

Planning for funding needs: improving the HWYNEEDS software

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Omar Smadi,
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EFFECTIVE long-term planning for transportation projects requires consistent funding levels—something Iowa’s counties have not been able to count on.

A recent research project sponsored by the Iowa Highway Research Board (TR-433) is helping to change that, beginning with gravel road needs in the 2002 quadrennial need study. Preventing the volatile funding fluctuations from one need study to the next was the main objective of Omar Smadi’s research on the HWYNEEDS computer program.

Smadi, pavement management specialist at the Center for Transportation Research and Education, has developed “a better planning tool” for counties’ future needs. He investigated HWYNEEDS’s parameters and their impact on the determination of needs.

HWYNEEDS, developed by the FHWA, was adopted by the Iowa DOT in the early 1980s as the main programming tool for the needs study. It forecasts the condition of highways, automates the determination of financial needs, and provides a tool for determining the road use tax fund (RUTF) allocations to counties.

The allocations are based partly on the total area of a county (30 percent), and partly on highway needs (70 percent). The condition data used to calculate needs have been the main culprit in the funding swings.

The Iowa DOT conducts visual surveys of the state’s county road network every year, but only one-tenth of the network can be surveyed in any given year. Consequently pavement data on some parts of the network are

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up to 10 years old during a need study. These old condition data can dramatically skew the funding allocations.

Changes for gravel roads

For the 2002 need study, Smadi says that the Iowa DOT will try to minimize the impact of condition data by treating gravel roads differently in HWYNEEDS. Gravel roads account for approximately 47 percent of the total needs. In his research, Smadi developed a formula based on past needs studies from 1990, 1994, and 1998, which predicts gravel road needs based on the number of miles and the vehicle miles traveled.

By using this formula, approximately 60 percent of the total funding will be stable. Also, by removing gravel roads from the visual survey, the Iowa DOT can reduce its survey cycle of paved roads from 10 years to four years.

The “gravel road system is so dynamic it just doesn’t make sense to include it in the data collection process,” Smadi says.

Automated data collection

In an earlier research project, Smadi, Tom Maze, and Jon Resler investigated the use of automated distress data (data that were collected using automated equipment) with HWYNEEDS. These data are objective, consistent, and more current because they are on a two-year collection cycle rather than a 10-year cycle.

Distress data have been electronically collected on approximately 75 percent of Iowa’s paved roads, but the entire roadway system will not be covered in time for the 2002 needs study. Iowa counties are assessing funding mechanisms and data collection procedures for the use of automated distress data during the 2006 needs study.

The county engineers’ executive board has approved the formula-based approach for assessing gravel roads needs, and it has also approved a recommendation to automatically collect data on the entire county road paved system. “It’s a more fair approach,” Smadi says.

For more information

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