Identification of Key Performance Indicators to Develop a Scorecard to Evaluate the Level of Safety in School Zones

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Abstract

When it comes to road safety, the immediate vicinity of schools is a very sensitive region. According to WHO, a child is lost every 4 minutes on road with age ranging from 5-19 years. Statistics show that afternoon school pick-up hours are the most common time for crashes. In many countries, most crashes involving children happen within 500m from the school. Children are especially vulnerable in road traffic because of their unique physical, mental, and cognitive abilities. However, assessing the level of safety in school zones can be a complex task, given the numerous factors and variables involved. This abstract presents a proposal for the identification of Key Performance Indicators (KPIs) for the development of a comprehensive scorecard designed to evaluate the level of safety in school zones. The aim is to propose a cost-effective scorecard model that can be used remotely/online without physically going to site. A systematic and holistic approach to assessing school access safety, encompassing infrastructure aspects. In this study, the research problems in debate are incompliance of traffic laws in school zones and the location of the school not being significantly considered in school road safety while safety problems differ location-wise. The objective of this research involves identifying road safety issues faced by school children, identifying KPIs that can be used to measure safety risk and to evaluate different school zones. The methodology initiates with a thorough literature review to find research gaps and further improvements in the already existing assessment methods if any. This detailed literature review undertaken also involved various case-studies around the world. Then the identification of relevant parameters was carried out by proposing suitable indicators that are quantitative in nature to facilitate, evaluate and compare different school zones. The important parameters that need to be considered in evaluating road safety near schools include school location and nearby land use, crosswalks and pedestrian infrastructure, speed limits, school zone signs, traffic calming measures, drop-off and pick-up zones, proper visibility, bike lanes, parking facilities, etc. This scorecard consists of 16 (KPIs) each measures a specific aspect and evaluation criterion of school zone safety. These indicators are grouped into four key categories: school site, road network, parking/loading and active transport indicators. The indicators are identified with the help of literature review and a small-scale case study in New South Wales, Australia. Site visits were conducted and secondary data available online was obtained to analyze the road safety parameters in the school zone. Main indicators identified are location/entrance, fence around the school, land use, main roads in the school vicinity, school zone signage and pavement marking, speed limit signage, traffic calming measures, adequate sight distance, adequate pick-up/dropoff zones for private vehicles, availability of school crossing supervisors, sidewalks, crosswalks, bike lanes etc. All the indicators identified are further justified through a detailed literature review, supporting evidence and local standards. A numerical star rating system is used as an evaluation criterion to assess school zone safety levels across each category on a scale from 1 (lowest safety) level to 5 (highest safety level). The proposed scorecard model will assign weights to each indicator based on its relative importance, and schools will be evaluated against these indicators. Further analysis involves a pilot study on

a school in Sri Lanka in which few students will use the proposed scorecard model on a school zone remotely to observe the consistency of results. The final score will provide a comprehensive overview of the safety level of school access, helping schools, parents, and local authorities identify areas for improvement. The cumulative score will provide an overall safety rating, facilitating easy comparison and benchmarking against other schools Implementing this scorecard will not only serve as an assessment tool but also motivate schools and communities to prioritize safety in school access. Moreover, it will facilitate and fill the research gaps for data-driven decision-making, and interventions to enhance school access safety.

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