

Research at a Glance

Technical Brief

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The Cost of Roadway Construction and Maintenance in New Jersey

Well-maintained transportation infrastructure is necessary to support the needs of the traveling public and goods movement and other economic activity. In today's fiscally constrained funding environment, cost efficiency in highway construction and maintenance is an important goal for transportation agencies nationwide.

Research Problem Statement

New Jersey's transportation systems comprise a vast array of infrastructure. The costs associated with planning, constructing, operating and maintaining New Jersey's transportation infrastructure is significant. Research is needed to provide NJDOT with short-term insight into the average cost of roadway construction and maintenance projects in New Jersey and longer-term understanding of the factors that influence construction and maintenance costs and what can be done to ensure the cost efficiency in the delivery of roadway projects.

Research Objectives

1. Estimate the average cost per-lane mile for roadway construction projects on State-owned roadways using project-specific data;
2. Benchmark New Jersey roadway construction costs against those of other states;
3. Identify the factors that may influence the cost efficiency of roadway construction projects in New Jersey; and
4. Identify leading practices that can be used to improve the cost efficiency of roadway construction projects.

Methodology

To achieve these research objectives, the Rutgers research team conducted a two phase study. Phase 1 of the study, which was completed in May 2016, involved analysis of annual NJDOT expenditures for various activities related to administration, planning and research; capital construction; operations and maintenance; and debt service to provide a base-line understanding of costs associated with roadways under NJDOT jurisdiction. These expenditures data were then utilized to estimate an average cost-per-lane mile of roadways under NJDOT jurisdiction. The programmatic analysis was conducted for fiscal years 2010 through 2014. Phase 2 of the study involved a more detailed analysis of construction and pre-construction cost data associated with a sample of specific NJDOT road and bridge projects completed over the same time period as well as a review of leading practices intended to increase the cost-efficiency of roadway construction projects.

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Results

Phase 2 of the study found that the statewide average total project cost per lane-mile was \$191,175, which is in line with costs estimated in other states. The analysis showed that projects funded using Federal funding were, on average, more expensive than those funded with 100 percent State Funding. Costs were also higher when projects were constructed on Interstate Highways, Other Freeways and Expressways as well as two-lane, lower-volume roads. Longer projects were much more likely to be low or very low cost while projects that were less than six miles long tended to be higher cost.

Given these findings, NJDOT should further examine projects constructed on two-lane, lower-volume, undivided roadways to determine why project costs are higher on these roads and if bid specifications can be adjusted to reduce costs. Further, NJDOT should examine how project limits are currently defined to determine if there are opportunities to extend the length of projects to increase the total lane-miles of pavement addressed in each project. This can optimize the value received from construction mobilization efforts under each contract. There are other ideas for reducing costs published by FHWA. NJDOT should work with its research partners and vendors to determine which, if any of these or other recommended leading practices related to 3R projects are not currently being used but could be adopted to reduce the cost of capital construction projects in New Jersey.

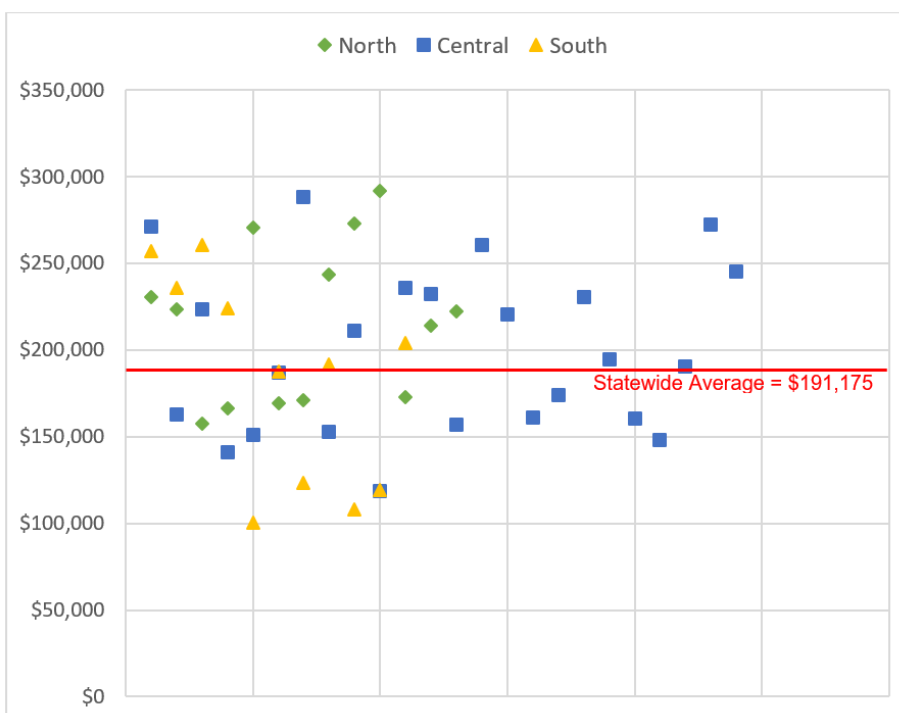


Figure 1. Variation in Average Project Cost Per Lane mile by NJDOT Region

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