EconWorks

Improved Economic Insight

EconWorks Products: What They Are and How They Can Be Used

Stephen Fitzroy, Executive Vice President,
Economic Development Research Group, Inc. | April 20, 2017

Agenda

EconWorks
Improved Economic Insight

- What is EconWorks? (Case Studies, W.E.B. Tools)
- History: Why were the EconWorks tools developed?
- Key Concepts
  - Economic Analysis (BCA, EIA)
  - Ex-Post Analysis
- Case Studies: Ex-Post Analysis of Economic Impacts
  - Different from typical EIA "models"
  - New information and insights
- W.E.B. Tools
  - Enhancement to traditional ex-ante analysis
  - Suite of tools
- Upcoming Webinar Series

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What is EconWorks?

EconWorks
Improved Economic Insight

PlanWorks TravelWorks EconWorks Home

PlanWorks
Better Planning. Better Projects.

Collaborative decision making in transportation planning and project development

TravelWorks
Advanced Travel Analysis Tools

A collection of tools to improve modeling and transportation analysis

EconWorks
Improved Economic Insight

Case studies and predictive tools to support analysis of economic benefits

SHRP2 Planning Tools

The second Strategic Highway Research Program (SHRP2) included more than 100 research products designed to improve the way transportation professionals plan, operate, maintain and ensure safety on America's roadways. PlanWorks, TravelWorks and EconWorks will help transportation planners conduct better collaborative processes, produce better modeling and transportation analysis, and introduce economic benefit analysis into early project decision making.

What's New

The Rapid Policy Assessement Tool (RPAT) open source code is now available. Check TravelWorks' Resource Page to download the code.

PlanWorks

TravelWorks
- Modeling Tools
- Resources
- Forum

EconWorks
- Tools
- Case Studies
- FAQ
- Resources

Question?

SHRP2 SOLUTIONS

AASHTO
The Voice of Transportation

What is EconWorks?

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Project Tools | Submit A Case Study | FAQ | Home

Goal: help planners incorporate economic analysis into early project decision making.

Learn From Ex-Post Analysis of Completed Projects

Case Study Search

Assess My Project

Incorporate Wider Economic Benefits into BCA

(and other analyses)

Wider Economic Benefit Analysis Tools

What is EconWorks?

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Case Studies | Analysis Tools | Forum | Home

- Case Study Search
- Assess My Project
- Submit A Case Study

Case Study Search

To search the case study library, select filters from the col rt using the column headings. You can compare case studies and print results using the buttons at the bott

Available information includes descriptions of project features and pre/post data about impacts on the local or regional economy. It includes detailed results from local interviews on project objectives, implementation issues and other factors as as aerial photos and other reports.

Search:

RESET FILTERS

Filters:

Project Details
- Project Type
- Motivation

Geographic
- Region
- Length
- Average Annual Daily Traffic
- Topography
- Urban/Class Level
- Economic Distress

Other Criteria
- Airport Travel Distance
- Project Cost

Compare	Project	Type	BEA Region	Cost (M	
☐	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	New England/Mid-Atlantic	$	
☐	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	New England/Mid-Atlantic	$1,708.26	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	International	$127.65	1995

Find and Learn from Past Projects: *Economic Impact on Communities*

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Assess My Project

Characteristics

Project Type
- (•) Access Road
- ( ) Limited Access Road
- ( ) Bypass
- ( ) Connector
- ( ) Beltway
- ( ) Bridge
- ( ) Interchange
- ( ) Widening
- ( ) Intermodal Freight
- ( ) Intermodal Passenger

Region
- ( ) New England/Mid-Atlantic
- ( ) International
- (•) Great Lakes/Plains
- ( ) Southwest
- ( ) Southeast
- ( ) Rocky Mountain/Far West

Urban/Class Level
- (•) Rural
- ( ) Mixed
- ( ) Metro

Estimated Project Cost: $17.2 millions
Estimated Average Annual Daily Traffic: 2,310.84

	Jobs	Wages (mil.)	Output (mil.)
Direct Impacts	1,256 - 2,094	$58.9 - $98.1	$187.1 - $311.8
Supplier and Wage Impacts	721 - 1,202	$34.1 - $56.9	$106.2 - $177.0
Total Impacts	1,978 - 3,296	$93.0 - $155.0	$2[illegible] - $488.8

Actions

Adjust the sliders to increase estimate accuracy.

Project Cost:
Average Annual Daily Traffic:
Land Use Policies:
Infrastructure:
Business Climate:

Project	Type	BEA Region	Cost (Millions)	Length	AA[illegible]

Explore the range of economic impacts that may results from a specific type of project in a defined setting, *based on the case database*.

What is EconWorks?

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Case Studies | Analysis Tools | Forum | Home

EconWorks Wider Economic Benefits Analysis Tools

Tools for analyzing the economic impacts of accessibility, reliability and connectivity projects

SHRP2 included five tools to help practitioners use economic analysis in project decision making. These tools are designed to fill the gap between the screening stage where the Case Studies may be useful and later stages where agencies may employ detailed economic models.

Analysis Tools include:

- **Accessibility**: tools designed to explain the benefits and impacts of a project to the labor and buyer-supplier markets.
- **Reliability**: tool designed to explain the benefits and impacts of projects designed to improve system reliability (e.g. ITS projects).
- **Connectivity**: tool designed to explain the benefits and impacts of improved intermodal connectivity.

A final Analysis Tool, the **Accounting Framework**, provides a place to assemble the results of the accessibility, reliability and connectivity tools alongside more traditional benefits categories like safety, travel time savings and vehicle operating cost savings.

To use any of these tools, download the tool and the user's guide as well as the final research report: Development of Tools for Assessing Wider Economic Benefits of Transportation.

Ask questions of other users on the Analysis Tools Forum.

Accessibility

- Specialized Labor Market Access Tool
- Buyer-Supplier Market Access Tool
- User Guide

Reliability

- Tool
- User Guide

Connectivity

- Tool
- User Guide

Accounting Framework

- Tool

Tools to incorporate *Accessibility, Reliability, & Connectivity* Benefits into early-stage BCA

PlanWorks | TravelWorks: Forum | EconWorks: Case Studies, Analysis Tools, Forum | *Question?*

SHRP2 SOLUTIONS

AASHTO
The Voice of Transportation

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History & Need: EconWorks

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EconWorks (formerly "TPICS") Case Studies

Part of a broader "ex-post" analysis movement (BCA/EIA)

Goals: Accountability;
Improve Analysis, Design, & Expectations

International

France: mandatory ex-post analysis of large projects *(1982 -)*

UK: new ex-post emphasis at DfT following analysis by National Audit Office

Mexico: National Observatory

United States

Rural Interstates *(Miller, 1979)*

GAO Guidance *(1991)*

Bypasses *(Multiple)*

Appalachian Regional Commission *(2000)*

FHWA Guide *(2001)*

SHRP/EconWorks *(2005 -)*

History & Need: EconWorks

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Second Strategic Highway Research Program (SHRP2)

- Authorized by Congress in 2005
- To translate objective credible research into products that are ready for implementation
- Capacity program goals:
  - Increase the likelihood of choosing and delivering "good projects"
  - Systematically integrate **environmental, economic, and community requirements** into planning and design.

History & Need: EconWorks

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"TPICS" Case Studies - SHRP2 (C03)

- Better incorporate economic vitality and land use factors into the planning and investment process.
- Support **"early stage" planning** and collaborative decision-making
- Ex-post case-based analysis
  - Identify **LONG-TERM** Economic Impacts from New/Capacity-Enhancing Highway Investments
  - Illustrate the **Interaction** between Highway Infrastructure and Non-Highway Investments and Initiatives

60 Initial Transportation Project Impact Case Studies (T-PICS) → EconWorks Cases (112 cases currently)

History & Need: EconWorks

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Wider Economic Benefit Tools SHRP2 (C11)

- Designed to **fill the gap** between the screening stage where the Case Studies may be useful and later stages where agencies may employ detailed economic models.
- **Open-source tools** that use parameters from readily available research/data
- Addresses **benefit-cost analysis**
- Move **beyond traditional benefit categories** (i.e. safety, travel time, vehicle operating costs) to capture additional **productivity** related effects

Accessibility
Reliability
Intermodal Connectivity
Accounting Framework

→

EconWorks Analysis Tools

History & Need: EconWorks

1. Policy / Funding Stage
2. Planning/Strategy Stage
3. Programming Stage
4. Prioritization Stage
5. Project Devel./ EIS Stage
6. Operations Stage

EconWorks Case Studies

EconWorks W.E.B Tools

Economic Model (*REMI, TREDIS)*

Ref: SHRP2 Collaborative Decision-Making Framework

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Key Concepts: Economic Analysis

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BCA v. EIA: Alternative Perspectives

Measure	Description
Benefits	• Used in **benefit-cost** assessments to asses the **efficiency** of an investment • Dollar value of net **welfare gain** to transportation system users (user benefits) and non-users (external benefits)
Economic Impacts	• Impacts on the **flow of money** in the economy; includes **multiplier effects** • Measured in terms of jobs, income, value added, and business output • Tangible **measures of changes in a specific local economy** for constituents, policy makers, & industry representatives

Key Concepts: Economic Analysis

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BCA v. EIA: Alternative Perspectives

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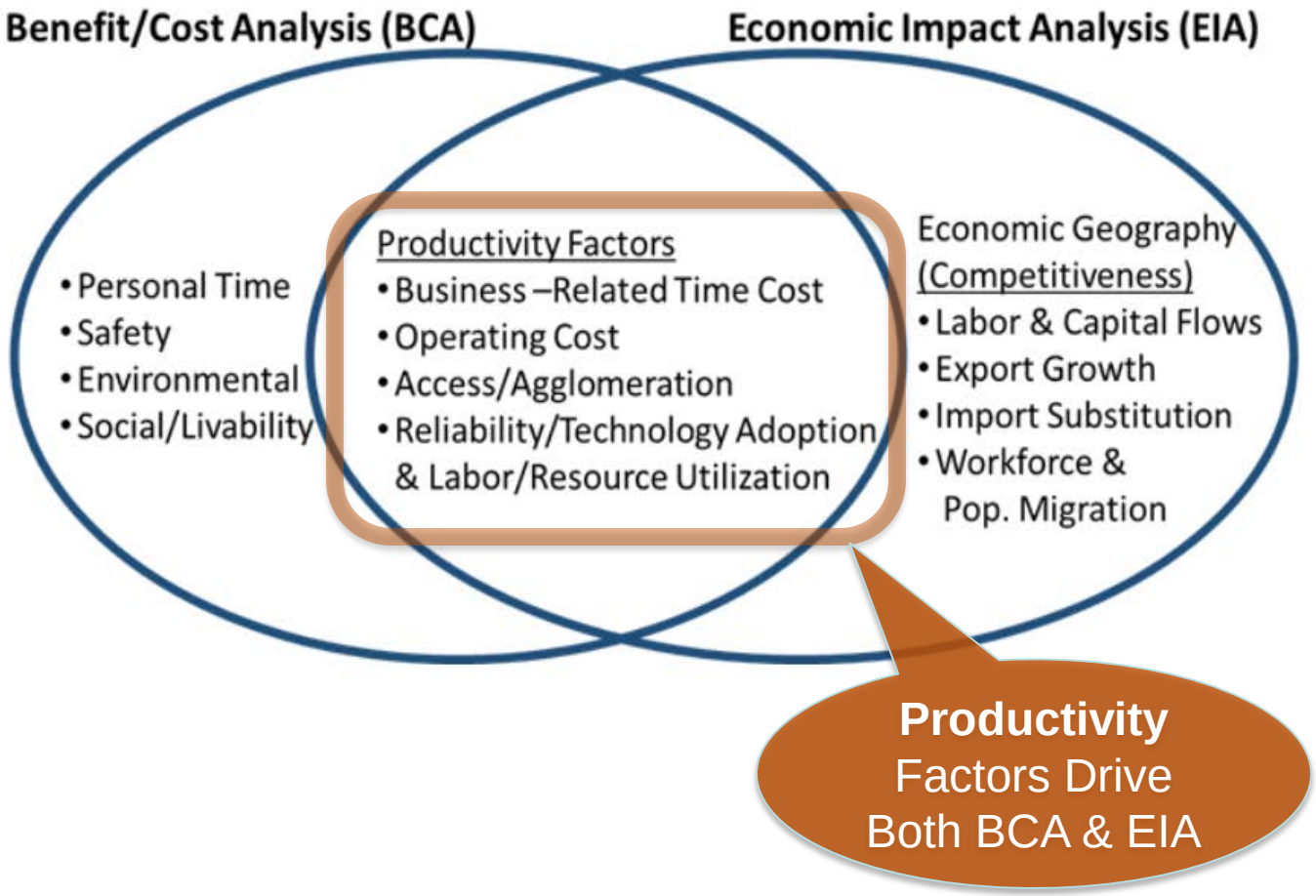
Key Concepts: Economic Analysis



Distinctions between BCA and EIA

Key Concepts: Economic Analysis

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Productivity = {output produced} / {inputs required}

Productivity impact of transportation reflects:

- **Efficiency gains for business-related travel**, that are enabled by travel time / cost savings
- **Wider economic benefits** associated with agglomeration and logistics technology efficiencies, that are enabled by access, connectivity and reliability effects

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Key Concepts: Ex-Post Analysis

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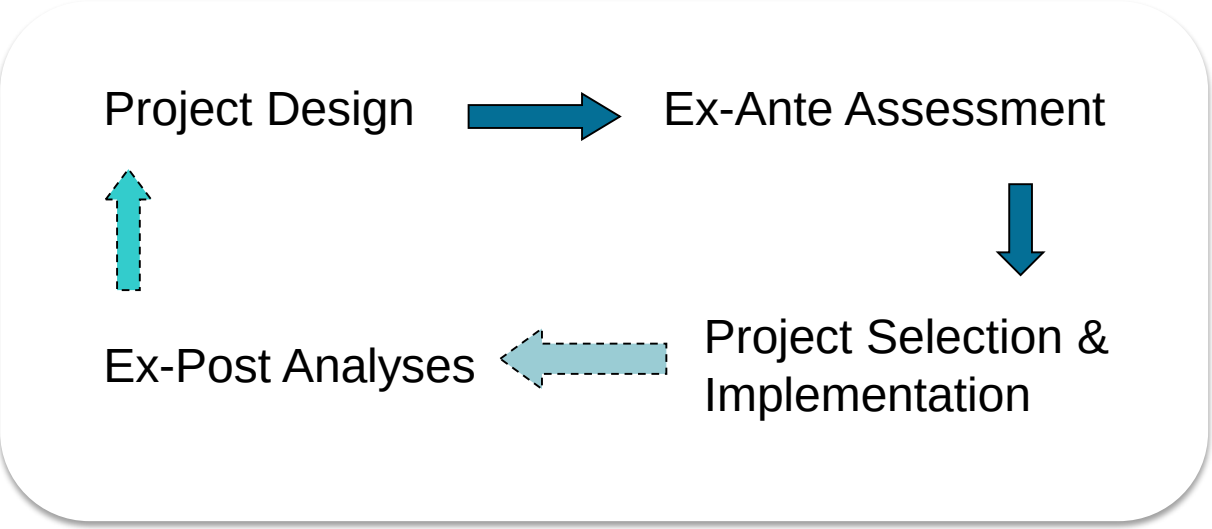
Why Ex-Post Analysis?



Key Concepts: Ex-Post Analysis

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Why Ex-Post Analysis?

Learn from past outcomes

- "Ground" expectations in real-world examples
- Investigate nuanced causal relationships
  - Policy objectives
  - Economic context
  - Complementary non-transportation policy
- Provide "case studies" that can facilitate discussion between planners & stakeholders
- Validate/temper model findings

Key Concepts: Ex-Post Analysis

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Why Ex-Post Analysis?

The Challenge:

The relationship between transportation and economic vitality is very real yet it is also multi-faceted and sometimes complex.

The Approach:

Investigate actual observed economic development impacts (new or expanded development) within a specific geographic area.

Use interviews, document research, and before-and-after data collection to understand the influence of transportation and non-transportation factors.

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Ex-Post Cases & EIA

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Learn From Ex-Post Analysis of Completed Projects

Case Study Search

Assess My Project

Search criteria

- Project Type
- Mode
- Motivation
- Region
- Length
- Daily Use
- Topography
- Urban Class level
- Distress level
- Airport access
- Project Cost
- Market size
- Economic Growth Rates
- Pop. Density

Project Results

Economic Impacts

- Jobs
- Personal income
- Business sales

Pre/Post Conditions of Study Region

Narrative**

Example of an EconWorks Case

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Key Words:

RESET FILTERS

3 Results Found

Filters:

Project Details

Project Flags

Project Type

- [ ] Access Road
- [ ] Limited Access Road
- [ ] Bypass
- [ ] Connector
- [x] Beltway
- [ ] Bridge
- [ ] Interchange
- [ ] Widening
- [ ] Freight Terminal
- [ ] Station

Project	Type	Mode	BEA Region	Cost (Millions)	End Date
Des Moines US 65/IA 5 Bypass Iowa 5 and U.S. 65 highways, built in phases between 1994 and 2003, run along the southern and eastern sides of the Des Moines metropolitan region. Together with Interstates 35 and 80, which bound Des Moines to the west and north, Iowa 5 and U.S. 65 form a beltway around the city.	Beltway	Highway	Great Lakes / Plains	$315.68	2003
Fort Wayne, Indiana, I-469 Bypass The intent of the I-469 Bypass was to divert pass-through traffic from I-69 and downtown Fort Wayne to relieve traffic congestion.	Beltway	Highway	Great Lakes / Plains	$317.66	1995
Appleton, Wisconsin, Route 441 Bypass Route 441 circumvents the city of Appleton, Wisconsin on the eastern side. This route, along with US 41, forms a square-shaped beltway around the city.	Beltway	Highway	Great Lakes / Plains	$205.16	1993

Project Description

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Project: Des Moines US 65/IA 5 Bypass

PRINT CASE STUDY

Description:

Iowa 5 and U.S. 65 highways, built in phases between 1994 and 2003, run along the southern and eastern sides of the Des Moines metropolitan region. Together with Interstates 35 and 80, which bound Des Moines to the west and north, Iowa 5 and U.S. 65 form a beltway around the city.

Characteristics and Setting:

Project Type: Beltway
Project Mode: Highway
Average Annual Daily Traffic: 21,113
Length (mi): 24.00
Economic Distress: 0.61
Population Density (ppl/sq mi): 572
Population Growth Rate (%): 128.00
Employment Growth Rate (%): 332.00
Market Size: 439,105
Airport Travel Distance: 8
Topography:

Geography

Region: Great Lakes / Plains
State: IA
County: County
City: Des Moines
Urban/Class Level: Metro
Local Area: N/A
Impact Area: County
Transportation System: N/A
GIS Lat/Long: 41.547083 / -93.513566

Timing

Initial Study Date: 1990
Post Constr. Study Date: 2013
Constr. Start Date: 1991
Constr. End Date: 2003
Months Duration: 108

Costs

Project Year of Expenditure (YOE): N/A
Planned Cost (YOE $): 126,000,000
Actual Cost (YOE $): 0
Actual Cost (curr $): 315,675,709

Pre- and Post- Conditions

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STATE | COUNTY(IES) | LOCAL

County

Measure	Pre-Project	Post-Project	Change	% Change
Personal Income Per Capita	38,918	48,118	9,200	23.64%
Economic Distress	0.61	0.65	0.04	6.56%
Number of Jobs	255,281	350,020	94,739	37.11%
Business Sales (in $M's)	29,061	62,396	33,335	114.71%
Tax Revenue (in $M's)	0	139	139	N/A
Population	328,531	451,677	123,146	37.48%
Property Value (median house value)	106,408	154,400	47,992	45.10%
Density (ppl/sq mi)	573	787	215	37.48%

County Impacts for: County

NOTE: All impact dollar values are in 2013$

Measure	Direct	Indirect	Total
Jobs	645.00	400.00	1045.00
Income (in $M's)	37.70	23.30	61.00
Output (in $M's)	107.48	64.63	172.11

Project Location

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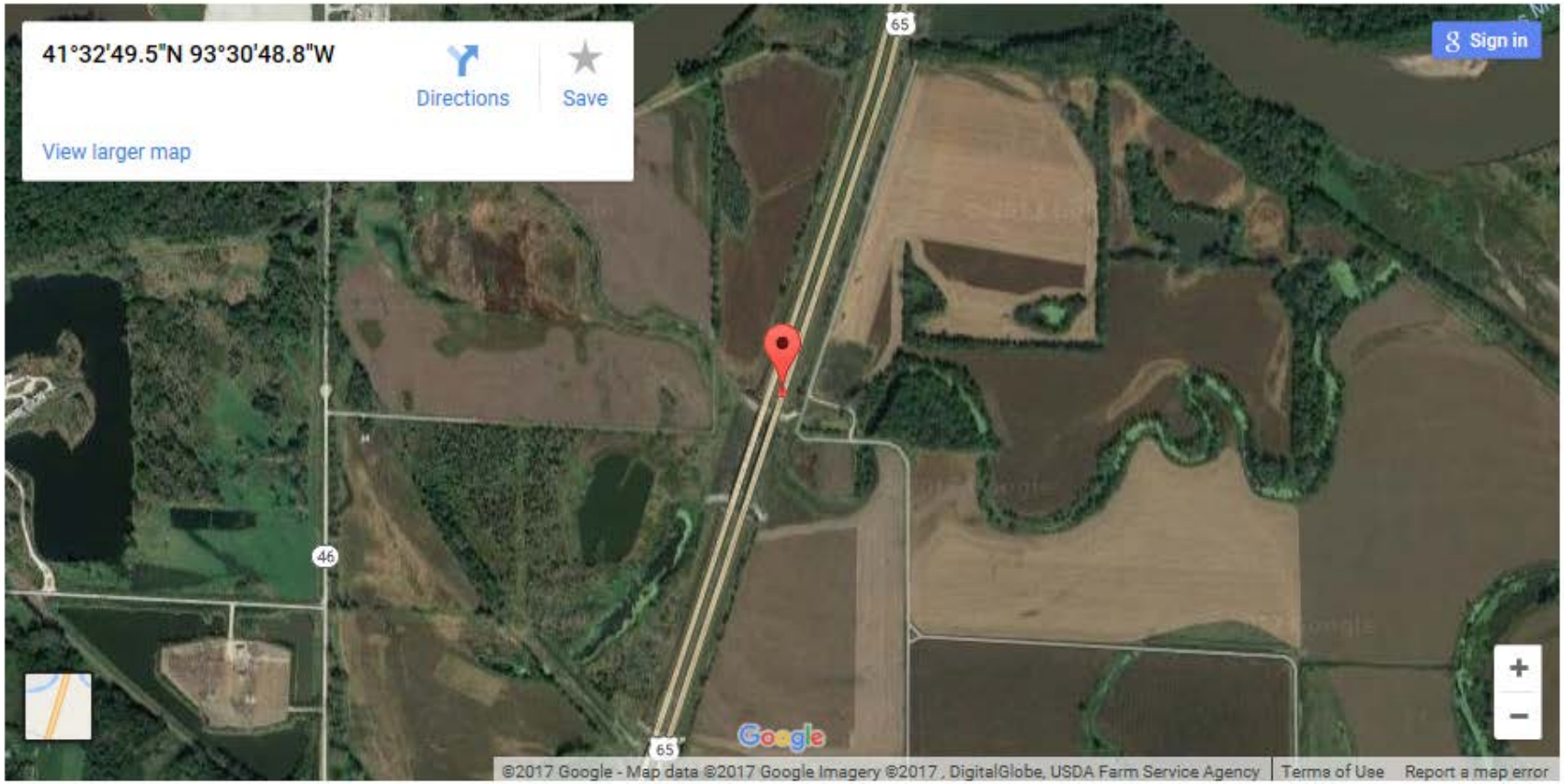
Case Location:



Project Narrative

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Narrative:

Iowa 5/U.S. 65 Bypass/Beltway – Iowa

1.0 Synopsis

Iowa 5 and U.S. 65 highways, built in pha
Moines metropolitan region. Together wit
and U.S. 65 form a beltway around the ci
south. The 24-mile project is located almo
through Warren County. The bypass was
anticipated future congestion in the corrid

All identified net-new economic impacts t
development trends and effects to the so
in the IA-5/U.S. 65 corridor proved slowe
has only more recently begun to occur in
people to search out alternate routes arou
communities in the region and offered tim
were created in Polk County as a result of
in the City of Altoona.

2.0 Background

2.1 Location & Transportation Connection

The freeway segment of Iowa 5 analyzed
the Des Moines International Airport, and
IA-5 across the Des Moines River, through
these freeway segments complete a beltw

Des Moines is served by multiple rail lines
west of U.S. 65 bounded to the south by
served by Norfolk Southern, Iowa Intesta

2.2 Community Character & Project Conte

The direct area of influence of the IA-5/U
Des Moines (61,255), Norwalk (9,639), Ca
Des Moines are major centers of employm
Pleasant Hill is characterized by a mix of i
construction of the bypass, become a maj

The economy of Polk County is, like many

3.0 Project Description & Motives

Planning for the corridor dates back at least to the 1970s when the first environmental and location studies were prepared for the Iowa 5 improvements. Funding limitations prevented construction of the project, which was delayed until the early 1990s. Similar alignments were considered as far back as the Iowa 1968 Highway Plan, a planning document authored following the completion of the majority of the Interstate System in Iowa. Prior to the construction of the freeway segment east of Des Moines, U.S. 65 ran coterminous with U.S. 69 north as far as Euclid Avenue, at which point it joined U.S. 6 and ran northeast to I-80. Army Post Road, which stretched east-west from I-35 to Southeast 45th Street (just west of the future U.S. 65 alignment), was originally
and two miles south of the original Army
north-south U.S. 65 portion, and finished
Iowa Department of Transportation, the

The freeway bypass was built to decrease
congestion, and increase accessibility to
considered a tool for economic developm
realized. In 2012, the Iowa Department
the corridor to an Interstate. Both the De
organization, and the Des Moines Interna
corridor and the access it provides, and t
Organization (MPO) and the Purple Heart
the designation bid as a means to further

4.0 Project Impacts

4.1 Transportation Impacts

In 1992, when the Iowa DOT evaluated t
8,800 to 11,400 vehicles per day. In the
alignment), volumes reached 5,600 vehic
per day on Iowa 5 and between 19,900 a

Des Moines has not experienced the leve
not report congestion levels overall to be
Des Moines Area MPO for the year 2010,
A), with only 5% experiencing unstable,
F). While some of the most congested po
Des Moines, planners nevertheless report
route provided by the bypass. Interviewe
are still relatively unaware of the access

Despite the limited congestion in the Des
transportation performance in the region.

5.0 Non-Transportation Factors

A number of additional non-transportation factors affected development in the highway corridor. For example, the fact that the industrial area located just west of U.S. 65 is in a floodplain acts to some degree to constrain development interests. The most significant non-transportation factor affecting the corridor's development is the historic westward momentum of growth in Des Moines. The bypass has only gradually shifted development to the east and south, and only after developable land became scarcer to the west and north.

Tax increment financing played a significant role in the development strategy of multiple communities along the corridor. TIF is used to secure a major new business with anticipated tax revenue large enough to fund infrastructure investment. Utilities or road infrastructure built with tax increment financing then can attract additional firms to the same area. TIF was used extensively in Altoona and is also part of the development package for the recently announced Microsoft Data Center in West Des Moines. Another funding source that has supported development along the beltway is Iowa DOT's Revitalize Iowa's Sound Economy (RISE) grant program, which was used to finance the new Capital City Fruit facility in Norwalk.

Finally, it is worth noting some of the subtleties associated with determining "net new" jobs from project development in the Des Moines area. The metropolitan area of Des Moines has experienced overall robust growth in the last decade or so. Moreover, companies with long histories in the area want to remain in their established communities. While Iowa 5/U.S. 65 has opened up new areas for growth and made it easier to find large parcels of land for companies looking to expand, these companies would have attempted to the stay in the region even without the highway's construction. The highway contributes towards the fulfillment of growth in the region, by making it easier to find locations for companies already in the area to stay and grow.

6.0 Resources

6.1 Citations

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Des Moines Area Metropolitan Planning Organization. Transportation Improvement Program Fiscal Years 2001-2003.

Ex-Post Cases & EIA

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Learn From Ex-Post Analysis of Completed Projects

Case Study Search

Assess My Project

- Screening Tool
- Define project characteristics > see potential range of impacts
- Differs from typical EIA "models"
  - Based on observations in database, ONLY
  - **Does not** provide information on the effects of changing VMT/VHT or effects of changing reliability, connectivity or accessibility
  - Enables exploration of the **influence of community factors on observed project outcomes**

Estimated Impacts

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Take a survey!

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Tools | Case Studies | FAQ | Resources | Home

Assess My Project

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Project Type

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- ○ Limited Access Road
- ○ Bypass
- ○ Connector
- ◉ Beltway
- ○ Bridge
- ○ Interchange
- ○ Widening
- ○ Freight Terminal
- ○ Station
- ○ Service Improvement
- ○ Line Extension
- ○ New Line

Region

- ○ New England/Mid-Atlantic
- ○ International
- ◉ Great Lakes / Plains
- ○ Southwest
- ○ Southeast

Estimated Project Cost: $328 million
Estimated Average Annual Daily Traffic: 22,176

	Jobs	Wages (mil.)	Output (mil.)
Direct Impacts	519 - 864	$24 - $40	$77 - $129
Supplier and Wage Impacts	298 - 496	$14 - $23	$44 - $73
Total Impacts	816 - 1,361	$38 - $64	$121 - $202

Actions

Move the sliders to adjust for higher or lower levels of project cost, traffic and community factors applicable in your case. You will then see shifts in the likely range of economic impacts.

Project Cost: Below Average — Above Average

Average Annual Daily Traffic: Below Average — Above Average

Land Use Policies: Restrictive — Supportive

Infrastructure: Not Available — State-of-Art

Business Climate: Negative — Aggressive

Ex-Post Cases & EIA

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Yields a new understanding of economic development effects and pathways…

- No individual economic measure can capture the full range of the economic effects
- Economic impacts take time and depend on project settings and type
- Economic conditions and project location (urban/rural) are important determinants of outcomes
- Motivations for projects influence outcomes
- Projects that are coordinated with broader planning and investments tend to produce measurably greater economic impacts

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W.E.B. Tools

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W.E.B. Tools NOT needed

Little or No Productivity Impact

Projects addressing **social, environment, safety factors**, and **personal travel**

Productivity Gain from Traditional User Benefit

Projects that reduce **time/cost** for business-related travel: *speed, vehicle capacity, frequency, dwell time*

W.E.B. Tools useful

Productivity Gain from Wider Economic Benefits

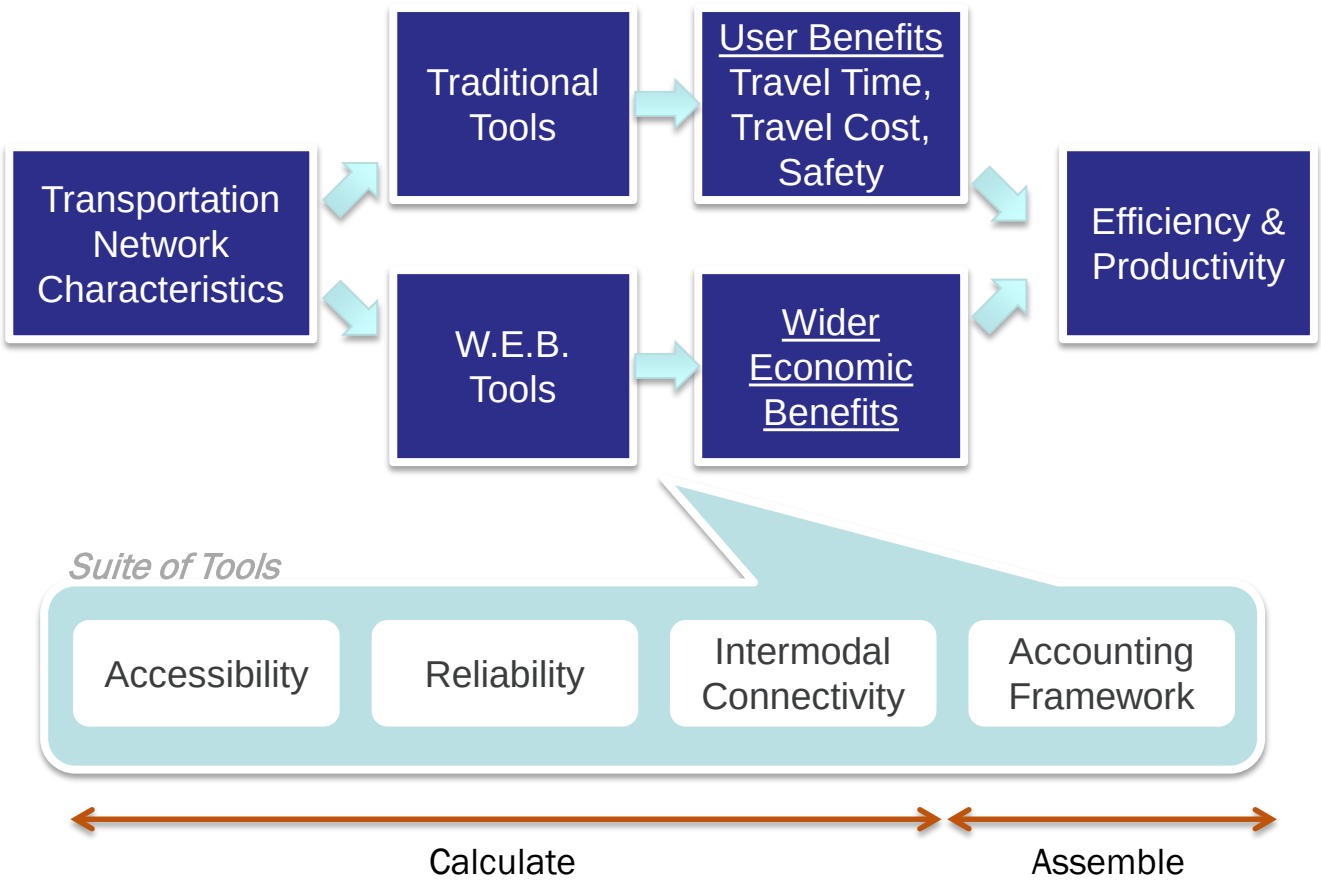
Enhance **reliability** for business-related travel: *congested bottlenecks, product inventory and delivery processes*

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*

W.E.B. Tools

Enhancement to Traditional BCA



WEB Tools in EconWorks

EconWorks
Improved Economic Insight

EconWorks
Improved Economic Insight

Tools | Case Studies

EconWorks Wider Economic Benefits Analysis Tools

Tools for analyzing the economic impacts of accessibility, reliability and connectivity projects

SHRP2 included five tools to help practitioners use economic analysis in project decision making. These tools are designed to fill the gap between the screening stage where the Case Studies may be useful and later stages where agencies may employ detailed economic models.

Analysis Tools include:

Accessibility: tools designed to explain the benefits and impacts of a project to the labor and buyer-supplier markets.

Reliability: tool designed to explain the benefits and impacts of projects designed to improve system reliability (e.g. ITS projects).

Connectivity: tool designed to explain the benefits and impacts of improved intermodal connectivity.

A final Analysis Tool, the **Accounting Framework**, provides a place to assemble the results of the accessibility, reliability and connectivity tools alongside more traditional benefits categories like safety, travel time savings and vehicle operating cost savings.

Accessibility

Specialized Labor Market Access Tool
Buyer-Supplier Market Access Tool
User guide and technical document

Need help?

Reliability

Tool
User guide and technical document

Need help?

Connectivity

Tool
User guide and technical document

Need help?

Accounting Framework

Tool

Need help?

Agenda

EconWorks
Improved Economic Insight

- What is EconWorks? (Case Studies, W.E.B. Tools)
- History: Why were the EconWorks tools developed?
- Key Concepts
  - Economic Analysis (BCA, EIA)
  - Ex-Post Analysis
- Case Studies: Ex-Post Analysis of Economic Impacts
  - Different from typical EIA "models"
  - New information and insights
- W.E.B. Tools
  - Enhancement to traditional ex-ante analysis
  - Suite of tools
- Upcoming Webinar Series

Upcoming Webinars

EconWorks
Improved Economic Insight

Title	Date
Economic Impact Analysis Tools: *Using case studies for project and program assessment*	**Th June 15** 2:00-3:30 PM EST
Wider Economic Benefit Tools – Part 1: *Using WEB tools to assess changes in market access in a Benefit Cost Analysis (BCA)*	**Th August 17** 2:00-3:30 PM EST
Wider Economic Benefit Tools – Part 2: *Using WEB tools to assess changes in reliability and connectivity in a Benefit Cost Analysis (BCA)*	**Th October 19** 2:00-3:30 PM EST
EconWorks as a Decision Support System: *educating and informing the public, decision makers and stakeholders about the economic effects of transportation investments*	**Th December 14** 2:00-3:30 PM EST

In the meantime, please explore!
https://planningtools.transportation.org/13/econworks.html

EconWorks

Improved Economic Insight

Questions?