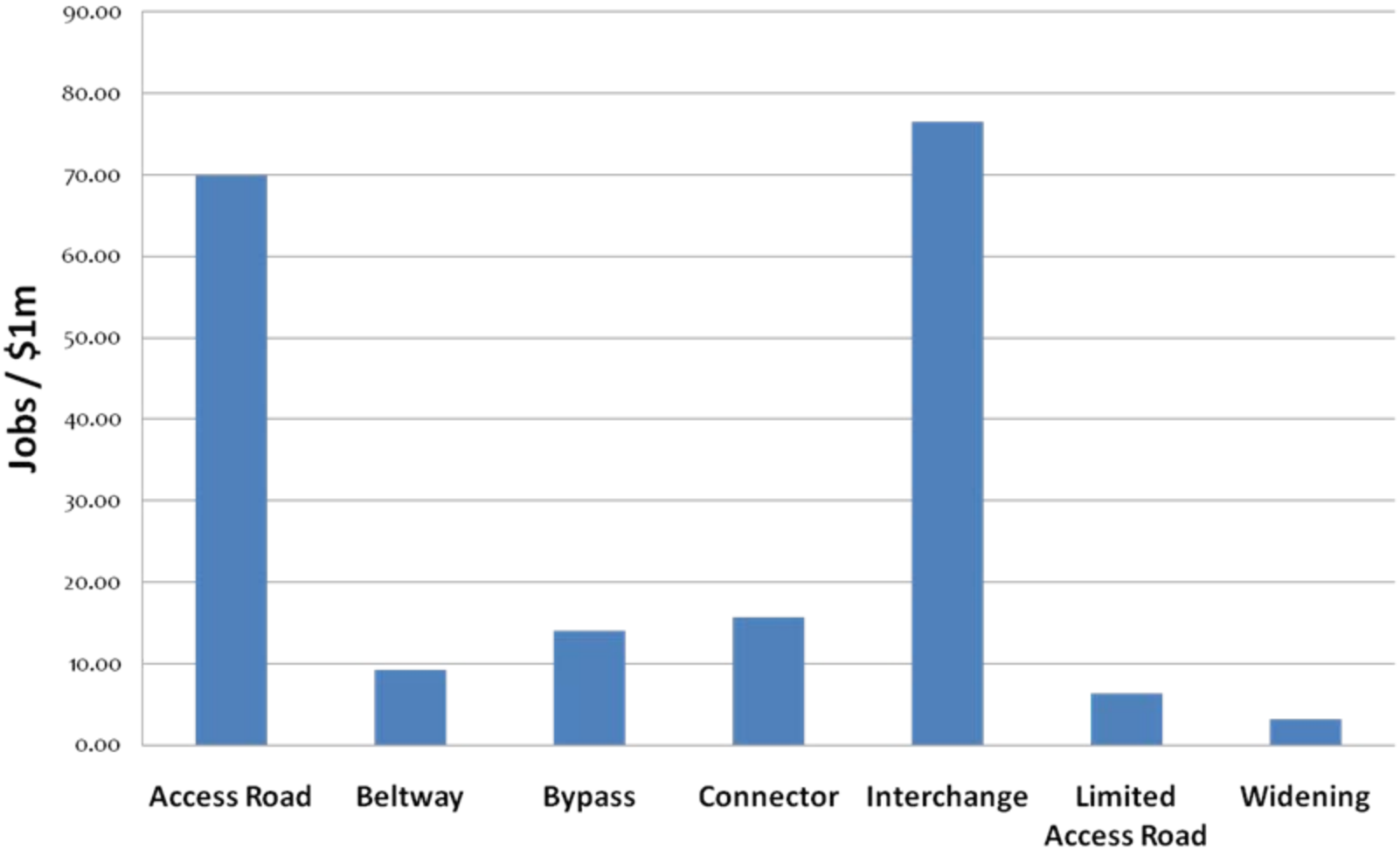
Case Characteristics

- Project Type
  - Nine types in current data
  - Two new types to be added
- Urban/Rural Setting
  - Directly affects level and type of economic impacts
- Degree of Economic Distress
  - Sets stage for leverage and potential factor interactions
- Intensity of Activity
  - Addresses traffic volume, market size and access to intermodal facilities (e.g., airport ports)

Case Characteristics

Project Type	Median Costs per Mile *(millions)*	Median AADT
Access Road	$ 1.45	-
Beltway	$ 24.78	58,000
Bypass	$ 5.85	10,000
Connector	$ 19.28	62,200
Interchange*	$ 90.01	116,550
Limited Access Road	$ 9.19	61,288
Widening	$ 43.44	20,500

Median Jobs (per $1 million)



Economic Development RESEARCH GROUP

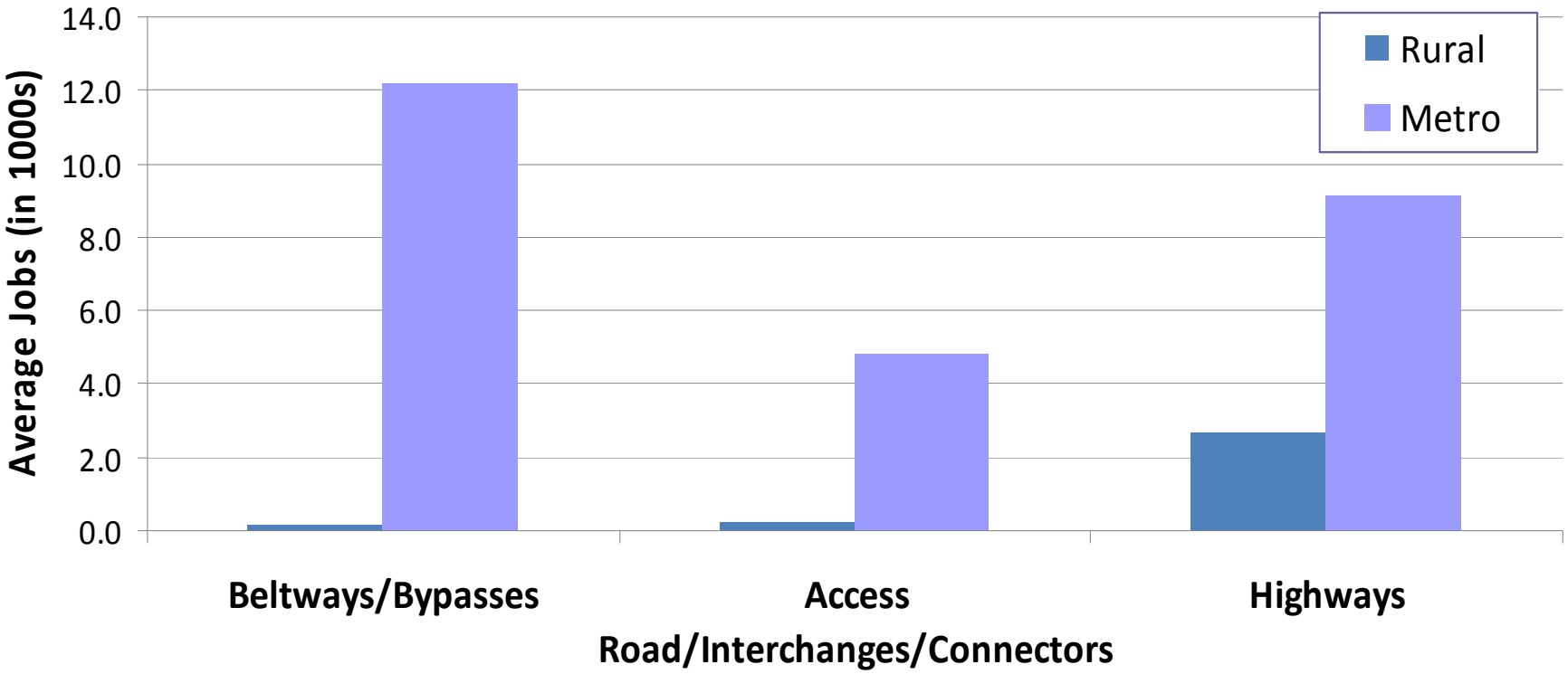
How Findings Were Developed

- Literature Review
  - Assessed prior studies, cases & ED research
- Synthesis of Case Studies/Interviews
  - Focused on project types & factors influencing economic impacts
- Assessment of Existing Models
  - Reviewed structural composition of ED models
- Statistical Analysis of Case Data
  - Identified key interactions & controlled for key factors
- Common Sense

SHRP2 C03 – Findings To-Date

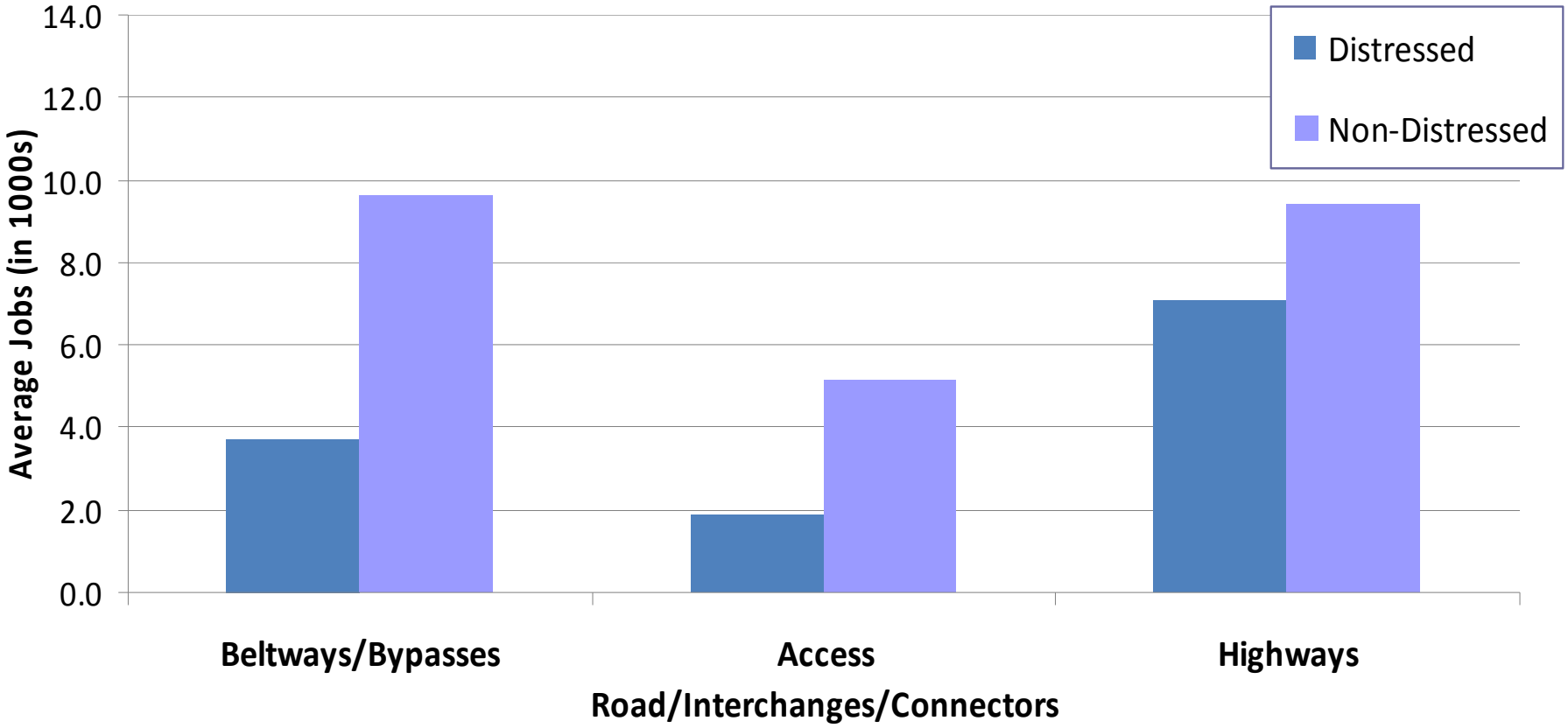
- Size of Investment ($$) is not the Primary "Driver" of Long-Term Economic Impacts
- Project Types and Economic Conditions Have Greatest Influence on Investment Outcomes
- Greatest Economic Effects Attributable to:
  - Regional setting
  - Current level of economic activity/distress
  - Location and intensity of use
  - Concurrent economic development policies

Actual Jobs Impacts by Density



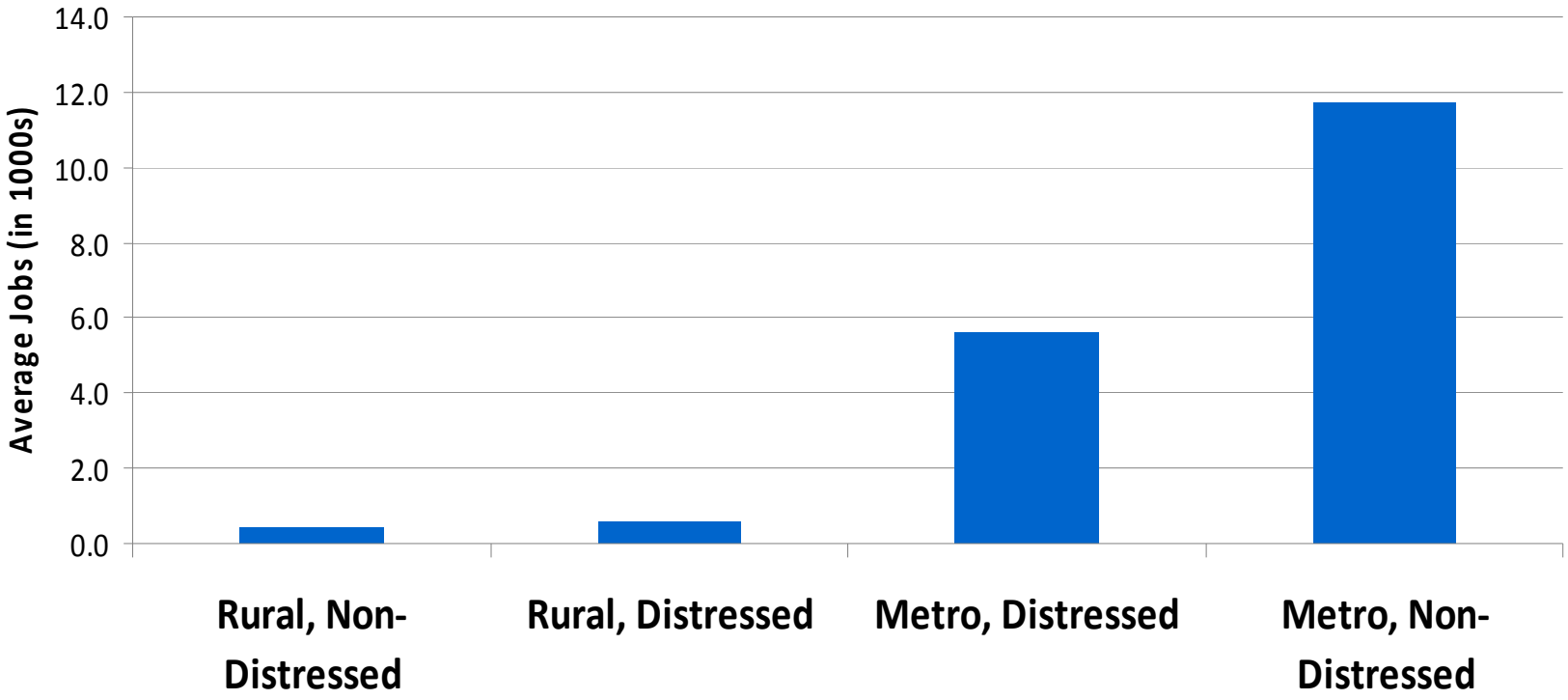
Economic Development RESEARCH GROUP

Actual Job Impacts by Distress Level



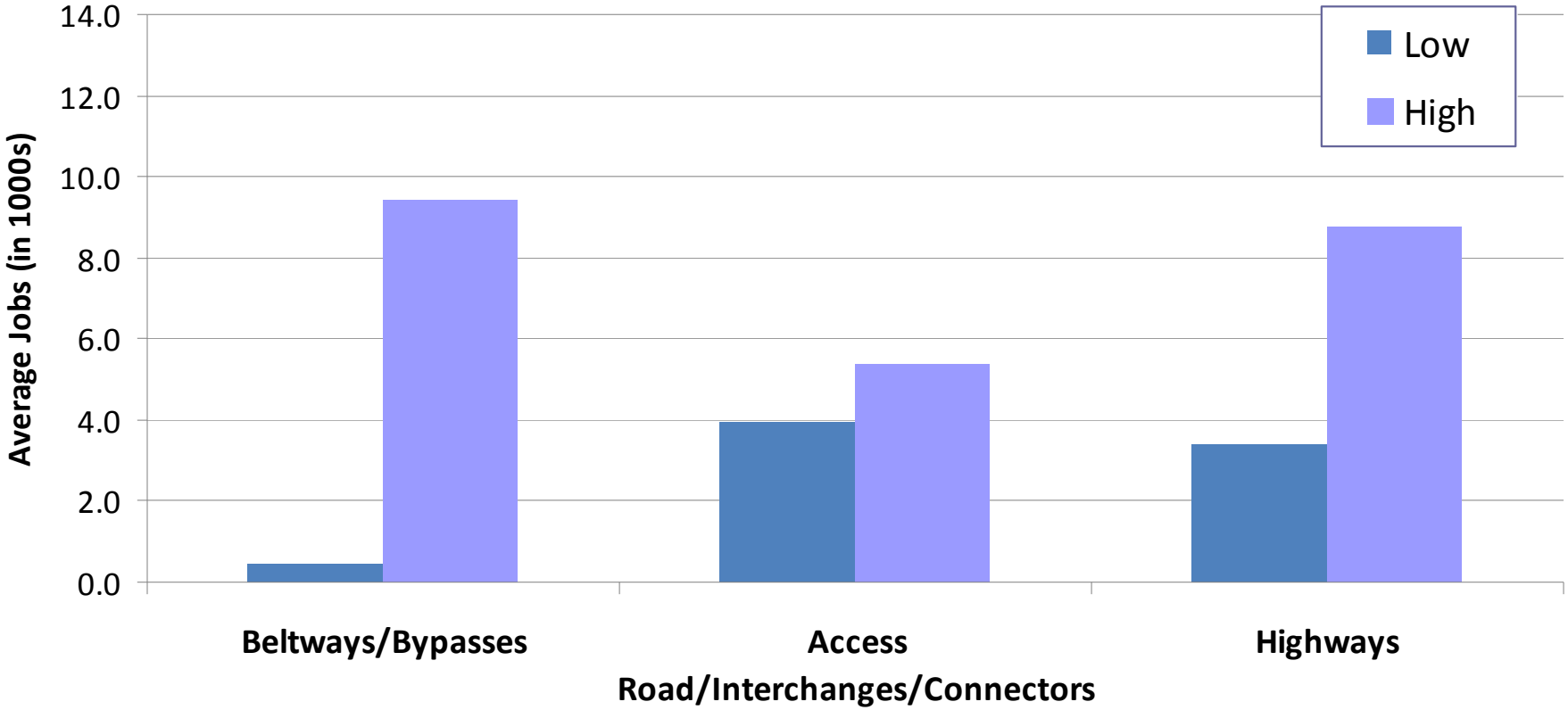
Economic Development RESEARCH GROUP

Interaction of Density and Distress



Economic Development RESEARCH GROUP

Actual Job Impacts by Intensity of Usage



Economic Development RESEARCH GROUP

Estimating Potential Economic Impacts

- Based on User-Specified Project Characteristics
  - Project type, location and economic conditions
- Applies Findings from Cases and Synthesis of Studies
  - Basic relationships establish range of economic impacts
- Users Provide Supplemental Adjustments
  - Includes policy and intensity of user-defined options
- Includes Internal Consistency and Checks

Setting Effects

- Variation in AADT
  - Metro areas 10% higher than median
    - Rural areas 74% lower than median
- Variation in Costs per Mile
  - Non-distressed areas 18.2% higher than mean
    - Distressed areas 17.5% lower than mean

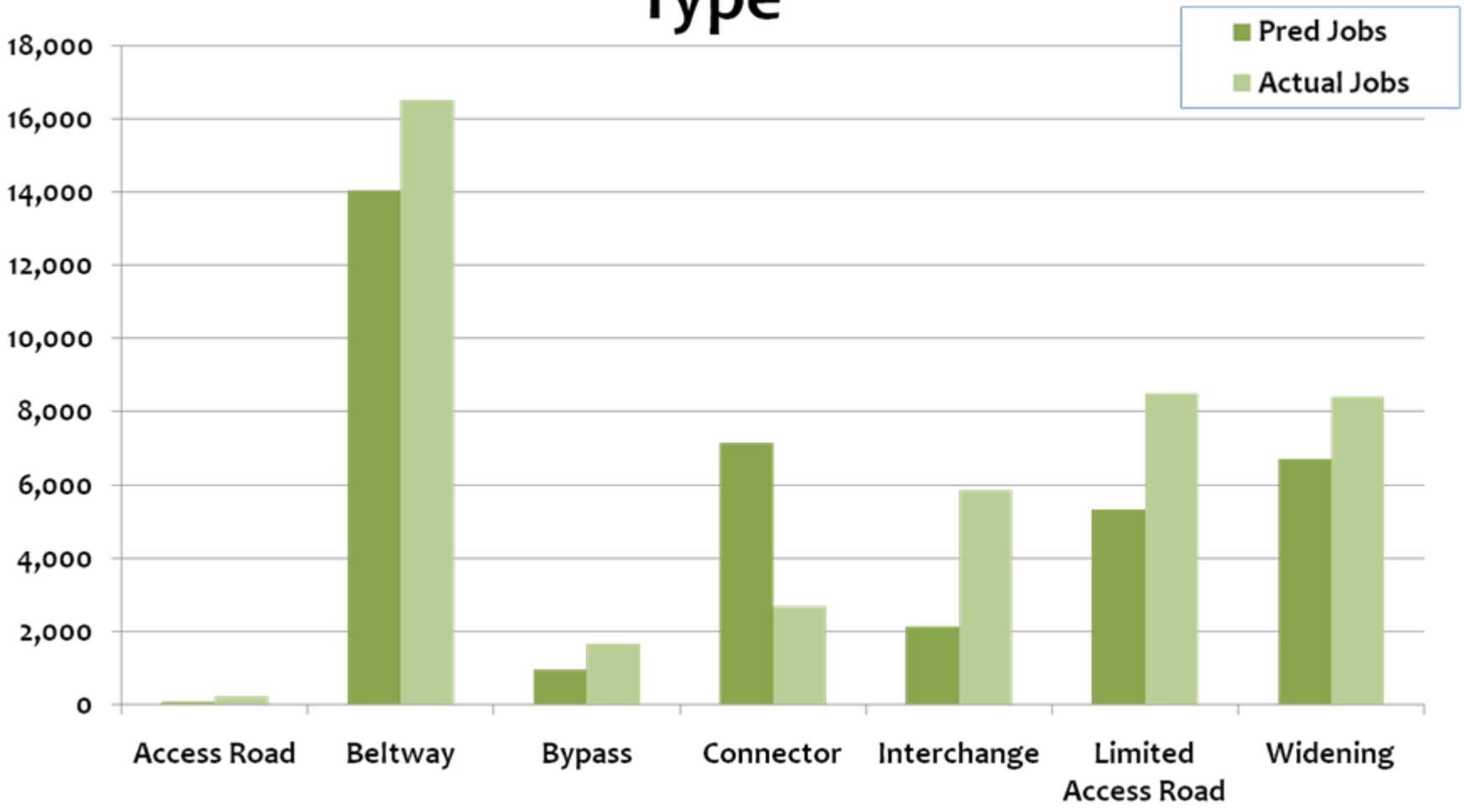
Key Interaction Factors

- Access to Alternative Modes
  - Airports
  - Rail Intermodal Facilities
  - Seaports
- Market Access
  - Labor Markets
  - Freight/Delivery Markets
- Congestion
  - Shifts spatial distribution of economic impacts

Effects of Interactions

- Effects of Concurrent Infrastructure
  - Water, sewer, broadband, power, etc.
    - Range of effects: -35% to +20%
- Supportive Land Use Policies
  - Permitting, zoning, special districts, etc.
    - Range of effects: -20% to +11%
- Business Incentives
  - Tax increment financing, abatements, job training programs, etc.
    - Range of effects: -5% to +8%

Actual and Predicted Job Impacts by Type



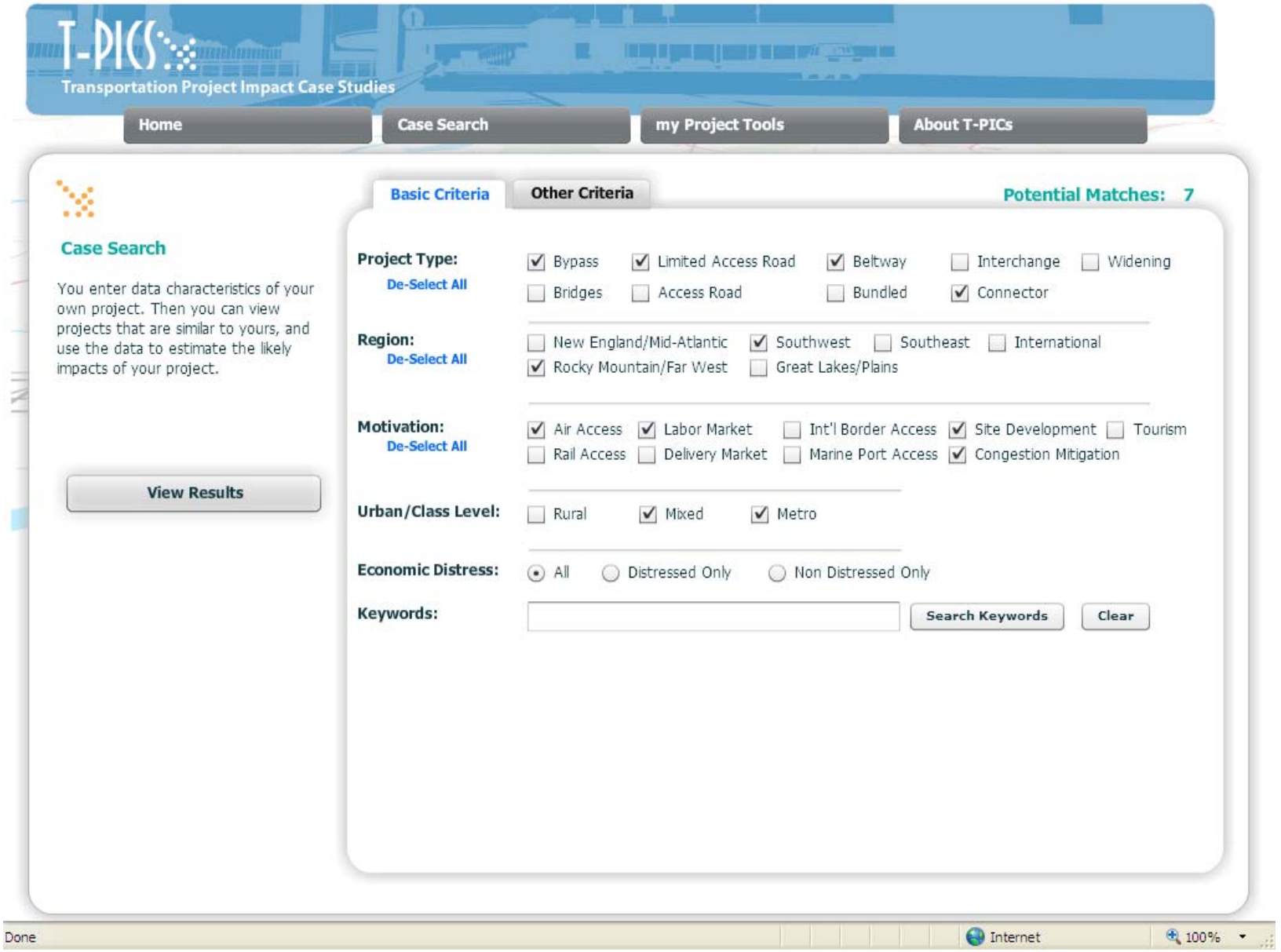
Economic Development RESEARCH GROUP

Challenges in Case Development

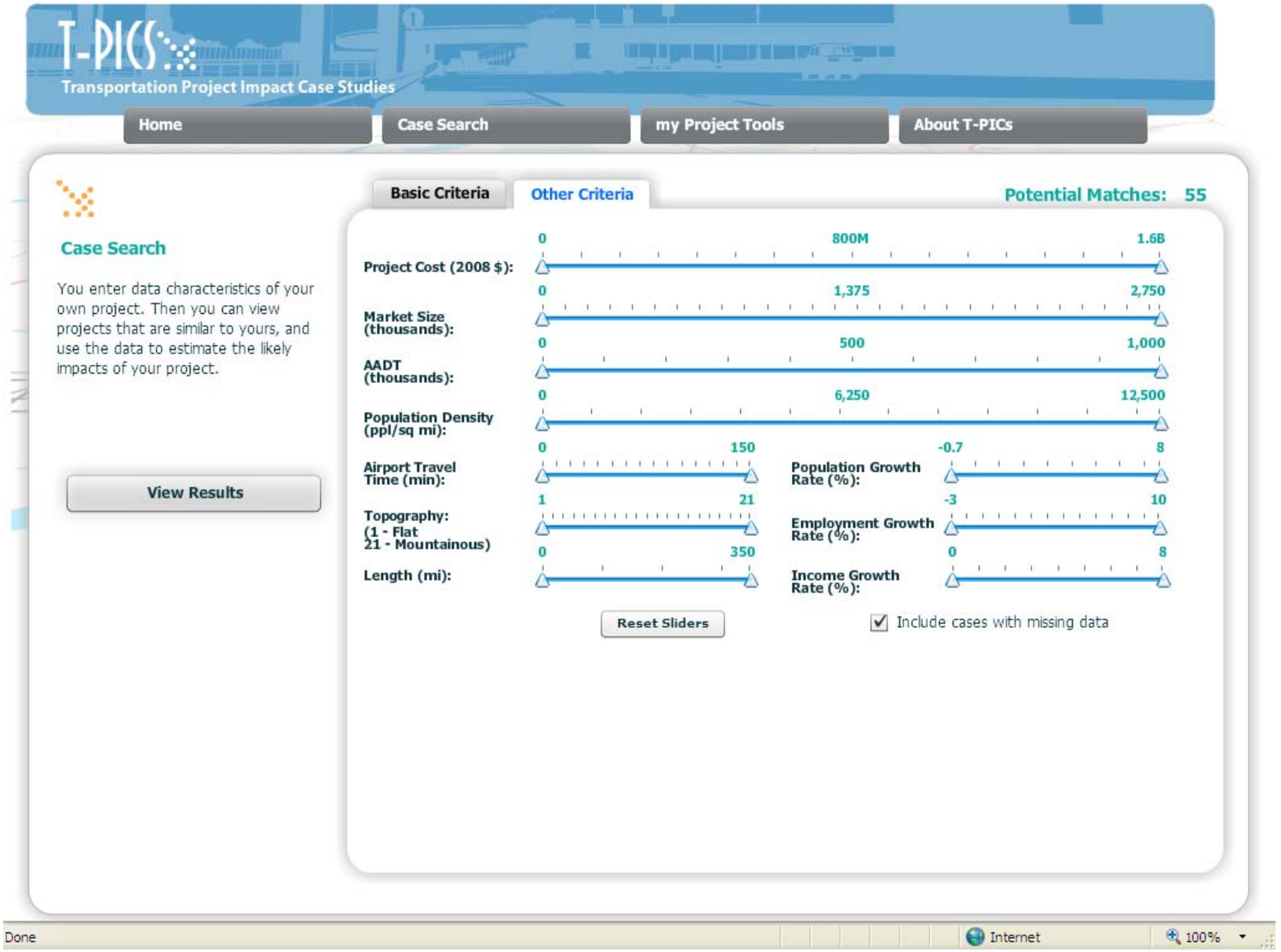
- Obtaining Retrospective Data on Cases
  - Economic impacts take time to manifest themselves
  - Timing differs by project type
- Distinguishing Cyclical Effects from Investment-Induced Effects
  - Historical baselines for property values and taxes are often unavailable or incomplete
- Separating Highway Investment Effects from Other Economic Development Initiatives
  - Urban/rural and distressed/non-distressed areas
- Assessing Effects of Large, Phased Projects

SHRP2 C03 – Next Steps

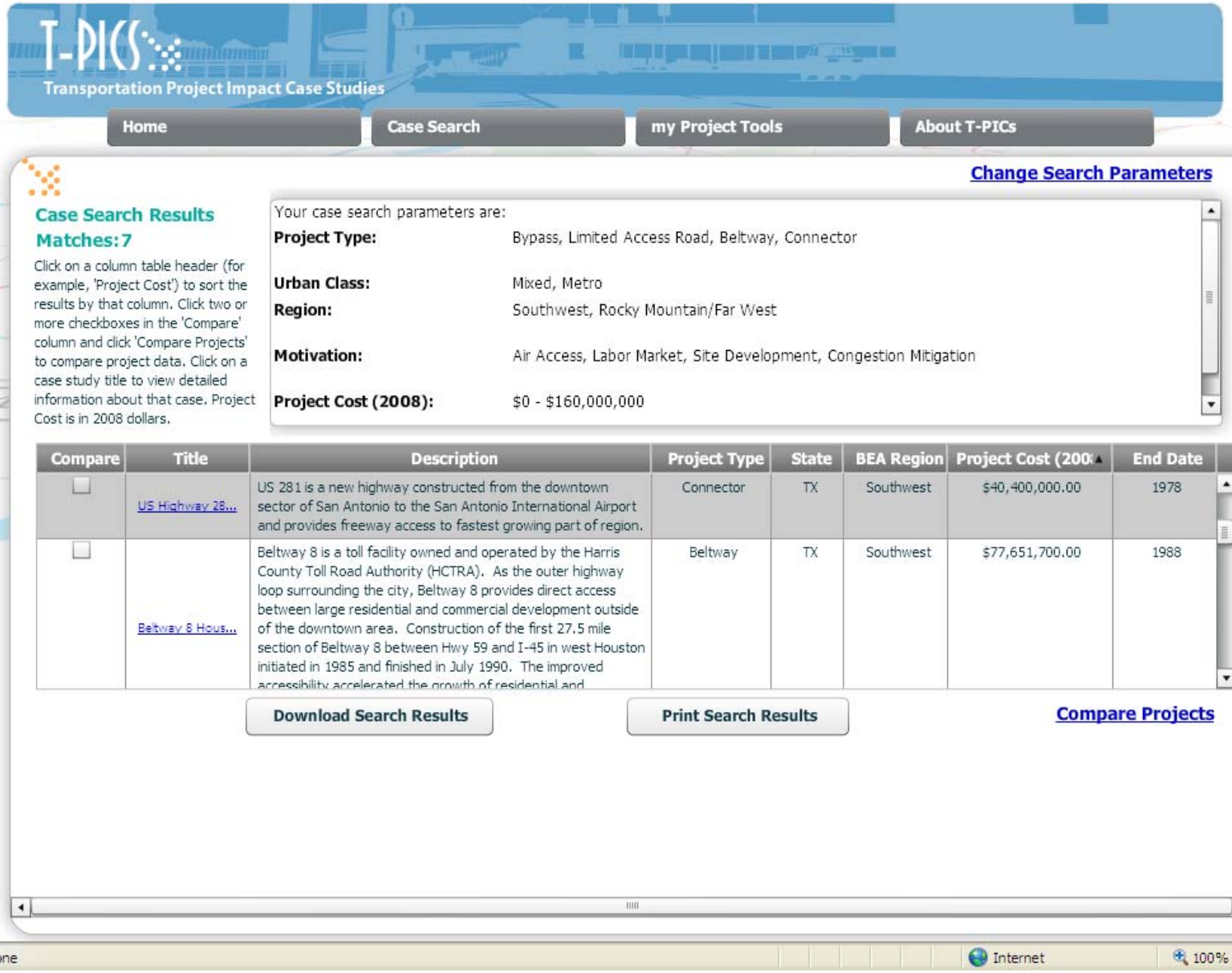
- Add 40 New Case to:
  - Expand range of project types
  - Add key information to under-represented case data
- Roll-out Project Tools and Results
  - Web tool prototype – January 2010
  - Complete set of 100 Cases – July 2010
  - Practitioner's guide and user's handbook – October 2010
- Apply Findings and Methods to New Investment Initiatives



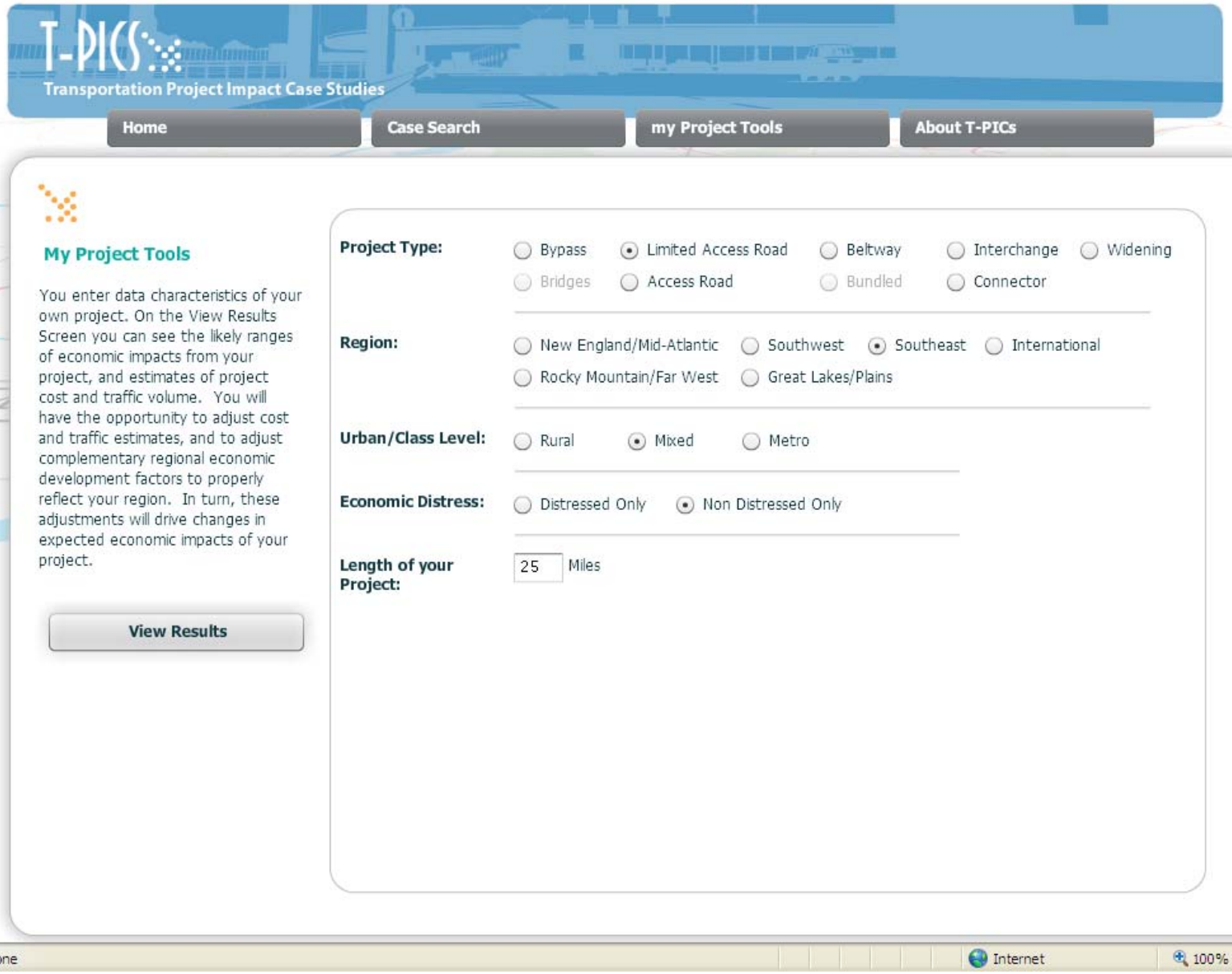
Economic Development RESEARCH GROUP



Economic Development RESEARCH GROUP



Economic Development RESEARCH GROUP



Economic Development RESEARCH GROUP

Change Search Parameters

My Project Tools

You can change the average project cost and expected AADT of your project, and adjust the characteristics of your region to reflect local conditions. These changes will affect the economic impacts of your project.

Current Project Cost ($):
$271 million

Estimated Project Cost ($):
$271 million

Estimated AADT (thousands):
61,000

Business Climate: Negative | Adequate | Aggresive

AADT: Below Average | Average | Above Average

Land Use Policies: Restrictive | Adequate | Supportive

Infrastructure: Not Available | Adequate | State-of-Art

	Jobs	Wages	Output
Direct Impacts	1,780 - 2,960	$236,793,000 - $394,655,000	$236,793,000 - $394,655,000
Supplier and Wage Impacts	1,070 - 1,780	$142,076,000 - $236,793,000	$142,076,000 - $236,793,000
Total Impacts	2,850 - 4,740	$378,869,000 - $631,448,000	$378,869,000 - $631,448,000

Change Search Parameters

My Project Tools

You can change the average project cost and expected AADT of your project, and adjust the characteristics of your region to reflect local conditions. These changes will affect the economic impacts of your project.

Current Project Cost ($):
$271 million

Estimated Project Cost ($):
$271 million

Estimated AADT (thousands):
61,000

Business Climate: Negative | Adequate | Aggresive

AADT: Below Average | Average | Above Average

Land Use Policies: Restrictive | Adequate | Supportive

Infrastructure: Not Available | Adequate | State-of-Art

	Jobs	Wages	Output
Direct Impacts	1,780 - 2,960	$236,793,000 - $394,655,000	$236,793,000 - $394,655,000
Supplier and Wage Impacts	1,070 - 1,780	$142,076,000 - $236,793,000	$142,076,000 - $236,793,000
Total Impacts	2,850 - 4,740	$378,869,000 - $631,448,000	$378,869,000 - $631,448,000

Economic Development RESEARCH GROUP