Sustainable urban mobility

Data-based insights for a future with only seamless public transport

Research being carried out by Professor Avishai Ceder from the Technion – Israel Institute of Technology offers a fresh global perspective of the current situation of urban transport. He examines opportunities for us to move towards sustainable urban mobility that could substantially reduce road traffic damages and its global impact. Using data from 19 countries and 17 major cities, Ceder measures road traffic damages and proposes alternatives to the exclusive, and preferred, use of public transport vehicles. His model provides a personalised, seamlessly connected urban public transport service for its passengers.

Damage caused by road traffic is a global problem, both in terms of the death toll from road traffic accidents and the pollution it generates. Research into public transport systems of the future, carried out by Professor Emeritus Avishai Ceder from the Faculty of Civil and Environmental Engineering at the Technion – Israel Institute of Technology, examines opportunities for us to move towards sustainable urban mobility, substantially reducing road traffic damages. Ceder believes that following the many lifestyle changes that accompanied COVID-19, it is likely that people are more open to altering their attitudes and behaviours. This may provide a window of opportunity for the adoption of sustainable solutions to the current problems surrounding global transportation.

An opportunity for change

Ceder’s unique analysis offers a fresh global perspective of the current situation on our roads in preparation for the transition from traditional privately used and owned vehicles, referred to herein as private cars, and autonomous vehicles. He addresses two main issues. Firstly, he tackles the confusion that hinders the development of automated urban mobility with a new global vision that prompts a reassessment of the development path for autonomous vehicles together with its sustainability. Secondly, he investigates the importance of directing public transport policy trends to avoid making mistakes during the transition to automated-electrical vehicles. Moreover, he encourages decision-makers to embrace proactive behaviour when considering new global decisions. Ceder explains that ‘with road traffic rated the largest net contributor to global warming, responsible for even greater damages to which the world has been largely oblivious, the prospects now appear greater for proactive governments to develop autonomous vehicles for transit only and vehicle standardisation’. To investigate the opportunities for changing urban mobility to reduce the damage caused by road traffic and the implications for global warming, he analyses data from 19 developed and developing countries across the world to establish measures to quantify and describe the detrimental effects of traffic and transportation damages. In addition, he compares the travel times of private cars with those of all types of public transport vehicles in 17 major cities before sharing his proposal for a system of autonomous transportation to provide public transport services for these 17 cities.

Measuring road traffic damages

Using data collected from 2014 to 2018, Ceder created a comparison base to deal with the variation across the 19 different countries by developing four proportionality-based measures to describe the global impact of traffic. These include traffic damages and its global warming, responsible for even greater damages to which the world has been largely oblivious. Ceder also compared the travel times of private cars with those of all types of public transport vehicles in 17 major cities before sharing his proposal for a system of autonomous transportation to provide public transport services for these 17 cities.

Comparison of travel times

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Potential sustainable urban mobility

Global data that justifies a range of public transit vehicles can replace private cars underpins Ceder’s proposal for a system of autonomous transportation to exclusively provide autonomous public transport services, and is preferred to private cars, within these 17 cities. He presents two options. The first scenario involves the transfer of individuals using a reserved autonomous vehicle to take them from their point of departure to their destination. The second scenario involves people moving from their individual points of departure to the departure point of an autonomous bus that takes them to their destination. Analysis of the data
Ceder advocates the use of automated and seamlessly connected public transit vehicles in our cities. This makes his proposed approach a plausible concept for the future.

**Research Objectives**

Dr Ceder strives for creating public transit systems that are superior to private cars.

**References**

