

ABSTRACT

The quadrennial need study was developed to assist in identifying county highway financial needs (construction, rehabilitation, maintenance, and administration) and in the distribution of the road use tax fund (RUTF) among the counties in the state. During the period since the need study was first conducted using HWYNEEDS software, between 1982 and 1998, there have been large fluctuations in the level of funds distributed to individual counties. A recent study performed by Jim Cable (HR-363, 1993), found that one of the major factors affecting the volatility in the level of fluctuations is the quality of the pavement condition data collected and the accuracy of these data. In 1998, the Center for Transportation Research and Education researchers (Maze and Smadi) completed a project to study the feasibility of using automated pavement condition data collected for the Iowa Pavement Management Program (IPMP) for the paved county roads to be used in the HWYNEEDS software (TR-418). The automated condition data are objective and also more current since they are collected in a two-year cycle compared to the 10-year cycle used by HWYNEEDS right now. The study proved the use of the automated condition data in HWYNEEDS would be feasible and beneficial in reducing fluctuations when applied to a pilot study area. In another recommendation from TR-418, the researchers recommended a full analysis and investigation of HWYNEEDS methodology and parameters (for more information on the project, please review the TR-418 project report).

The study reported in this document builds on the previous study on using the automated condition data in HWYNEEDS and covers the analysis and investigation of the HWYNEEDS computer program methodology and parameters. The underlying hypothesis for this study is that along with the IPMP automated condition data, some changes need to be made to HWYNEEDS parameters to accommodate the use of the new data, which will stabilize the process of allocating resources and reduce fluctuations from one quadrennial need study to another. Another objective of this research is to investigate the gravel roads needs and study the feasibility of developing a more objective approach to determining needs on the counties gravel road network.

This study identifies new procedures by which the HWYNEEDS computer program is used to conduct the quadrennial needs study on paved roads. Also, a new procedure will be developed to determine gravel roads needs outside of the HWYNEED program.

Recommendations are identified for the new procedures and also in terms of making changes to the current quadrennial need study. Future research areas are also identified.