Advances in Transportation Studies an international Journal 2014 Special Issue, Vol. 1

## Editorial

## M. R. De Blasiis F. Tosti

Department of Engineering Roma Tre University, via Vito Volterra 62, 00146 Rome, Italy email:mariarosaria.deblasiis@uniroma3.it, fabio.tosti@uniroma3.it

This Special Issue includes nine selected papers presented within the general framework of the Road Safety and Simulation Conference, that was held in Rome at the Department of Engineering, Roma Tre University, on October 2013.

A wide range of research topics has been covered, thereby providing a comprehensive overview of the most updated research approaches and techniques on road safety and simulation, spanning from the analysis and modelling of road safety conditions of drivers and pedestrians, to the impacts of human factors on driving simulation systems and the use of integrated advanced technologies for enhancing the reliability of such systems, up to the use of multidisciplinary approaches, including micro-simulation modelling, for achieving improved pavement management system.

The papers can be broadly grouped into two main categories of research, namely, i) road safety issues involving both drivers and pedestrians, and ii) simulation studies focusing on recent advances in hardware and software implementation.

As far as the first group is concerned, Bella et al. propose an analysis of car-following conditions through an empirical study on traffic safety indicators, proving a broad independence of Time Headway (TH) and Time To Collision (TTC) according to data recorded by means of a traffic control system in highway environment. In line with driving behaviour analyses, Vlahogianni et al. deal with the use of structural equation modelling to analyse the effects of incident occurrence on freeway traffic, wherein the impacts of various traffic, weather, geometry, and incident specific factors are included within a Multiple Indicators-Multiple Causes (MIMIC) latent variable model, whose reliability is demonstrated.

On the other hand and in more detail on safety aspects involving pedestrians, Shawky et al. give some insights on the impact of relevant external factors, such as road and site characteristics, on the severity of injuries and fatalities of pedestrian involved in vehicle collisions while trying to cross roads. The authors show a marked impact of road and site factors on the crash-injury severity level of pedestrians together with a strong relationship between such severity indicator and both speed limit and road width. In addition, Chen et al. introduce the use of surrogate safety measures (SSMs)

- 3 -

## Advances in Transportation Studies an international Journal 2014 Special Issue, Vol. 1

for assessing pedestrian versus left-turning vehicle conflict, and the relationship between SSM and limited crash records for crash risk estimation. The impact of site-specific geometric characteristics and operational conditions upon conflict risk is lowered by the effectiveness of using SSMs, with high turning speed and higher frequency of short Post Encroachment Time (PETs) being the most critical factors contributing in higher crash rates.

Concerning those research papers to be included within the second macro-category, namely, simulation studies, as part of hardware-dedicated studies, Donkor et al. relate drivers' behaviour and reactions within vehicle simulators to those observed on real roads, aiming at ensuring transferability of research findings from simulated to real environment. The authors highlight relevant differences in drivers' subjective responses between the hazard and non-hazard phases, along with realistic reactions and emotional gestures during simulated emergency braking events. Oron-Gilad and Parmet propose a driving Simulator based Hazard Perception Test (S-HPT) for assessing changes in awareness of hazards among trained young-novice driver, wherein two urban environments, having narrow and wide roads, are chosen for testing. Next, the study from Nathanail et al. deals with the impact of conversing with a fellow passenger on driving performance under several conversation scenarios showing that all the analysed variables are significantly affected by conversation, with speed being the most relevant one. The use of supporting enhanced techniques is therefore discussed by Zhang and Kontou, which deal with an eye tracking study, aimed at isolating out the sources, both stationary and temporal, that cause drivers to turn their own visual attentions away from the roadway ahead.

Finally, Di Mino et al. focus on a software-dedicated simulation study, dealing with the development of a multidisciplinary approach to make decision on management of urban pavement by means of the basic concepts of the Life Cycle Cost Analysis (LCCA) and micro-simulation model, to define a scheme of work zone that minimizes the delay on the traffic flow. In this regard, some outstanding considerations arise, such as the notable influence of the work-zone on user's cost.

- 4 -