Editorial

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This issue of *Transport* covers a wide range of topics, from motorcycle transport in sub-Saharan Africa to subway queues in China, demonstrating the vital part that transport plays in supporting communities across the globe. The papers are grouped around two themes: the benefits of enhancing transport infrastructure and the challenges of managing and maintaining existing infrastructure to maximise capacity and capability.

‘Properly planned rural road links to the formal road network can create new markets and opportunities for isolated communities, spurring economic growth and allowing access to essential services’ (Jenkins and Peters, 2016: p. 379). However, for the benefits of such road links to be realised there is a requirement for appropriate vehicles to use them.

In the paper ‘Vehicles for rural transport services in sub-Saharan Africa’, Dennis and Pullen (2017) identify that conventional vehicles, designed to operate at high speed on paved roads, incur high fuel consumption when operated at low speed on earth roads. The authors make the case for introducing appropriate vehicles, based on motorcycles geared for low-speed operation, which can be operated at a lower cost. The authors describe the successful trial of a motorcycle ambulance trailer.

The benefits delivered by investment in the Madrid commuter rail network are described by Calvo *et al.* (2017). Here the construction of new stations on two of Madrid’s commuter lines has led to a greater rate of population growth around the stations than in comparable areas without urban rail links. The authors describe a population ‘boom’ in the zones closest to the new stations, which demonstrates the importance of accessibility in supporting urban development.

Once transport infrastructure has been constructed, network operators face an ongoing challenge to manage and maintain networks as traffic volumes and other demands increase over time.

Li *et al.* (2017) describe the potential of variable speed limit (VSL) controllers to improve traffic safety and reduce traffic congestion and emissions through better harmonisation of traffic flows. The authors identify that the efficiency of the VSL

is substantially dependent on the algorithm used to set the speed limits. A logic-tree-based algorithm to improve the mobility benefits of VSL controllers was proposed for a critical bottleneck section of urban motorway in Auckland, New Zealand.

A traffic simulation was carried out and the model was validated against real traffic management data. Use of the logic-tree-based algorithm showed significant improvements in network capacity and total travel time compared with existing methods of setting VSLs.

Simulation and VSL also feature in the paper by Suleiman *et al.* (2017) which investigates the impact of traffic management and roadway design concepts on the approach route to a major crossing of the Bosphorus in Istanbul, Turkey. Congestion on urban arterial routes is a widespread problem leading to traffic delays, increased fuel consumption and negative effects on the environment and quality of life. Population growth and urban development along the arterial route studied have contributed to ever-increasing volumes of traffic.

The simulation showed that decreasing the distance between merge and diverge points, increasing the proportion of heavy vehicles and decreasing lane width all resulted in increased delay per vehicle. On the other hand, use of VSLs could increase flow by 17%.

In addition to the demands made by increasing levels of use, infrastructure networks are subject to environmental effects; ‘climate change is still a natural threat to critical infrastructure’ (Binti Sa’adin *et al.*, 2016: p. 319). It is known that highway pavements perform poorly after flood events but no study has addressed this in detail. Khan *et al.* (2017) propose a method for assessing the effect of flooding on highway pavement performance based on roughness. Pavement roughness, as measured by the international roughness index (IRI), generally increases after flooding, and the authors used roughness data to determine flood consequences and risk scores for different classes of roads and pavements.

The consequence and risk scores method was validated against two highways in Queensland, Australia; however, the authors

acknowledge that, as the data used covered only 10–12 years, a comprehensive flood risk assessment is required.

Simulation of pedestrian movement is used by Zheng *et al.* (2017) to investigate the queuing process in subway stations. The paper demonstrates that however good the infrastructure, however well operated and maintained it might be, so much of the capacity and utility of a network is down to the behaviour of users. Better understanding of user behaviour can inform improved design and facilitate greater capacity.

The authors propose a virtual queuing line to separate the activity of selecting a queue from the activity of joining the queue and waiting in line; they constructed a model to simulate pedestrian behaviour during these two activities. Two case studies from a Beijing, China subway station were used to verify the validity of the proposed model.

The journal continues to seek high-quality papers on subjects relevant to both practitioners and academics; in the New Year it will issue a call for papers for a themed issue on ‘Innovation in railway engineering’.

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