Editorial

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Welcome to the October 2015 issue of the *Proceedings of the Institution of Civil Engineers – Transport*, an issue that contains a range of papers from highly theoretical to directly practical, from network-wide scales to individual vehicles, and from authors spread across four continents.

The first group of papers considers the basics of road traffic flow on individual sections of road, looking again at the relationships between speed, flow and density that transport planners often take for granted. The first two papers, ‘Modelling speed–density relationship in traffic streams’ (Sarkar *et al.*, 2015) and ‘The impact of incidents on macroscopic fundamental diagrams’ (Ji *et al.*, 2015), both consider situations where the fundamental diagrams cannot be assumed to hold and that what is often considered to be a straightforward relationship can often be better modelled as a series of interconnected (and indeed overlapping) driving regimes. The third paper in this group, ‘Estimation of annual average daily traffic with optimal adjustment factors’ (Alonso *et al.*, 2015) then looks at how variation in traffic flows measured over short and long periods compare and the importance of selecting locations for undertaking temporary traffic counts to combine with longer-term measurements.

The second group of papers focuses on the overall performance and maintenance of the transport system as a whole. The first three papers in this group, ‘Structure and topology of high-speed rail networks’ (Cañizares *et al.*, 2015), ‘Vulnerability of road network based on generalised travel time’ (An *et al.*, 2015) and ‘Waterbus system optimisation for low-carbon transportation’ (Yu *et al.*, 2015) consider different modes of transport, but all show how the design of the network in relation to its fundamental connectedness influences the core performance of the network and its resilience in stressed times of operation. The paper on ‘Cross-asset management for road infrastructure networks’ (Weninger-Vycudil *et al.*, 2015) then takes the issue of resilience one step further, to consider how combining maintenance regimes for all parts of the road network can potentially produce cost benefits as well as minimising the need for disruption and reduced network capacity.

Having looked at individual road sections and network-level issues, the final group of papers then considers themes related to the detailed operation and movements of specific ‘vehicle’ types. ‘Simulation study of bicycle multi-phase crossing at intersections’ (Du *et al.*, 2015) examines a potential way to increase safety of cyclists wishing to cross conflicting traffic flows at a junction by enabling traffic streams to be crossed separately, ‘Potential for increased efficiency in the Irish freight sector’ (Farrell and O’Reilly, 2015) examines the potential for new technology to

reduce costs through improved coordination and consolidation of freight deliveries, and finally ‘A model of truck speed profiles on short upward slopes’ (Arellano *et al.*, 2015) considers the initial impacts of gradient on vehicle speed, before the truck is reduced to a basic crawl speed.

REFERENCES

- Alonso B, Moura JL, Ibeas A and Romero JP (2015) Estimation of annual average daily traffic with optimal adjustment factors. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 406–414, <http://dx.doi.org/10.1680/tran.12.00074>.
- An S, Leng JQ, Wang J, Li W and He Y (2015) Vulnerability of road network based on generalised travel time. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 425–433, <http://dx.doi.org/10.1680/tran.12.00086>.
- Arellano D, Echaveguren T and Vargas-Tejeda S (2015) A model of truck speed profiles on short upward slopes. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 475–483, <http://dx.doi.org/10.1680/tran.13.00012>.
- Cañizares MPM, Pita AL and Álvarez AG (2015) Structure and topology of high-speed rail networks. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 415–424, <http://dx.doi.org/10.1680/tran.13.00015>.
- Du Y, Wu J, Qi G and Jia Y (2015) Simulation study of bicycle multi-phase crossing at intersections. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 457–465, <http://dx.doi.org/10.1680/tran.13.00042>.
- Farrell E and O’Reilly O (2015) Potential for increased efficiency in the Irish freight sector. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 466–474, <http://dx.doi.org/10.1680/tran.12.00014>.
- Ji Y, Jiang R, Chung E and Zhang X (2015) The impact of incidents on macroscopic fundamental diagrams. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 396–405, <http://dx.doi.org/10.1680/tran.13.00026>.
- Sarkar A, Mansourkhaki A, Malakouti M and Yeganeh S (2015) Modelling speed–density relationship in traffic streams. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 384–395, <http://dx.doi.org/10.1680/tran.13.00064>.
- Weninger-Vycudil A, Hanley C, Deix S, O’Connor A and Pakrashi P (2015) Cross-asset management for road infrastructure networks. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 442–456, <http://dx.doi.org/10.1680/tran.13.00087>.
- Yu B, Zhang L, Zhu H *et al.* (2015) Waterbus system optimisation for low-carbon transportation. *Proceedings of the Institution of Civil Engineers – Transport* **168(5)**: 434–441, <http://dx.doi.org/10.1680/tran.13.00080>.