Cite this article

Labi S, Saeed TU and Faiz A (2019)
Editorial.
Infrastructure Asset Management 6(1): 1,
<https://doi.org/10.1680/jinam.2019.6.1.1>

Editorial

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Editorial

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This is the third set of articles for the *Infrastructure Asset Management* themed issue on highway infrastructure decision-making: challenges and opportunities. The first issue contained articles that largely addressed infrastructure investment evaluation methodologies and criteria that include costs and sustainability. The second issue mostly covered topics related to the monitoring of infrastructure operations and condition. This third installment carries five articles that focus on the performance effectiveness of infrastructure management and specific interventions at project and program levels, maintenance cost estimation and resilience.

The first paper (Adey, 2019) discusses in detail the road infrastructure asset management process at a high level and then presents a framework to further enhance the efficiency and effectiveness of this process. Acknowledging the complexity of the process, the author also shows how road asset managers can use computer systems to increase the efficiency and effectiveness of this process. The paper provides a useful starting point for road infrastructure asset managers who seek guidance in developing or upgrading their asset management processes in a manner that suits their goals and accommodates the perspectives of key stakeholders.

In the second paper (Qiao *et al.*, 2019), the authors developed models that estimate the cost and performance effectiveness for pavement repair (reconstruction, rehabilitation and maintenance) treatments. The models help not only to identify the factors that influence repair cost and effectiveness, but also choose the most cost-effective treatment type to restore a deteriorating pavement, extend pavement longevity and defer reconstruction. This paper also provides insight into the relationship between pavement treatment cost on one hand and the road class, project size and pre-treatment pavement condition on the other, and the relationship between the pre-treatment pavement condition and the treatment effectiveness.

The third article (Alabi and Keller, 2019) presents a statistical model to define the performance effectiveness of pavement crack sealing in terms of the reduction in the rate of pavement condition deterioration. The paper identifies two factors that influence the performance effectiveness of crack sealing: the pre-sealing level of deterioration and the effort (maintenance dollars) spent on the crack-sealing treatment. The consequences of deferring the sealing of a cracked highway or runway pavement were found to depend on pre-treatment pavement condition.

The fourth article (Ghahari *et al.*, 2019) uses aggregate state-level bridge data from 50 states in the USA to develop annual maintenance expenditure (AMEX) models for bridges, to predict the bridge AMEX (dollars per unit deck area) as a function of bridge condition, statewide bridge inventory size and average levels of traffic loading and climate severity. The authors also demonstrate the sensitivity of AMEX to these explanatory factors. The state-level bridge expenditure forecasts developed in this study could be useful for various highway agency functions, including infrastructure user cost allocation, financial need forecasts and long-term planning and budgeting.

The fifth article (Rouboutsos and Pantelias, 2019) proposes a methodology for measuring the likelihood that transport infrastructure projects achieve their performance targets. The authors use a novel indicator that is expressed in terms of transport infrastructure resilience. It is expected that their measurement system will complement current decision-support tools in agency efforts to identify appropriate actions to mitigate identified vulnerabilities and to improve asset robustness. The article also demonstrates the applicability and suitability of the measurement system to road infrastructure projects.

Finally, we are grateful to the contributing authors, reviewers, the Editor-in-Chief Dr. Arun Kumar, the entire Editorial Board, Kirsten Buchanan and the ICE Publishing team for their support of our themed issue.

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