This topic is "practice ready."   ☐ **Yes**   ☒ **No**

Relating Expert Estimated and Measured PCI in Iowa Local Network

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Abstract

Pavement performance assessment is a crucial element in pavement management systems, where it directly impacts maintenance and rehabilitation requirements, and estimate future funding needs (Bektas et al., 2014). Pavement performance indices can defined using one of three methods: direct panel rating, utility functions, deduct values and weighting factors. Increased accuracy of the assessment method will lead to a more objective and accurate pavement performance index, and thus will lead to more reliable and optimal maintenance decision (Chootinan et al., 2006). Pavement condition index (PCI) was developed in the late 1970s by the U.S. Army Corp of Engineers, and became one of the most used indices following the deduct values method (Shahin et al. 1980). PCI is calculated by estimating deduct value functions for various condition parameters such as crack, ride quality, and rutting indices. These estimations can be based on visual assessment by an expert or panel of experts; or by objective measurements acquired using physical systems. Recent advancements in data collection tools, such as laser crack measurement systems (LCMS), have allowed transportation agencies to acquire ample amounts of pavement condition data, and thus perform pavement condition analysis with a large network coverage.

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In this study a large data set of pavement condition data for Iowa highway network will be used to investigate the discrepancies between the PCI values obtained from visual inspection and semi-automated data collection. Decision tree algorithm will be used to derive a probabilistic path model that can relate the combination of visual inspection to the semi-automated data collection. This will also provide a tool to estimate new weights, for the PCI equations, that relate to the visual PCI estimation.

Keywords: pavement condition index—inspection—condition assessment—decision tree