SELECTED DATA AND TOOLS FOR UNDERSTANDING ECONOMIC IMPACTS OF TRANSPORTATION INVESTMENTS

SCORECARD GUIDE

Selected Data and Tools for Economic Impact Analysis (The Scorecard) is a decision support matrix that summarizes measures of economic impact and the data and tools available to assess these impacts, whether at the project or system or area level, as part of the state transportation planning process. The goals of this effort are to assist transportation analysts in assessing available tools and data, as well as to demonstrate the information required to develop comprehensive economic impact analyses for transportation investments.

Context

Historically, the potential economic development impacts of transportation investments have not been a primary decision factor in which investments get made by states. Measuring impact has been difficult, tools and data have not been available, and other factors have taken priority. Yet, compelling reasons exist for economic development to be considered broadly and more explicitly in state transportation planning:

1. The fragile state of the economy throughout the country requires a closer focus on those efforts providing the **greatest opportunity to grow local and state economies**. Given the impact of the recession and the resultant shortage of traditional revenues that can be applied to critical transportation needs, the corollary to this is "leave no potential benefit behind."

2. Transportation systems and services are likely determinants in the **success of many economic development initiatives.**

3. Capturing economic development benefits requires that **relevant projects are funded** as part of the statewide transportation improvement program. Transportation projects generate different types and levels of economic benefits and these impacts need to be well understood in the planning process to produce good investment decisions.

4. **Inadequate analysis may lead to investments that fail to generate net economic return** or may not produce economic gains and may encourage even negative results for a given community or region.

The role of economic analysis in transportation planning at the state level is changing. More states are engaged in economic analysis and some states are considering economic competitiveness and benefit/cost impacts among the factors in ranking, re-prioritizing and/or awarding resources for transportation investments. This Scorecard aims to help that process and to support the adoption of such efforts in more places.

Scope

This Scorecard in matrix form is the result of research that looked at:

1. The **current practice of economic analysis** in state transportation planning through a literature search and interviews with officials in nine state DOTs;

2. The **types of data** used to support economic development analyses within state transportation planning and project prioritization;

3. The key **measures, tools and techniques** used in state transportation planning that could affect efforts to support economic development; and

4. The **gaps in available data, tools and techniques** to determine specific economic effects and overall net economic benefits.

The Scorecard is accompanied by a set of background materials including a project report and annotated bibliography that can be used to learn about the items in the matrix and their application in more detail.

The Scorecard

This Scorecard and related materials are designed to help guide transportation strategies and choices toward more effective economic development planning. In particular, the Scorecard:

1. Provides **a sense of the steps involved** in acquiring the necessary information if a statewide agency wants to include economic development more explicitly in planning and decision-making;

2. Describes a representative sample of **available data and tools** based on an examination of the current state-of-practice; and

3. **Identifies gaps** in data and practices and indicates emerging practices to address a broader range of indicators.

Organization of the Scorecard

The matrix is organized with a **vertical axis** that contains **tools and data sources** and a **horizontal axis** that contains **measures of economic impact** for transportation investments. These terms are defined further in the next sections. Each cell of the matrix indicates whether a given tool in the row can be used to estimate some aspect of economic impact in the corresponding column. The table below shows how the matrix works.

	Economic Impact Measure
Tool or Data Source	**Rating = 2** This tool can be used for this measure of economic impact
Tool or Data Source	**Rating = 1** This tool is limited in its use for this measure of economic impact
Tool or Data Source	**Blank cell** This data source does not apply to this measure of economic impact

In a sense, each cell in the matrix can be read as the answer to the question, "Does Tool or Data Source Y measure a transportation investment's impact in terms of Indicator X." For example,

- "Does the Data Source **Parcel Development Data/Property Taxes** measure a transportation investment's impact on the Indicator **Travel Time Benefits - Passenger**?" **The answer is no, so the cell is blank**.
- "Does the Data Source **Parcel Development Data/Property Taxes** measure a transportation investment's impact on the **Value Capture/Creation & Property Values**?" **The answer is yes,** so the cell will either have a 1, which indicates that the data source provides some insight, **or a 2** which indicates that the data source addresses the issue to a significant degree.

Gaps exist between the available resources and what is needed to fully analyze the economic impacts of transportation projects. Showing these gaps is meant to indicate where new tools are needed or the tools need to improve as economic analysis becomes a more common practice in the transportation field. Generally, a combination of tools is still needed to provide a comprehensive view of benefits. At the same time, care should be taken not to double count benefits, such as travel time savings, which is used in calculating several impacts.

Vertical Axis: Data and Tools

The data and tools used in transportation impact analysis are divided into six categories shown on the vertical axis. These items progress from basic data at the top through increasingly more complex tools toward the bottom, with a final category at the base that incorporates libraries of experienced-based evaluations and tools. Within each category are several examples of the tools available. These examples are not a comprehensive list, but rather a representative sample of the range of resources available for the purpose of assessing their capacity. The categories are described as follows:

- **Primary Data:** Data and information without interpretation applied to them.

- **Purpose-Focused:** Data and modeled results that focus on specific transportation questions.

- **Traffic Engineering and Performance Based:** Models and capacity manual tools in use in transportation agencies are included in these approaches.

- **Travel Demand:** Models and tools that project or measure travel and its causes and effects.

- **Regional Economic Activity:** Analytical tools used to predict the regional economic impacts of transportation investments including changes in:
    - Employment, industry activity, and economic demand;

- o Fiscal impacts such as property values;
- o Household and business costs and affordability; and
- o Livability impacts such as environment and health, land consumption, and walkability.

- **Community of Practice:** Analytical tools that derive from real-world experience and implementation, such as compilations of case studies of completed projects or a body of research or data on a particular area of inquiry.

Horizontal Axis: Potential Economic Impacts

Five key types of measures and indicators of economic impacts are used in the horizontal axis. The indicators add comprehensiveness to an analysis as one goes from left to right in the table. The categories and related indicators are described as follows:

- **Geography:** Level of detail of area covered by tool or data. Finer grain geographies allow one to uncover economic impacts that might get washed out in a larger county- or state-level analysis. For example, if a transit stop enables 300 new units of housing in a census track it will have a major impact on the neighborhood, but that impact may not be large enough to be notable in county-wide building data.
    - o **County or Higher:** Disaggregates data to the county, state, or national level.
    - o **Local- Census Place:** Disaggregates data to smaller than the county level—to incorporated areas including cities, towns, and villages.
    - o **GIS - Block, Parcel:** Can be used as part of a fine grained geographic information system, or disaggregates data to a sub-city level.

- **System Performance:** Measures of efficiency and effectiveness of a project's impact on the transportation network. System performance indicators are first-order measures of economic impact. These basic indicators answer such questions as: Is an investment going to make the transportation system more or less expensive to maintain and operate? Is an investment going to help the system do its job better?
    - o **System Performance and Condition:** Efficiency, effectiveness of transportation network or state of good repair. The transportation system as an economic asset has a higher value if it is performing well. Preventing future maintenance expenditures also creates real savings.
    - o **Network Utility/Connectivity:** The transportation network's usefulness due to connectivity and other attributes. Providing a high degree of utility and connectivity will support economic development and allow the local economy to rely on the transportation system.
    - o **Operational Effects (Financial):** System's operational costs. Reducing operational costs of the system has long-term budgetary benefits and frees up resources for other public goods.

- **Benefit-Cost and Cost Effectiveness:** Measures of whether a transportation project is economical in terms of the value received as compared to outlay or impact. These indicators are the most common that transportation decision-makers use to look at return on investment to the users and the community affected. Demonstrating benefits such as reduced travel time or household expenses speaks to primary real-world concerns of constituents and can help garner public support for transportation investments.
  - **Travel Time Benefits – Passenger:** Time spent traveling by drivers and passengers. Travel time is a well-documented economic impact of transportation and is basic part of most economic analysis. But as the Scorecard shows it is not the only way to measure economic benefit.
  - **Travel Time Benefits – Freight:** Cargo's time spent in transport. Cargo travel time is often looked at separately from passenger travel, since the value of time for each is quite different.
  - **Household Costs:** Personal expenses. Transportation projects that reduce household costs support families and can allow them to channel their funds to more productive uses.
  - **Business Costs:** Business expenses. If a transportation project can help reduce the cost of doing business in an area local employers will have more resources to invest, grow, and create jobs.
  - **Safety (Accidents, Injuries):** Number or rate of accident and injuries. Transportation safety has played a role in economic analysis for decades. The economic benefit that reducing accidents and injuries creates is well documented.
  - **Equity Impacts:** Economic justice or relative financial well-being. Improving equity in a region is important from a fairness perspective. But it can also help ensure the health of the economy by creating more opportunities for success. Economic equity has been shown to contribute to higher rates of economic growth.
  - **Employment Accessibility:** The degree to which jobs are accessible from various modes of transportation, often within a set time such as 45 minutes. Since jobs are one of the cornerstones of the local economy, making them more accessible supports local economic development.

- **Regional Economic Development:** Measures of transportation project's impact on the economy of the surrounding area. Regional economic development indicators get to the heart of economic impact analysis. These measures look beyond cost savings to value creation in the region, such as through new jobs, increased property values, and cleaner air. This kind of value creation can differentiate a project that might otherwise score similarly to others in terms of system performance or other more traditional measures. Moreover, demonstrating economic development potential can help make the argument in a community for a transportation investment.
  - **Fiscal Impact:** Effect on revenues of transportation agency or of area served by the transportation investment, as well as changes in such impacts as tax receipts. Also includes loss of residents or businesses due to displacement and the impact on a

community not receiving a transportation improvement whose residences or businesses relocate to the new site. Analyzing the impact of transportation investments on public receipts over time helps ensure full accounting of tangible benefits and that the project contributes to sustainability of the area.

- o **Short Term Employment Impacts:** Jobs created in the construction phase or other temporary period. Short term job creation can be the largest economic impact of some transportation projects. Putting people to work, even if for just a few months or years, can aid local economic development.
- o **Employment Increases or Shifts:** Jobs in the region over the longer term, such as by an employer expanding in the region. Measuring employment shifts will show whether job creation is really new jobs, and thus net economic gain, or just jobs coming from elsewhere. Shifts may be beneficial if the new location of jobs will help transportation efficiency, reduce commutes or catalyze other development. Shifts in other economic activity can occur in this same manner.
- o **Induced Impacts & Second Order Effects:** Jobs created as a result of additional spending by people or firms that receive direct economic benefits from a project. Second order effects can be one of the more complicated economic impacts to measure, but can be significant. For every new job created, those employees go on to purchase goods and services in their neighborhoods, making the impact of that one job on the community much greater than its direct effects alone. The potential issue of double counting needs to be recognized.
- o **Value Capture/Creation & Property Values:** Market price of property in the region/place or other measure of value capture. Transportation has real impacts on property values—accessibility to job centers can increase home prices, while traffic noise can have a negative effect. If a transportation project has the potential to make local property values increase or decrease that should be documented as part of economic impact.

- **Livability:** Measures of quality of life impacts of transportation project. Livability measures go beyond standard economic development assessment to look at sustainability and quality of life. Sustainability has value on its own, and an investment that improves the attractiveness of a region for workers and businesses can make that region more competitive. Livability improvements can generate feedback loops of benefits, such as when healthier, greener neighborhoods promote walkability, which then creates a culture of walking to work or shop in the area and reduces congestion and air pollution in areas beyond the initial investment.
  - o **Environmental Benefits:** Quality of air, water, flora and fauna. The economic cost of air, water, and land pollution has been well documented. To the extent that an investment reduces environmental impacts it creates lasting value for a region's economy.
  - o **Land Consumption/ Resource Use Intensity:** Quantity and form of land and resource consumption. Investments that promote compact development can help reduce transportation demand and enable travelers to have alternative mode options. Land conservation can also help preserve ecosystems, protect biodiversity, and leave space

for other land uses like local agriculture. Investments that are less resource intense will have lower lifecycle impacts and can support sustainability throughout the supply chain.

- o **Health Benefits:** Inducing or preventing well-being and disease. A transportation investment that improves public health, such as by lowering obesity rates, creates real economic value for the community in a way that has not historically been accounted for. Including a measure of this impact can change the relative economic performance of projects.
- o **Walkability and Pedestrian Friendliness:** Supportiveness and safety for walking. Walkability crosslinks to other benefits including health and household costs. Walkability can also indicate a general level of quality of life that is attractive to business investments.