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## Using e-bikes and private cars in dynamic road pavement monitoring

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**Abstract:** The high cost and time involved with traditional road pavement monitoring approaches as well as the high costs of pavement monitoring equipment necessitate the need for introducing a cheap, accurate and straightforward road pavement monitoring method. Pavement monitoring systems are considered as an important preventive step to maintain the quality of road pavements. Road pavement conditions should be accurately monitored to measure the severity of road pavement degradations. This paper presents a new technique for road pavement monitoring. The proposed road pavement monitoring technique applies road pavement vibration measurements from an e-bike and a private sedan car equipped with vibration data and video recordings. In addition, a pavement performance indicator named Present Serviceability Rating (PSR) is used to detect the level of pavement degradation and overall pavement condition depending on visual inspections. The results from the proposed vibration monitoring technique and the PSR are compared to identify the accuracy of the proposed technique to measure the road pavement condition. The results of the case study road show that the e-bike and the sedan car are appropriate and accurate as test vehicles in pavement monitoring. They also show that travel speed and the number of monitoring iterations have a significant impact on the accuracy of pavement vibration data and consequently, on the accuracy of the road pavement monitoring of both test vehicles.