Economic Development
RESEARCH GROUP

TPICS, TIGER and US Experience: A Focus on Case-Based Ex Post Economic Impact Assessment

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International Transportation Forum Round Table

Ex-post assessments of transport investments and policy interventions

Paris, September 2014

History of Ex Post Analysis in US

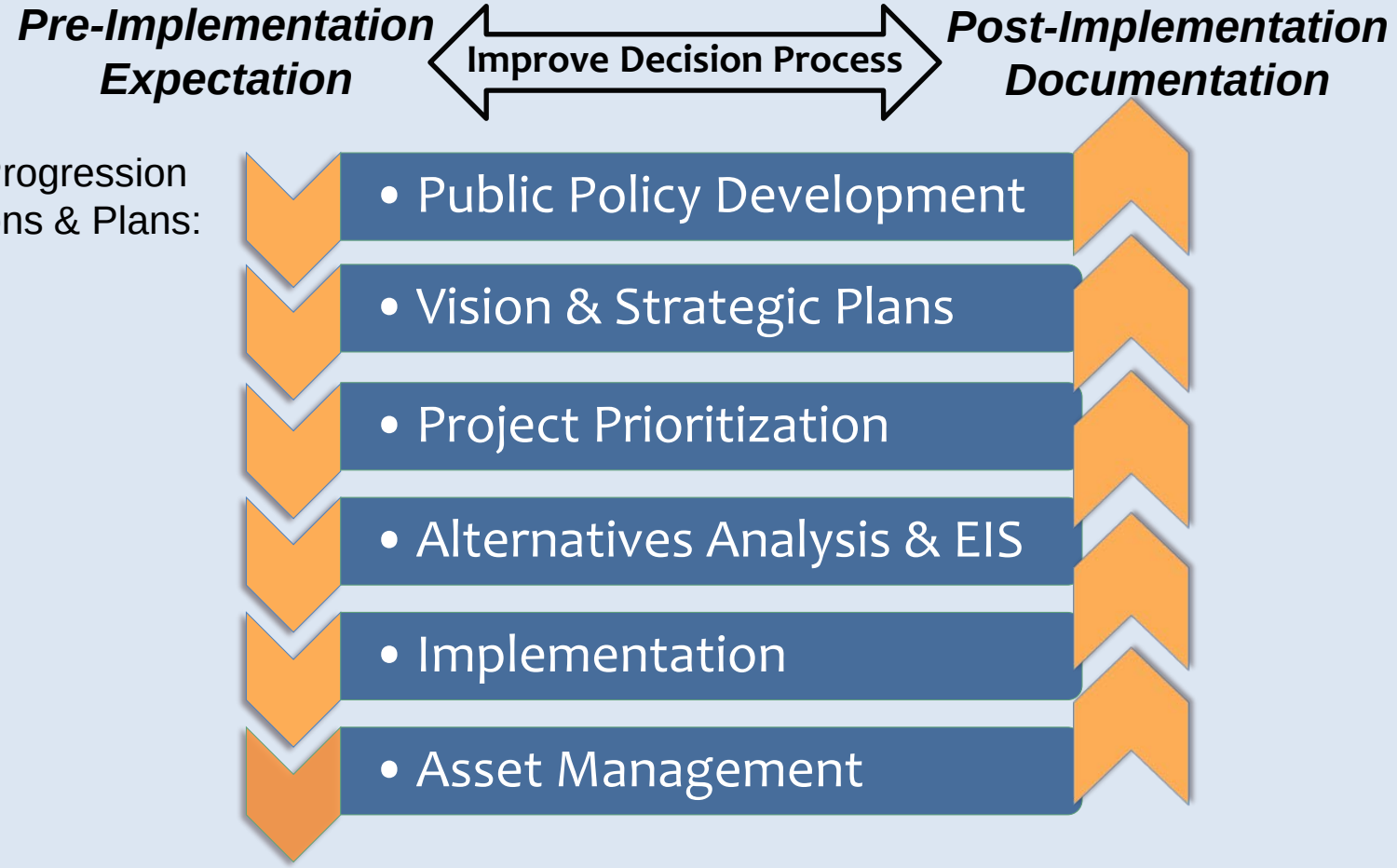
- Rural Interstate Highways – 1979
  - Developed concept of comparison areas
- US GAO and US FHWA– 1991/1996
  - Based on prior GAO guidance (1991)
  - US FHWA Delta Region Report - 1995
  - US GAO Impact of Economic Development Agencies – 1996
- US Appalachian Regional Commission – 2000/2007
  - Using GAO Guidance for transportation and non-transportation investments (200 cases)
- US Federal Highway Administration – 2002/2005
  - Conducted studies of twelve 4-lane highway projects
  - Using FHWA guidance on ex post highway assessment (2001)

US Focus on Lessons Learned

- Do Forecasts of Economic Development Match Performance?
- Do Investments Support Policy Initiatives?
- Can Project Design Be Improved?

US experience is grounded in demonstrating how past outcomes support current decision-making. They have focused on the economic development impacts of some of the more controversial types of highway investments (bypasses and interchanges).

Stages of Transport Decision Process



www.edrgroup.com/pdf/Planning-Oct2013-EconomicImpactTools-pp39-42.pdf

Strategic Highway Research Program (SHRP2)

- Authorized by US Congress in 2005
  - Recognized need for applied Ex Post methods and analysis of major highway investment projects
- Key Objectives of TPICS Development Program
  - Determine the changes in the economic systems impacted by transportation capacity investment
  - Provide data and results from case-based analysis to demonstrate impacts of a proposed project
  - Demonstrate how this fits into collaborative decision making for capacity expansion
- Part of a Broader Program on Collaborative Decision-making Under SHRP2 Capacity Program

Features of TPICS

- Database of 100 Case Studies
  - Designed for “early-stage” planning and developing grounded concepts for highway investment strategies
  - Provides Internet-based interactive case study selection and review
  - Identifies both transportation and non-transportation factors influencing economic development associated with project impacts
- Links to Background Studies and Information
  - Technical papers provide background on TPICS development and methodologies
- User Guides and Handbooks on Using Case-Based Ex Post Analysis
  - Guidance provided for users to show how use TPICS and interpret cases provided in database

TPICS Interactive Tool Structure

- Information Provided for Each of Current 100 Cases
  - Case Characteristics – A review of the selection parameters chosen for the case, including its location and cost
  - Setting – A summary of the demographic and economic conditions at the time the project was developed
  - Pre/Post Conditions – Measures of economic activity prior to project inception and subsequent to construction
  - Narrative – Description of the case, findings, conditions and characteristics that comprise the body of the case study
  - Economic Impacts – Estimates, based on development of each case, describing the observed effects of the project on jobs, income and output
  - Images – Google Maps® of project location with street-view perspectives on the location, milieu, and current street-level views

Case Development Process

- Local Data from Interviews
  - Land use regulations, use of business incentives; presence and use of support programs for economic development, other local factors enhancing or reducing observed economic changes.
- Project Motivation
  - Congestion reduction or access enhancement;
- Establish Baseline for Counterfactural Scenario
  - Pre-construction conditions based on documentation
  - Available documentation available for each case
- Standardization of Case Development Process
  - Initial design based on literature reviews and experience
  - Pre-tested methods using pilot cases
  - Refined and adapted methods based on pilots
  - Instituted oversight of team-based case development process


T-PICS
Transportation Project Impact Case Studies
www.tpics.us
Home
Case Search
My Project Tools
About T-PICs
The TPICS (Transportation Project Impact Case Studies) System
Contains: (1) a searchable database of past projects and their observed impacts on economic development, and (2) a predictive tool that estimates the range of likely impacts of proposed new projects, based on results from already-built projects. See buttons above.
Case Search (Past Projects)
You define a set of project characteristics. The system screens available cases and selects those that meet your criteria. You can then view the selected cases.
The Case Search feature allows you to search for specific types of projects in specific types of settings. So if a specific type of project has been proposed or suggested for your area, you can use this information to inform agency planners and public meeting attendees about past experiences with similar types of projects. The available information includes descriptions of project features and pre/post data pertaining to project impacts on the local or regional economy. It also includes detailed results from local interviews on project objectives, implementation issues and other factors affecting the nature of project impacts. Aerial photos and links to other reports are also provided. Lessons learned from these experiences can be used to improve project design and implementation processes.
My Project Tools (Predict Impacts of Future Projects)
You define a set of project characteristics. The system identifies case studies of past projects that meet your criteria. You can then view details of those cases.
The Project Tools feature is a form of expert system that draws from the case study database to estimate the range of economic impacts likely to results from a specific type of project in a defined setting. It provides a form of "analysis by analogy," in that it identifies a reasonable range for expected impacts of proposed projects, based on prior experiences. You can thus use it as a screening tool for early stage project assessment.
Users should note that neither the searchable database nor the project prediction tool provides information on the effects of changing traffic volumes, speeds, distances or safety, or effects of changing reliability, connectivity or accessibility. In real world situations, these factors can play a substantial role in determining whether the actual economic impact of a project will be at the low end, high end or outside of the normally expected range. To assess the impact of these additional factors, it is necessary to use economic impact models and tools that do measure these added factors affecting the wider economic impacts of projects.
Further Information
SUMMARY OF TPICS
ADVICE ON TPICS USE
INSTRUCTIONS FOR TPICS
ANALYSIS OF TPICS DATA
FURTHER REPORTS ON TPICS
TOOLS TO ASSESS WIDER ECON IMPACTS
SUBMIT NEW CASE
FORUM
We are very interested in your feedback. If you have any questions or comments about TPICS, please click the button below to let us know what you think.
Feedback

T-PICS: Results: Cases Found

Transportation Project Impact Case Studies

Home | Case Search | My Project Tools | About T-PICs

You enter data characteristics of your own project. Then you can view projects that are similar to yours, and use the data to estimate the likely impacts of your project.

Potential Matches: 100

View Results

Download Search Results

Print Search Results

Compare Projects

Basic Criteria | Other Criteria

Project Type: Select All / De-Select All
☑ Bypass ☑ Limited Access Road ☑ Beltway ☑ Interchange ☑ Intermodal Passenger
☑ Bridges ☑ Access Road ☑ Widening ☑ Connector ☑ Intermodal Freight

Region: Select All / De-Select All
☑ New England/Mid-Atlantic ☑ Southwest ☑ Southeast
☑ Rocky Mountain/Far West ☑ Great Lakes/Plains ☑ International

Motivation: Select All / De-Select All
☑ Air Access ☑ Labor Market ☑ Int'l Border Access ☑ Site Development ☑ Tourism
☑ Rail Access ☑ Delivery Market ☑ Marine Port Access ☑ Congestion Mitigation

Urban/Class Level: ☑ Rural ☑ Mixed ☑ Metro

Economic Distress: ◉ All ○ Distressed Only ○ Non Distressed Only

Keywords: Clear

Compare	Title	Description	Project Type	State	BEA Region	Project Cost (2008)	End Date
☐	Hammondsport	The Hammondsport Industrial Access Road involved resurfacing of three adjoining streets on the village's industrial western flank, running a total length of about a mile.	Access Road	NY	New England/Mid-Atlantic	$1,609,742	2001
☐	Interstate 68	Interstate 68 is part of the Appalachian Development Highway System, a network of roads intended to foster economic development throughout the Appalachian region. The route followed by I-68 was first designated as Corridor E by the Appalachian Regional Development Act of 1965.	Limited Access Road	MD	New England/Mid-Atlantic	$1,708,257,711	1991
☐	Yass Bypass	A bypass in town of Yass, New South Wales (NSW) State by the Hume Highway - linking Sydney and Melbourne. The bypass includes 15 bridges and 18km of dual carriageway.	Bypass	New South Wales	International	$127,649,810	1995
☐	Interstate 29	I-29 was constructed to serve as a major north-south interstate through the upper Great Plains to Canada.	Limited Access Road	IA	Great Lakes/Plains	$604,309,905	1973
☐	US Highway 281, San Antonio (Extension)	US 281 is a new highway constructed from the downtown sector of San Antonio to the San Antonio International Airport and provides freeway access to fastest growing part of region.	Connector	TX	Southwest	$176,434,913	1978
☐	Richmond, Virginia, I-295	I-295, is a 53-mile bypass around the cities of Richmond and Petersburg, and provides north-south, east-west,					

T-PICS: Economic & Development Impacts

Transportation Project Impact Case Studies

Home | Case Search | My Project Tools | About T-PICs

Characteristics | Setting | Pre/Post Conditions | Narrative | Impacts | Images

Hammondsport

The Hammondsport Industrial Access Road involved resurfacing of three adjoining streets on the village's industrial western flank, running a total length of about a mile.

Print Current Tab

Related Websites:

ARC | Research Reports

Attachments:

ARC Public Works 2007

Pre/Post Conditions Scale: ○ Local ◉ County ○ State

Measure	Pre-Project	Post-Project	Change	% Change
Personal Income	$35,971	$37,131.2	$1,160.2	3.23%
Economic Distress	1.35	1.15	-0.2	-14.62%
Total Num. of Jobs	41,195.3	45,322	4,126.7	10.02%
Population	98,907	98,236	-671	-0.68%
Property Value	$96,841.3	$74,971.6	-$21,869.7	-22.58%
Business Sales ($M's)	$7,612.51	$7,859.57	$247.06	3.25%
Tax Revenue ($M's)	N/A	N/A	N/A	N/A
Density (ppl/sq mi)	71	71	0	0%

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Characteristics | Setting | Pre/Post Conditions | Narrative | Impacts | Images

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HAMMONDSPORT ACCESS ROAD

1.0 SYNOPSIS

Hammondsport is a town of 735 in the Finger Lakes region of New York State. The Industrial Access Road resurfaced and provided drainage improvements to an existing one-mile stretch of street serving the town's manufacturing and tourist industries. The project was intended to retain manufacturing jobs and to create new jobs in tourism. However, due to structural factors, the village has continued to lose jobs in manufacturing while winery tourism is stable to declining. The project has had no significant economic impacts. Its main impact was institutional in that it helped the village of Hammondsport retain its independence by enabling it to continue to resist annexation into the larger surrounding town of Urbana. The project supported 25 jobs at the winery, however, these jobs are seasonal and tend to fluctuate.

2.0 BACKGROUND

2.1 Location & Transportation Connections

Hammondsport, New York is located at the head of the Finger Lakes Champagne Trail in northwestern New York, 90 miles south of Rochester. The town is approximately 10 miles north of I-86 via State Route 54 and is 87 miles southeast of Rochester, where there is a regional airport.

2.2 Community Character & Project Context

Hammondsport, New York, is a quaint village of 735 people at the head of the Finger Lakes Champagne Trail in northwestern New York. Through creative grantsmanship and volunteerism, the village has worked to retain its independence from the larger town and county authorities. The village considers its independence fundamental to maintaining responsive, high level community services.

Hammondsport was an early center of excellence in manufacture of aircraft equipment, but much of this has migrated to Asia and Mexico. Losses in the village's industrial base have been offset by its expanding role as a popular stopover along the Wine Trail that crosses New York's Finger Lakes region, which includes ove 100 wineries.

In tandem with the exodus of jobs, the population of the village has dropped by about 30% since 1980. Unemployment in the region is relatively low, however, a 5.6%. Many of Hammondsport's residents work in Bath (10-minute commute) and Corning (35-minute commute) at such multi-national companies as Phillips, Mercury, and Corning, which have manufacturing plants and research labs in the region. Blue-collar jobs in the area pay $10 to $12 an hour. According to interview sources, there are an adequate number of both blue- and white-collar jobs within commuting distance and suited to the skills of the local workforce.

3.0 PROJECT DESCRIPTION & MOTIVES

The Hammondsport Industrial Access Road involved resurfacing a total of one mile of three adjoining streets on the village's industrial western flank. This area contains a mix of industrial and lower-income residential buildings. Existing roads were replaced and new water mains, hydrants, and storm drainage pipes were installed. Planning for the project started in 1997 and construction was completed in 2001. The project received $1.1 million in funding from ARC, state, and federal source. This reduced the local share to just $83,000, or 7% of the total cost (1997$).

Defining Economic "Development"

- Economic Development
  - Employment
  - Income
  - Output
- Physical Development
  - Land use
  - Buildings and other non-transportation structures
  - Non-transportation infrastructure
- Community Development
  - Mix of activities
  - Quality of life
  - Wider economic benefits

"Motivation" for Projects

- Recognizes Key "Purpose and Need" Elements Driving Project Design and Development
  - Establishes a set of conditions by which outcomes can be "tested"
- Defines Non-Traditional Evaluation Measures
  - Compiling a series of motivational data for multiple projects provides an underlying pattern for guiding analysis
- Provides Linkages for Usability of Case by Practitioners
  - Planning and prioritization often depend on more than "project type" for establishing mix of projects
  - Multiple cases selected based on motivation can provide important insights into potential range of outcomes
  - Illustrative abilities of project selected based on motivation can provide useful examples for policy-makers and general public

Classify Projects by Driving Factors

- Clear social impact but less demonstrable productivity effect
  - Projects Addressing **Social**, **Environment**, **Safety** Factors, and **Personal Travel**
- Gains from traditional user (traveler) benefit
  - Projects that reduce Time Cost for Business-Related Travel:
    - *speed, vehicle capacity, frequency, dwell time*
- Productivity gain from wider economic benefits
  - Enhance **Reliability** for Business-Related Travel:
    - *congested bottlenecks, product inventory & delivery processes*
  - Enhance **Accessibility** for Business-Related Travel:
    - *labor market, material supplier market, customer market*
    - *routes between clusters or communities in a region*
  - Enhance **Intermodal Connectivity** for Business-Related Travel:
    - *ground access to, or service at, intermodal terminals*

TPICS Project Types and Locations

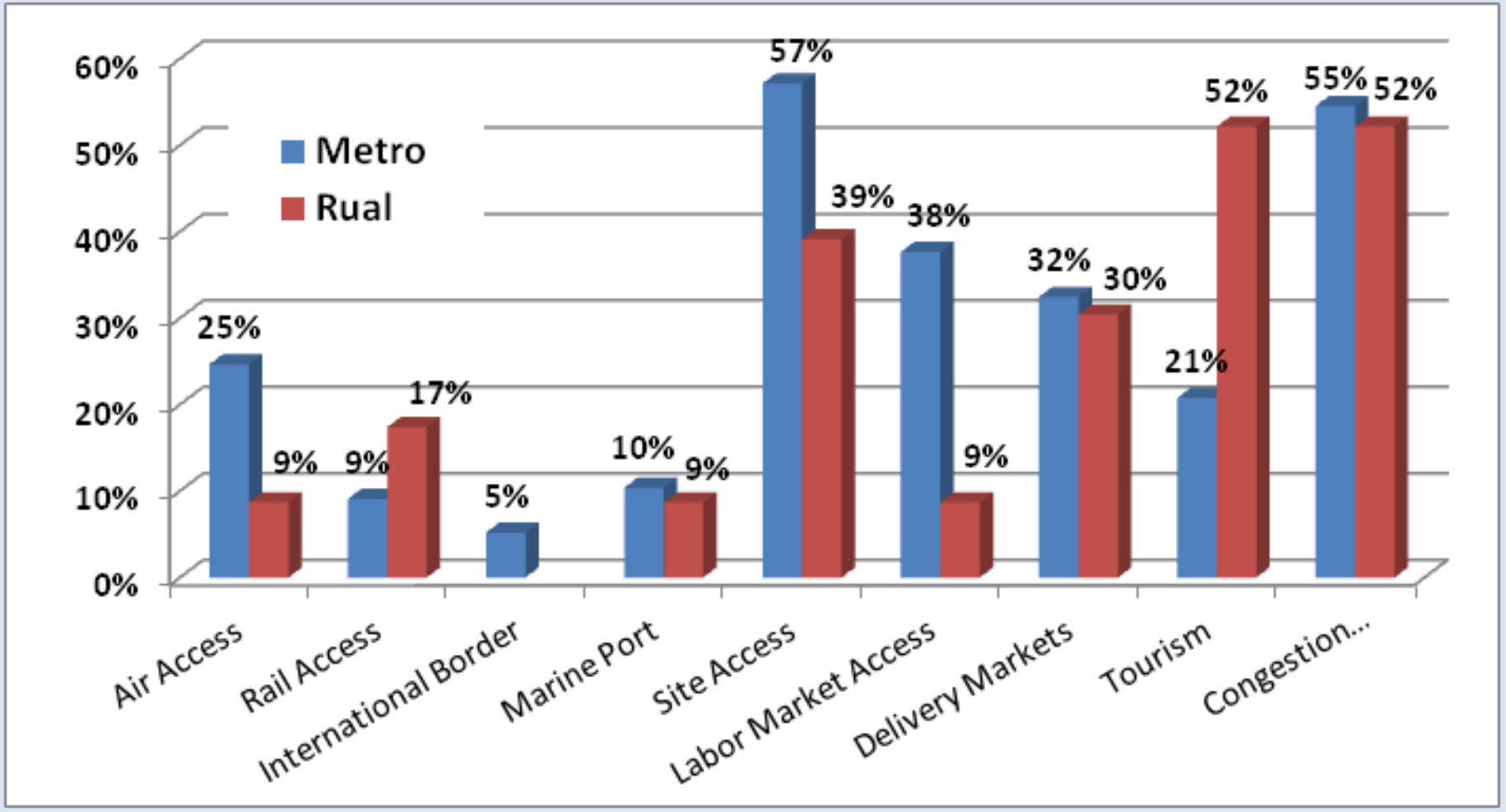
Project Type	Metro	Mixed	Rural	Total
Industrial Access Road	2		5	7
Beltway	8			8
Bridge	4	3	3	10
Bypass	4	1	8	13
Connector	4	2	2	8
Interchange	10	2		12
Intermodal Freight Terminal	6	1	3	10
Intermodal Passenger Terminal	9			9
Major Highway (Limited Access Road)	5	9		14
Widening	4	3	2	9
Total	**56**	**21**	**23**	**100**

Direct Observations for TPICS Cases

Measure of Impact	Number of Cases in TPICS Database		
	Some Quantitative Impact Data	Full Quantitative Data in Dataset	Number of Cases in TPICS Database
Employment	-	100	100
Income	*	*	*
Business Value Added or GDP	*	*	*
Building Development (Sq. Ft.)	38	36	74
Direct Private Investment ($)	27	30	57
Property Values	30	6	36
Property Tax Revenue	36	14	50

* Measures that were calculated (in the database) from employment change ratios

Motivation for Projects



Role of Non-Transportation Factors

Policy Factors	Factor	Number Reported
Effective Synergies	Infrastructure (sewer, water, broadband, transit, etc.) – positive	33
	Land Use Management – positive	45
	Financial Incentives/ Business Climate – positive	47
Lack of Effective Synergies	Financial Incentives/ Business Climate – negative	5
	Infrastructure (sewer, water, broad band, transit, etc.) – negative	10
	Land Use Management – negative	6

Projects With No Apparent Employment Impacts

- 15 Projects Resulted in Zero or Negative Impacts on Employment
  - Primarily traffic management projects
  - Project types included:
    - Bridges
    - Bypasses
    - Connectors
    - Interchanges
    - Intermodal Terminals
- Same 15 Projects Produced Other Economic Effects
  - Increased business sales
  - Growth in per capita income
  - Increased property values

Scale and Behavior/Response Effects

- Physical Scale of Transportation Project
  - National programs/project of national significance
  - Inter-metropolitan connections
  - Metropolitan capacity and reliability improvements
  - Local land access
- Behavioral Effects Tied to Economic Activity
  - Efficiency of routing/tours
  - Response to congestion reduction/reliability improvements
  - Market access
  - Intermodal connectivity

Range of Effects

Measure of Impact	Min	Max*	Median	Mean
Employment (Jobs)	-48	50,505	1,290	5,782
Income ($ millions)	$0	$2,332	$53	$267
Business Output ($ millions)	$0	$8,830	$142	$840
Building Development (thousand sq.ft.)	4.2	50,000	1,003	-
Direct Private Investment (in $ millions)	$3.0	$6,300	$300	-
Property Values (in $ millions)	$0.15	$85	$16.0	-
Property Tax Revenue (in $millions)	$0.12	$55	$2.1	-

http://edrgroup.com/attachments/article/372/Local-Economic-Impacts-of-Highway-Projects.pdf

Complementary Infrastructure and Policies

	Non-Transportation Factors	Incidence
Positive Local Factors	Available Infrastructure (sewer, water, telecom)	33%
	Land Use Management	45%
	Financial Incentives/ Business Climate	46%
Negative Local Factors	Lack of Infrastructure (sewer, water, telecom)	10%
	Lack of Land Use Management	6%
	Lack of Financial Incentives/ Neg. Business Climate	5%

Challenges in Ex Post Case Studies

- Evaluating projects built several years ago
- Isolating project impacts from impacts resulting from other factors
- Estimating project impacts in long corridors, freight projects and transit projects
- Isolating project impacts in large metropolitan areas
- Establishing a time frame for impact analysis
- Finding knowledgeable people to interview
- Reconciling conflicting information

Case Development Issues

- Methodological Approach
  - Designed to address known issues with ex post evaluation
  - Accounted for computational and comparative adjustments in observed and computed information
  - Accessed ex ante information and analysis
- Consistency
  - For a comparative database and multi-case profile development, methods must support comparative requirements
- Counterfactual Scenario
  - Designed to address motivation (e.g., connectivity, performance, or congestion)
  - Requires tools, models and methods to address post-project conditions without project implementation

Issues in Ex Post Case Development

- Properly Identifying Pre- and Post- Conditions
  - Establishing baseline conditions
  - Sorting out project versus non-project effects
  - Establishing time-frame for when project effects occur
  - Designing counterfactual (base case) evaluation
- Structuring and Conducting Interviews
  - Perspectives of interviewees
  - Identify type and timing of changes
  - Establish other potential causal factors
- Field Investigations and Field Data
  - Land development and property assessments
  - Travel patterns and other infrastructure development
  - Observe use of faculties and interactions with other development

Structuring and Conditioning Case Data

- Distinguish project impacts from impacts due to other causes
  - Included identifying supporting public policies, other investments and market shifts
- Measure impacts over a long time period
  - Full impact timing varied by project type and local conditions
- Identify impacts associated with expansion or retention of existing businesses
  - Identify "net" new jobs and their effects on economy at multiple levels
- Reconcile conflicting results from interviews and data sources

Uses of Case-Based Resources in TPICS

- Provides well-grounded reference examples for planners and decision-makers
- Shows importance of interactions with non-transportation investments
- Balances predictive modeling results with empirically-derived impact evaluation
- Provides Resource for Initial Planning Processes Not Otherwise Available

Further US Research Needs

- Systematic expansion of cases
  - Need more robust coverage of project types and underlying conditions
- Development of Pre-Construction Data
  - Traffic data and conditions
  - Control for external business cycles
    - Establishing appropriate reference areas and data filtering
  - Integrating and sorting out contradictions in interview results and historical data
- Identification of Scale Effects and Impact Timing
  - Establish the full spatial range of project influence
  - Identify the temporal progression of economic impacts

Next Steps

- TPICS – Implementation
  - Pilot Studies
  - Courses in case study development
  - Implementation process
- TIGER
  - Monitoring grant agreements
    - Currently over 270 awards
    - Another 45 announced during week of 8 September 2014
  - Planning for long-term performance
- Other Initiatives
  - APTA transit case studies (pilot)
  - FHWA exploration of wider economic benefits