

PRISM Model/Frequently Asked Questions

1. How will the study estimate the economic impact of potential transportation improvements?

The study will use a proprietary software program called PRISM to analyze the potential economic benefits of the range of potential transportation improvements that will be considered. PRISM, which stands for PB Regional Impact Scenario Model, is Parsons Brinckerhoff's (PB) proprietary transportation economic impact model. (Parsons Brinckerhoff is the consultant firm conducting the study.) PRISM uses documented, established relationships between economic and travel-related factors to generate estimates of economic impact. PRISM considers how changes in accessibility – measured as changes in travel time and other transport costs – affect cost efficiency and production (output) for existing industries in a region. PRISM also captures potential improvements in worker productivity and overall labor market activity resulting from personal travel time savings. In addition, PRISM estimates how these initial increases in industry activity and income cycle through the economy in the form of more household and business spending, producing total impacts that can be several times greater than the initial cost savings.

Together, these analyses comprise the Regional Economic Impact module of PRISM. This module's focus is on the long-term, permanent changes to a regional economy, as a region's producers and workers become more cost efficient and productive due to better transportation access, and as expanded business sales and personal income recycle throughout the area's economy. Key economic impact measures estimated by PRISM include employment and wage growth, and increases in Gross Regional (and State) Product (GRP/GSP). Gross Regional Product (GRP) is equivalent, on a smaller scale, to Gross Domestic Product. It can be viewed as the local economy's GDP, however that local geography may be defined.

The entire PRISM model actually consists of several interrelated but separate modules. In addition to the Regional Economic Impact component, it includes modules for conducting an economic benefit-to-cost analysis (BCA), estimating impacts on regional employment from a project's construction and maintenance expenditures (in effect, a short term stimulus impact model), and a Sustainability Return on Investment module, which considers a range of long-term environmental and social benefits, with a focus on sustainable transportation and development.

2. How will PRISM be applied to the Central York County Connections Study (CYCCS)?

The CYCCS has three phases – the first is initiation of the study, the second is a general assessment of a broad range of transportation and other improvement options, while the third is a more detailed evaluation of the most plausible options that emerge from the first phase. For the CYCCS, PRISM will first be used in Phase 2 to illustrate the potential economic benefits associated with potential transportation infrastructure improvement options. This initial application will help frame the discussion regarding potential economic benefits associated with potential actions. The economic impacts will focus on benefits to York County. Some benefits may be found to “spill over” to other counties and also to bordering Massachusetts, especially since York County is partly a labor market for

the Boston metropolitan area, which will also benefit to some degree from improved access to York County workers.

As initial options in the first phase of the study are refined into more specific concepts during Phase III of the Study, PRISM will again be used to quantify economic benefits. For each option, the overall economic benefit will be estimated in terms of annual dollars added to the local (study area) economy, and further described in terms of the number of new jobs, increases in wages, and additions to Gross Regional Product.

During the second phase of the study, the Benefit Cost Analysis (BCA) module of PRISM will evaluate benefits against construction and maintenance costs to allow comparison of cost-effectiveness across various options. This analysis will include direct user benefits (travel time savings for goods and passengers, vehicle operating cost savings from reduced travel time and mileage) as well as “social” and environmental benefits, such as reduced air emissions and highway crashes. This BCA will allow an “apples to apples” comparison of the economic trade offs (costs vs. benefits) of the different concepts under consideration. This information will be used in conjunction with other measures of effectiveness (e.g. – traffic safety, environmental impacts, etc.) to fully evaluate the study options.

3. How has PRISM been used before in other locations? What types of results were obtained?

PRISM has been and is currently being used by PB in a wide variety of transportation economic impact studies. PRISM was developed in response to requests by the Ohio Department of Transportation for a comprehensive economic evaluation tool that could be directly integrated with their statewide travel demand model, could evaluate the economic development impacts of their statewide capital program, as well as to study the potential impacts of specific major projects. For example, in Ohio, major improvement alternatives to US Highway 250/36 were estimated to result in long term increases of several hundred jobs in the study region, due to both passenger and freight time and cost savings.

Since then, PRISM has been used in multiple TIGER grant applications, and is currently being used for economic studies in Arkansas, Illinois, and other locations.

4. What types of economic impacts does PRISM estimate?

PRISM estimates regional (in this case York County) changes in employment, wage earnings, Gross Regional Product, and state and local tax revenues. (Click [here](#) for a definition of Gross Regional Product.)

It is important to keep in mind that the economic impacts estimated by PRISM reflect only the incremental effects of the transportation improvement – PRISM is not a comprehensive economic forecasting model. Many complex and interrelated factors influence economic activity. In other words, PRISM estimates the “marginal” impacts of a transportation project.

It is also important to note that relatively major changes in accessibility are needed to generate important structural changes to a region’s economy. For example, while a new highway interchange may provide a setting for some development to cluster around the interchange, the relative magnitude

of the impacts will probably be quite small. By contrast, a major new highway link, especially where there are significant gaps in capacity and connectivity, can generate important structural changes. The PRISM model can help to determine whether and to what extent York County can benefit from such an investment and if the benefits can justify the cost.

5. What is the difference between economic development analysis and benefit cost analysis?

Benefit-cost analysis considers the direct value of transportation improvements to transportation users, as well as additional non-user benefits that may be derived, such as environmental, safety and even quality of life benefits. The analysis compares these to the costs of constructing, operating and maintaining the associated transportation infrastructure over their effective life. Benefits can include travel time savings, vehicle operating cost savings, health savings from reduced emissions, benefits to land owners from increased real-estate values, reductions in noise, etc. Some of these benefits are not “priced” in the market directly, such as travel time savings. For these types of benefits, benefit cost analysis looks at the additional “utility” of the savings based on what people who benefit might be willing to pay for such improvements.

PRISM’s Economic impact analysis takes a different approach. It considers the long term structural changes to an area’s economy, and is measured in terms of wages, jobs, taxes, business sales, and Gross Regional Product. These figures are excluded from benefit-cost analysis for theoretical reasons, and to avoid double counting of benefits. Input-output analysis is a useful tool to support economic impact analysis; it examines the impact of an injection in investment or additional demand. It considers the idea of economic multipliers, where dollars injected into the economy flow through the various industries – government paying contractors, contractors buying legal services as part of their payment; law firms using that money to buy coffee; the coffee retailer paying its employees. These complex interactions are accounted for in economic impact analysis. They are distinguished as direct impacts (the initial spending), indirect impacts (additional sales by businesses to support the initial direct spending), and induced impacts (the additional spending of the employees from increased wages).

6. What are PRISM’s limitations; what impacts does it not address?

PRISM does not fully address structural economic changes that might occur in York County in the future – that is, it will not identify “new” industries that might come to the region, which would be entirely beyond what the region already has at present. For example, at some point in the future, York County might attract high tech firms by drawing businesses away from neighboring states or regions; similarly, it would not identify, say, the potential for new forms of organic farm production, which might be viable as time to major markets might fall to within a reasonable shelf time for such a product. If such industries are not present now, or are not projected to be present under the baseline socio-economic conditions, PRISM will be unable to identify such “new entrants”. The possibility for major new industries to develop in York County would have to be identified through other analytic processes. But PRISM does measure benefits to new industries in the region, provided those industries have been projected as part of the socio-economic forecasts that drive the Travel Demand Model. (Note: The Travel Demand Model is a customized computer modeling tool that estimates how changes in

population and jobs combined with proposed transportation improvements would affect travel patterns in the study area.)