

Development of Decision Trees for the Selection of Pavement Maintenance and Rehabilitation Activities in South-Central United States Dataset

Dataset available at: https://digitalcommons.lsu.edu/transet_data/103/

(This dataset supports report **Development of Decision Trees for the Selection of Pavement Maintenance and Rehabilitation Activities in South-Central United States**)

This U.S. Department of Transportation-funded dataset is preserved by the Transportation Consortium of South-Central States (TRAN-SET) in the LSU Digital Commons Repository (<https://digitalcommons.lsu.edu>), and is available at https://digitalcommons.lsu.edu/transet_data/103/

The related final report **Development of Decision Trees for the Selection of Pavement Maintenance and Rehabilitation Activities in South-Central United States**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/61617>.

Metadata from the LSU Digital Commons Repository record:

Authors:

Momen Mousa, Louisiana State University
Marwa Hassan, Louisiana State University
Daniel E. Game, Louisiana State University

Document Type: Data Set

Publication Date: 8-2021

Abstract: Over time, new pavements deteriorate under the combined effects of traffic loading and the environment, no matter how well-designed or constructed. In general, maintenance and rehabilitation activities are employed to slow down or reset the rate of pavement deterioration. Cement-Stabilized Full Depth Reclamation (CSFDR) is a common rehabilitation treatment used by transportation agencies, specifically in Louisiana. Likewise, Ultra-Thin overlay (UTO) is a pavement maintenance treatment that has increased in popularity in recent years in Region 6. Yet, several gaps exist in the literature regarding the long-term field performance and cost-effectiveness of these two treatments especially in hot and humid climates. Therefore, the key objectives of this study were to assess the immediate benefits and long-term field performance as well as the cost-effectiveness of these two treatments in Louisiana. To achieve these objectives, numerous CSFDR and UTO projects were identified from the Louisiana Department of Transportation (LaDOTD) Pavement Management System (PMS) database and analyzed in terms of alligator cracks, rutting, random cracks, and roughness over a monitoring period of up to 15 years. Results indicated that the performance of CSFDR is significantly affected by the pre-treatment pavement conditions, applied overlay thickness, and traffic. Results also indicated that CSFDR projects would usually fail due to the development of random cracks. This could be attributed to the development of shrinkage cracks, which is a common problem with cement stabilization in Louisiana. A regression model was developed to predict the service life of CSFDR based on project conditions. Results also showed that UTO considerably extended the Pavement Service Life (PSL) for all the distress indices. This extension varied based on the pre-treatment pavement conditions and traffic level. As such, a predictive model was developed, with

reasonable accuracy, to predict the extension in PSL of UTO based on project conditions. The developed models in this project for CSFDR and UTO will help state agencies make effective decisions for the maintenance and rehabilitation of their pavements.

Comments: Tran-SET Project: 20PLSU02

Recommended citation:

Mousa, M., Hassan, M., & Game, D. E. (2021). Development of Decision Trees for the Selection of Pavement Maintenance and Rehabilitation Activities in South-Central United States.

Retrieved from https://digitalcommons.lsu.edu/tranсет_data/103

Dataset description:

This dataset contains 1 file described below.

Datasets.xlsx:

The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.

National Transportation Library (NTL) Curation Note:

As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (<https://ntl.bts.gov/public-access>) Section 7.4.2 Data, the NTL staff has performed *NO* additional curation actions on this dataset. NTL staff last accessed this dataset at https://digitalcommons.lsu.edu/tranсет_data/103/ on 2022-05-19. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.