1. INTRODUCTION

Asian cities are continually faced with challenges in improving traffic safety and reducing road accidents. Based on recent statistics provided by the World Health Organization (WHO, 2015), more than 1.2 million people die each year on the world’s roads, making road traffic injuries one of the leading causes of death worldwide. Road traffic accidents cause a loss of approximately 3% of GDP in low- and middle-income countries. A holistic approach that includes both research and implementation issues is therefore necessary to alleviate traffic accident issues faced in emerging economies. The aim of this special issue is to document the state-of-the-art research and development on various aspects of traffic safety in Asia. It is anticipated that through this special issue, readers can understand key concerns and issues involved with traffic safety and develop implementable strategies that are capable to traffic safety in Asian cities.

2. BRIEF REVIEW OF PAPERS IN SPECIAL ISSUE

The first two papers in this special issue developed the accident prediction model from traffic accident data using the econometric/statistical method. The first paper by Yang et al. investigated the injury severity of drivers involving in two-vehicle crashes. An ordered probit model is developed based on the accident data in Japan. Several important findings are: (1) crashes occurring at night are more prone to high injury severity, compared to other time-periods; (2) head-on, crossing and right-turn collisions result in higher injury severity levels to drivers when compared to rear-end collisions; (3) trucks are less prone to two-vehicle crashes.
compared to passenger cars; (4) young drivers (aged less than 25) and old drivers (age greater than or equal to 70) are less likely to be seriously injured in two-vehicle crashes, compared to drivers with age between 25 and 69. The second paper by Junirman and Dixit developed a crash prediction model for Indonesia using negative binomial regression and zero-inflated negative binomial regression models. They found that the widely-used International Road Assessment Program (iRAP) star rating methodology that are used for prioritizing road improvements from the safety perspective has no relationship with accident occurrence. They also found that signalized junctions increase the number of expected crashes while larger curvature, presence of delineation and developed land use can reduce crash frequency. Mixed traffic condition with significant bus and micro-truck volume was found to reduce the likelihood and expected number of crash.

The third and fourth papers in this special issue investigated the driver behavior and their performance in contributing to accident risk. By adopting a variation of naturalistic driving study (NDS) approach, Thwe et al. investigated the effect of road condition on driving stress in Myanmar. They attached the watches, heart rate sensors and video cameras on the driver and vehicle to detect their driving behavior. Results showed that drivers experience higher stress at highly crowded places and locations that requiring attention. Paper 4 by Khoo et al. investigated the bus driver behavior on mountainous roads by measuring bus dynamics parameters (such as x-, y-, and z- axis acceleration) and speed. On board passengers rating on the driver behavior is adopted as the perceived safety rating. Statistical analysis was carried out to analyze the correlation among the variables and the authors found that driving experience and type of bus are significant factors contributing to accident risk.

The fifth and sixth papers in the special issue investigated how traffic safety-related policy can bring potential impact to effective traffic accident mitigation. Nur Aini et al. studied the effects of mandatory supervised driving exercise under the Graduated Driving Licensing (GDL) system in Malaysia. They showed that young novice drivers are considerably slow at anticipating hazards at the early stage of licensing due to lack of exposure to driving environment. It is thus recommended that a supervision of at least 150 minutes is required to improve driving skill and performance of drivers so that accident risk is reduced. Khairil Anwar et al. stressed that the deployment of Intelligent Transport System (ITS) in automobiles and road systems could elevate the traffic safety level. In their paper, advanced technologies such as Electronic Stability Control (ESC) and Autonomous Emergency Braking (AEB) technologies, eCall initiative are studied and the implementation of these advanced technologies in Malaysian context are discussed.

The seventh and eighth paper in this issue deals with how roadway infrastructure could be designed to enhance traffic safety. Wimalaweera et al. developed a methodology to estimate deduct values for pavement rutting (a form of pavement distress which could pose high accident risk to the drivers especially during rainy days). The proposed methodology in this study determine the rut deduct values by incorporating its impact on vehicular braking distance (which was computed from an analytical model) due to loss of skid resistance at different operating speed limits. Nur Shuhadah et al. found that the effectiveness of the transverse bars is depending on the planning, design profile, and location of the roadway. They showed that it is less effective to install the transverse bars near to a vertical curve as they fail to reduce traffic speed for approaching vehicles. They highlighted the need to ensure that transverse bars are properly installed and designed according to roadway characteristics so that traffic speeds can be reduced for safety enhancement.
3. FUTURE DIRECTIONS

These papers provided an excellent starting point on future directions for traffic safety research in developing Asian countries. For example, many Asian cities face challenges in managing traffic accidents associated with motorcycles and non-motorized transportation and factors affecting accident frequencies and severity levels can be analyzed via statistical or econometric means so that appropriate policies can be developed. Through a proper understanding on how Asian drivers behave under different roadway operating and environmental conditions (either by using naturalistic driving approach or with the use of sensors detecting human behavior/fatigue), appropriate technologies (such as safety mechanisms or systems within a driver-assisted or intelligent vehicle) and legislations/policies can be deployed to ensure that traffic safety on roadways can be enhanced. Finally, roadway infrastructure itself can be made to be safer through proper design of roadways and pavements and a proper management of pavement friction in a road network.

REFERENCES