Introducing SHRP2’s Economic Impact Estimator / Sketch Planning Tool - Transportation Project Impact Case Studies (T-PICS)

University of Minnesota Center for Transportation Studies
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Transportation Project Impact Case Studies (T-PICS) is a web-based tool that allows the user to gather useful information on the potential economic impacts of a proposed transportation project.

(Graphic courtesy of Economic Development Research Group, Inc.)
What are the components of T-PICS?

- Data base of 100 case studies representing broad range of project type and scale, from all regions of the country.
- “Case Search” module generates a list of similar projects and provides detailed information from past experience that can be applied to the project under consideration.
- “My Project Tools” module allows preliminary assessment of potential economic impacts (jobs, wages, output) while requiring only modest input from the user.
TPICS Home Page

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.
TPICS Case Search Page

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: 6**

**View Results**

<table>
<thead>
<tr>
<th>Basic Criteria</th>
<th>Other Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Type:</strong></td>
<td></td>
</tr>
<tr>
<td>Select All / De-Select All</td>
<td></td>
</tr>
<tr>
<td>□ Bypass</td>
<td>□ Limited Access Road</td>
</tr>
<tr>
<td>□ Bridges</td>
<td>□ Access Road</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Region:</strong></td>
<td></td>
</tr>
<tr>
<td>Select All / De-Select All</td>
<td></td>
</tr>
<tr>
<td>□ New England/Mid-Atlantic</td>
<td>□ Southwest</td>
</tr>
<tr>
<td>□ Rocky Mountain/Far West</td>
<td>□ Great Lakes/Plains</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Motivation:</strong></td>
<td></td>
</tr>
<tr>
<td>Select All / De-Select All</td>
<td></td>
</tr>
<tr>
<td>□ Air Access</td>
<td>□ Labor Market</td>
</tr>
<tr>
<td>□ Rail Access</td>
<td>□ Delivery Market</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Urban/Class Level:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Rural</td>
<td>□ Mixed</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Economic Distress:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>□ All</td>
<td>□ Distressed Only</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Keywords:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TPICS Case Search Results

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: 6

| Project Type: | Connect, Limited Access Road, Bypass, Interchange, Bridge, Access Road, Widening, Connector, Intermodal Freight |
| Region:       | New England/Mid-Atlantic, Rocky Mountain/Far West, Great Lakes/Plains, International, Southwest, Southeast, Central, South East, Midwest, North East, Global |
| Mode:         | Air Access, Rail Access, Labor Market, Delivery Market, Marine Port Access, Int'l Border Access, Site Development, Tourism, Congestion Mitigation |
| Land/Class Level: | Rural, Mixed, Metro |
| Economic Distress: | All, Distressed Only, Non Distressed Only |

Keywords:

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Project Type</th>
<th>State</th>
<th>BEA Region</th>
<th>Project Cost (2008)</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-705 Connector in WA</td>
<td>Interstate 705 is a short freeway spur connecting Interstate 5, the main north-south interstate stretching between two major activity centers - Downtown Tacoma and the Port of Tacoma.</td>
<td>Connector</td>
<td>TX</td>
<td>Rocky Mountain/Far West</td>
<td>$204,697,927</td>
<td>1986</td>
</tr>
<tr>
<td>Ted Williams Freeway</td>
<td>The Ted Williams Highway (State Route 56 (SR 56)) runs from Interstate 5 in the Carmel Valley neighborhood of San Diego to Interstate 15.</td>
<td>Connector</td>
<td>CA</td>
<td>Rocky Mountain/Far West</td>
<td>$250,749,921</td>
<td>2004</td>
</tr>
<tr>
<td>Auburn Intermodal Center</td>
<td>Auburn Intermodal Facility is a truck-rail intermodal yard which includes parking, container storage, and a weighing and freight-control operations center.</td>
<td>Intermodal Freight</td>
<td>ME</td>
<td>New England/Mid-Atlantic</td>
<td>$6,443,286</td>
<td>2001</td>
</tr>
<tr>
<td>Devon Intermodal Rail Terminal</td>
<td>The Devon Intermodal facility is a truck-rail facility in Aver, Massachusetts that provides distribution services for businesses dispersed throughout southern New England.</td>
<td>Intermodal Freight</td>
<td>MA</td>
<td>New England/Mid-Atlantic</td>
<td>$7,679,046</td>
<td>1993</td>
</tr>
<tr>
<td>Topsham Bypass/Connector</td>
<td>The Topsham Bypass/Connector is a southeastward extension of Maine Route 196 built to provide direct access between I-295 and the Maine coast, and to relieve traffic in downtown Topsham.</td>
<td>Connector</td>
<td>ME</td>
<td>New England/Mid-Atlantic</td>
<td>$58,118,601</td>
<td>1998</td>
</tr>
</tbody>
</table>
### Auburn Intermodal Center

Auburn Intermodal Facility is a truck-rail intermodal yard which includes parking, container storage, and a weighing and freight-control operations center.

### Pre/Post Conditions Scale:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pre-Project</th>
<th>Post-Project</th>
<th>Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Income</td>
<td>$34,918</td>
<td>$32,705</td>
<td>-2,213</td>
<td>-6.34%</td>
</tr>
<tr>
<td>Economic Distress</td>
<td>1.11</td>
<td>0.83</td>
<td>-0.28</td>
<td>-25.23%</td>
</tr>
<tr>
<td>Total Num. of Jobs</td>
<td>51,299</td>
<td>62,501</td>
<td>11,202</td>
<td>21.84%</td>
</tr>
<tr>
<td>Population</td>
<td>104,335</td>
<td>105,792</td>
<td>1,457</td>
<td>1.4%</td>
</tr>
<tr>
<td>Property Value</td>
<td>$142,986</td>
<td>$150,360</td>
<td>7,374</td>
<td>5.16%</td>
</tr>
<tr>
<td>Business Sales ($M's)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Tax Revenue ($M's)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Density (ppl/sq mi)</td>
<td>222</td>
<td>225</td>
<td>3</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

**Related Websites:**

**Attachments:**

TPICS Case Search “Pre/Post Conditions”
AUBURN INTERMODAL FACILITY

1.0 SYNOPSIS

The Auburn Intermodal Facility is a truck-rail intermodal yard in Auburn, Maine. The terminal, which opened in 1994, consisted of a 35-acre terminal with a double-track and a gravel-yard facility for transfer of containers between truck and rail. Phase II of the project was constructed in 2001 added 19 acres to the facility, expanding the project to 54 acres. Phase II improved the rail track and added a mechanized packer that lifts cargo containers between flat bed rail cars and truck frames. In addition, the expansion included parking and container storage, and a weighing and freight-control operations center. Phase I cost $3.7 million ($2001), and Phase 2 cost $1.6 million ($2001) for a total project cost of $5.3 million ($2001). This analysis includes the impacts associated with both phases of the project.

The facility has helped foster growth in the local economy, particularly for regional distribution companies, warehousing, and related companies. The intermodal facility has supported the construction of new industrial parks in the Auburn area, particularly the Auburn Industrial Park. Between 1990 (prior to the construction of the intermodal facility) and 2008, the number of transportation and warehousing establishments in the Lewiston-Auburn MSA has grown by 60% and employment in those industries has grown by 211%. The intermodal facility and businesses that have located in Auburn because of the facility supported roughly 2,200 employees in the transportation/warehousing industry in 2008. Future growth in warehousing and distribution and a growing focus on low-emission transportation likely will increase demand for the Auburn Intermodal Facility in the coming years.

2.0 BACKGROUND

2.1 LOCATION & TRANSPORTATION CONNECTIONS

The Auburn Intermodal facility is located in Auburn, Maine, which is approximately 40 miles north of and inland from Portland. Auburn is well-situated as an intermodal hub because of its proximity to rail lines, the Lewiston-Auburn International Airport, the Maine Turnpike (I-95, I-495), and the state highway network. The Auburn Intermodal facility is less than 3 miles from the Maine Turnpike and 140 miles from Boston.

Auburn is bisected by the St. Lawrence & Atlantic Railroad, a 260 mile rail line that connects Portland, ME and St. Rosalie, Québec. The St. Lawrence & Atlantic connects with Canadian National Railway at Richmond, Québec, which provides access to deep-water ports in Halifax to the east and Vancouver to the west.

2.2 COMMUNITY CHARACTER & PROJECT CONTEXT

Auburn is the county seat of Androscoggin County, Maine and is part of the Lewiston-Auburn metropolitan area, which had an estimated population of 90,830 people in 2000. As of the 2000 census Auburn itself had a population of 23,203. Population in
You enter data characteristics of your own project. On the View Results Screen you can see the likely ranges of economic impacts from your project, and estimates of project cost and traffic volume. You will have the opportunity to adjust cost and traffic estimates, and to adjust complementary regional economic development factors to properly reflect your region. In turn, these adjustments will drive changes in expected economic impacts of your project.

| **View Results** |

<table>
<thead>
<tr>
<th><strong>Project Type:</strong></th>
<th>Bypass</th>
<th>Limited Access Road</th>
<th>Beltway</th>
<th>Interchange</th>
<th>Bridges</th>
<th>Access Road</th>
<th>Widening</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region:</strong></td>
<td>New England/Mid-Atlantic</td>
<td>Southwest</td>
<td>Southeast</td>
<td>Rocky Mountain/Far West</td>
<td>Great Lakes/Plains</td>
<td>International</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Urban/Class Level:</strong></td>
<td>Rural</td>
<td>Mixed</td>
<td>Metro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Economic Distress:</strong></td>
<td>Distressed Only</td>
<td>Non Distressed Only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Length of Project:</strong></td>
<td>10 Miles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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**Project Type:**
- Bypass
- Limited Access Road
- Beltway
- Interchange
- Bridges
- Access Road
- Widening
- Connector

**Region:**
- New England/Mid-Atlantic
- Southwest
- Southeast
- Rocky Mountain/ Far West
- Great Lakes/ Plains
- International

**Urban/Class Level:**
- Rural
- Mixed
- Metro

**Economic Distress:**
- Distressed Only
- Non-Distressed Only

**Length of Project:**
- 10 Miles

**Estimated Project Cost ($):** $614 million

**Estimated AADT:** 6,000

<table>
<thead>
<tr>
<th></th>
<th>Jobs</th>
<th>Wages (mil.)</th>
<th>Output (mil.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Impacts</td>
<td>2,422 - 4,036</td>
<td>$113.5 - $189.1</td>
<td>$360.6 - $601</td>
</tr>
<tr>
<td>Supplier and Wages Impacts</td>
<td>1,391 - 2,318</td>
<td>$55.8 - $109.8</td>
<td>$204.7 - $341.2</td>
</tr>
<tr>
<td>Total Impacts</td>
<td>3,812 - 6,354</td>
<td>$179.2 - $298.7</td>
<td>$565.3 - $942.2</td>
</tr>
</tbody>
</table>
SHRP2 Research Project: Validating the Results of TPICS

- Pilot Project to Validate the Results of T-PICS
- Led by Minnesota DOT - Partners: Minn DEED, University of Minnesota, REMI
- Examined 14 projects, comparing T-PICS results to “independent alternative analysis”
- Focus on “My Project Tools” function
• Address the interests of potential TPICS users to improve its utility.
  – Offer recommendations that improve the practical value of TPICS.
  – Suggest methods and means to effectively describe the function of TPICS.
  – Identify “gaps” in the data base.
  – Offer suggestions to enhance “user friendliness”.
  – Suggest modifications to the instruction manual.
Research Focus

Identify the Test Case Study Project “factors” that have the most influence (positive or negative) on the consistency of the TPICS projected economic impact.

Search criteria

Basic:
- Project Type
- Region
- Motivation
- Urban Class level
- Distress level

Other:
- Cost
- Market size
- AADT
- Pop. Density
- Airport distance
- Topography
- Growth rates
- Length

Project Types
- Beltway
- Bridge
- Bypass
- Connector
- Interchange
- Access Road
- Limited Access Road
- Widening
- Freight Intermodal
- Passenger Intermodal
Interchange Projects:
I-1: Minnesota Opportunity Drive Interchange on I-94
I-2: Iowa 86th Street Interchange

Highway Corridor Projects:
Widening Projects:
W-1: Minnesota MN TH 60 Expansion from Windom to Heron Lake
W-2: Washington State - Interstate 405
W-3: New Mexico - U.S. 54
W-4: Iowa 60/US 75 Le Mars Corridor
W-5: Georgia - Appalachian Development Hwy System (ADHS) – Corridor A/A1
W-6: Kentucky - Appalachian Development Hwy System (ADHS) – Corridor I
W-7: West Virginia - Appalachian Development Hwy System (ADHS) – Corridor L
W-8: Pennsylvania - Appalachian Development Hwy System (ADHS) – Corridor P

Bypass Projects:
B-1: Minnesota 371 Little Falls to Brainerd
B-2: Minnesota US 71/MN 23 Including Willmar Bypass
B-3: Iowa 5/US 65 Beltway from W Jct 5/65 to I-80

Connector Projects:
C-1: Washington State – State Route 509
TPICS Strengths

- Ease of Use / Accessibility / “Affordability”
- Depth and detail of 100 Case Study projects
- Scalable for specific projects
- Certain project types (w/ certain characteristics) return reliable estimates of potential economic impacts.
Our findings: What project “factors” lead to the most reliable projections of economic impact?

- Projects that are similar in scope, cost, function, etc. as those represented in the T-PICS database
- Projects that are of a “type” that tends to be more homogenous (e.g. Interchanges and access roads)
- Projects in metro areas where new development opportunities are more limited by existing ROW and land use considerations

![Figure 3-30: Comparison of Estimated Jobs Added T-PICS Range vs. Alternative Method Highway Corridor Projects - Bypasses](image)
Our findings: Project factors that were less likely to return a reliable estimate

- Smaller, lower cost projects
- Widening of projects in “rural greenfields” where supporting infrastructure is lacking.
- Projects with a “motivation” not principally related to economic development
- Projects in areas with unique economic features
- Rural bypass projects where efficiency gains reduce transportation sector jobs
- Projects which do not significantly impact travel demand or mobility
Thanks very much!

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(651) 366-4893