TRIPP BULLETIN
VOL 14 NO.2 MONSOON 2017
TRANSPORTATION RESEARCH & INJURY PREVENTION PROGRAMME
INDIAN INSTITUTE OF TECHNOLOGY DELHI

Ph.D. Scholars — *Current*

Study of the effect of geometric design features on capacity of hill roads
Scholar: Achyut Das

Transport, gender and climate change
Scholar: Akshima Tejaz Ghate

Context aware technology and systems
Scholar: Alok Nikhil Jha

Multi objective optimization in construction project management
Scholar: Amit Chandra

Urban landuse and transport modeling
Scholar: Amit Sharma

Accident reconstruction based study on motorcycle crashes
Scholar: Amrit Lal

Bus transit route network - aspects of design, optimization
Scholar: Bhamidipati Siri Aparna

Railway track pedestrian safety
Scholar: Darbamulla Saibaba

Safety issues in project management
Scholar: Dilip A Patel

Modelling and risk assessment of heterogeneous traffic
Scholar: Gaurav Pandey

Macroscopic modelling in heterogeneous traffic environment
Scholar: Harikrishna Gaddam

Analysis of travel behaviour and impact of demand management interventions on non-captive bus users
Scholar: Hemant Kumar suman

Establishing relationship between elements of highway engineering on crashes on national highways in India
Scholar: H.M. Naqvi

Issues in human body FE modelling
Scholar: Kanhaiya Lal Mishra

Human body model (thorax modelling and its validation)
Scholar: Khyati Verma

Pedestrian and crowd modelling
Scholar: Lakshmi Devi Vanumu

Urban freight modelling
Scholar: Leeza Malik

Simulation of hetrogeneous traffic at signalized intersections
Scholar: Mohit Kumar Singh

Private participation in metro rail projects in India: challenges and way forward
Scholar: Mukund Kumar Sinha

Road safety risk assessments of modern toll plazas and standardization of its geometric design
Scholar: Navdeep Kumar Asija

Urban freight studies
Scholar: Nilanjana De Bakshi

Ph.D. Scholars — *Continued*

Transportation equity
Scholar: Nishant Singh

Thorax model building and validation – diaphragm and aorta
Scholar: Piyush Gaur

Pavement materials
Scholar: Priyansh Singh

Finite element human body modelling direction
Scholar: P Devendra Kumar

Human body finite element modelling
Scholar: Rajesh Kumar

Measuring public health effects of urban transportation in Delhi
Scholar: Rahul Goel

Understanding the urban environmental correlates of road safety : case study - Delhi
Scholar: Richa Ahuja

Mode choice initiators in public transport demand modelling
Scholar: Sandeep Gandhi

Finite element human body modelling direction
Scholar: Sanyam Sharma

Vehicle and crew scheduling optimisation of city bus systems
Scholar: S B Ravi Gadepalli

Assessing the future of E-rickshaw
Scholar: Shiv Priye

Framework to determine the level of service of urban bus systems - Case study: Delhi
Scholar: Sneha Lakhotia

Impact of traffic control measures on speed and driver behavior in highway work zones
Scholar: Sumeet Gupta

Human body modelling requirements for vulnerable road users
Scholar: Wondwosen Ayelework Lakew

Ph.D. Scholars — *Completed*

Design and optimization of air ventilation system for improved heat transfer characteristics in helmet
Scholar: Bhagwat Singh Shishodia

Methodology for low carbon mobility plan for indian cities
Scholar: Deepty Jain

Estimation of perceived and actual risk faced by pedestrians: case study Delhi, India
Scholar: Shalini Rankavat

Service level benchmarks for urban transport systems
Scholar: S.K. Lohia

A methodology for simultaneous route network design and frequency setting problem in small and medium sized cities
Scholar: S.M. Hassan Mahdavi M.

The **Transportation Research and Injury Prevention Programme (TRIPP)** at the Indian Institute of Technology Delhi, is an interdisciplinary programme focussing on the reduction of adverse health effects of road transport. TRIPP attempts to integrate all issues concerned with transportation in order to promote safety, cleaner air, and energy conservation. Faculty members are involved in planning safer urban and inter-city transportation systems, and developing designs for vehicles, safety equipment and infrastructure for the future. Activities include applied research projects, special courses and workshops, and supervision of student projects at postgraduate and undergraduate levels. Projects are done in collaboration with associated departments and centres at IIT Delhi, government departments, industry and international agencies.

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THE SWEDISH VISION ZERO - AN ADVANCE SAFETY CULTUREE PHENOMENA

Matts-Ake Belin, Swedish Transport Administration, Sweden

According to estimates of the World Health Organization more than 1.25 million people die each year on the world´s roads. Also according to WHO, the difference in fatality rate is huge between countries; the situation being worst in low-income countries.

Poor road safety has been highlighted by the UN and the WHO, and together with the World Bank they jointly published the World Report on Traffic Injury Prevention in 2004. The World Report is for road safety, whereas the Brundtland Report is for the environmental sector. The World Report on Traffic Injury Prevention was launched in conjunction with the World Health Day, 7 April 2004 which was dedicated to road safety. A week later, on April 14, 2004, the first road safety debate was held in the UN General Assembly took place and an historic United Nations resolution on road safety was adopted. Another important milestone was the UN General Assembly's adoption of a global plan for road safety, ("The Decade of Action for Road Safety 2011-2020") which was adopted in order to save lives and stop the expected negative trend in the number of traffic accidents in the world.

At the UN summit on 25-27 September 2015, world leaders decided on 17 new global sustainable development goals that would guide the international development cooperation over the next 15 years (https://sustainabledevelopment.un.org/?menu=1300). Although several targets have a bearing on road traffic injuries, targets 3.6 and 11.2 are most clearly connected to road safety.

Goal 3. Ensure healthy lives and promote well-being for all at all ages.

- Target 3.6: By 2020, halve the number of global deaths and injuries from road traffic accidents.

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.

- Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, such as women, children, persons with disabilities and older persons.

Before the Second World War Sweden was a rather poor country but after the war Sweden experienced tremendous economic growth, fast motorization and urbanization. The popularity of the automobile took off and the road transport system was developed rapidly. Unfortunately, there was also a negative side to this development: the greater the volumes of motor traffic, the more people were killed and seriously injured in traffic accidents. In the mid-60s, Sweden had some 17 fatalities per 100 000 inhabitants annually on the roads. This is similar to what middle income countries around the world are facing nowadays (18.4 fatalities per 100 000 inhabitants) according to World Health Organization's estimates.

The establishment of the Road Safety Authority can be said to be the starting point for systematic road safety activities in Sweden. This work was successful during the 1970s and the number of people killed on the roads dropped from 21.3 killed per 100 000 inhabitants in 1966 to 12.9 killed per 100 000 inhabitants in 1982 – a decrease of over 40 %. Sweden was definitely moving into the calculative/bureaucratic phase where the road safety work was institutionalized and characterized by a planning approach with goals, targets and the use of cost-effectiveness methods to prioritize effective countermeasures. The calculative/bureaucratic phase is, from a road safety point of view, a good phase during which the number of fatalities usually decreased by approximately 50%.

The decision to adopt Vision Zero was a decision to adopt a new strategy which aims to influence the concrete work on road safety directly, but also – more indirectly – the institutional preconditions and approaches, which in turn also have an impact on the actions of various players so that they take action to increase the safety of the road transport system.

Vision Zero differs from a traditional road safety policy in a number of ways and it is probably not an exaggeration to state that from a safety culture perspective Vision Zero belongs to the more advanced phases in the safety culture ladder.

According to Vision Zero, it is not the individual road-user who has the ultimate responsibility but rather the so-called system designers.

The responsibility for safety is thus split between the motorists and the system designers (i.e. infrastructure builders and administrators, the vehicle industry, the haulage sector, taxi companies and all the organizations that use the road transport system professionally), on the basis of the principles that:

- the system designers have ultimate responsibility for the design, upkeep and use of the road transport system, and are thus responsible for the safety level of the entire system;
- as before, the road-users are still responsible for showing consideration, judgment and responsibility in traffic and for following the traffic regulations;
- if the road users do not take their share of the responsibility, for example due to a lack of knowledge or competence, or if personal injuries occur or for other reasons that lead to risk, the system designers must take further measures to prevent people from being killed or seriously injured.

In Vision Zero, the responsibility for safety is a chain of responsibility that both begins and ends with the system designers.

Vision Zero provides an alternative approach and will influence the kind of interventions that needs to be implemented. First, Vision Zero's ultimate goal is to create a safe system. The aim is not to, step by step, reduce the risks and make it a little better. Second, Vision Zero does not make any claims that it is possible to create "the perfect road user". On the contrary, Vision Zero is based on the idea that people are people, who will make mistakes and sometimes break the law. Instead of wishing for the perfect road users, Vision Zero faces the fact that people are not perfect and that the challenge is to so design of the road system that it can accommodate these human deficiencies. This brings us to one of the core elements in Vision Zero, namely human's tolerance against external violence. This is a crucial part of Vision Zero: to design a road transport system which does not exceed people's tolerance against external violence. For the first time in the history of road safety, Vision Zero forced us to start discussing human tolerance levels.

From a Vision Zero perspective, speed is the most important factor to control. That is because speed is just another word for kinetic energy which, as has been mentioned before, is the principal cause of injuries. Therefore, when we talk about speed we need to discuss three important aspects; the designed speed, the posted speed and the operation speed. All these aspects have been influenced by Vision Zero.

From a Vision Zero perspective, it is the speed we should focus on, not necessarily the speed limits itself in order to achieve a safe system. The actual speed could be influenced in different ways and it seems like our strategies, also in this case, have evolved over time. In the model below this evolution is presented. It starts with awareness, which then goes to regulation and traditional manual enforcement. Experience from Sweden, indicates that with these strategies we can expect to achieve in general 50% compliance. To achieve better performance, which is necessary to achieve a safe system, we need to change our strategies and focus more on technology. The question is should this transition be influenced by our traditional strategies or should it be based on a Vision Zero approach. In the paper these differences are explored through a comparative analysis between Victoria, Australia (the traditional approach) and Sweden (the Vision Zero approach).

The Swedish approach on the other hand appears to be based on a belief that road safety is of the utmost priority for road users, and that one of the reasons for speeding is due to lack of information. The Swedish approach thus places less trust in the capabilities of individual road users to make decisions and to calculate the benefits and costs of speeding. It also appears to be based on the idea that other road users, and their choice of speed, have a significant influence on the individual's choice of speed and the decision is more automatic and operated through humans System 1. The traffic safety camera system in Sweden is therefore supposed to increase the level of information in order to support drivers in making a safe speed choice and, through a change in speed behavior among a large proportion of the traffic (at least the local traffic near cameras), to create a new social norm with respect to what is an appropriate speed.

Over the years, a comprehensive knowledge base has been developed regarding the severity and incidence of traffic injuries. This is also true of important risk factors and effective countermeasures. However, there are still large gaps in the knowledge regarding the road transport system where different components, vehicles, infrastructure and users interact and communicate with each other. Large investments, predominantly industrial, are being made for this type of research worldwide. In addition, non-fatal injuries are becoming increasingly important to highlight.

Deaths and serious injuries in road traffic accidents are ultimately a result of the road transport system's design and function. The road transport system can be defined as a phenomenon consisting of users, vehicles and the traffic environment that interact with each other in order to satisfy the society's need for road transport. These components and their interactions can be seen as a result of how the various actors individually and jointly act in a road transport system. In turn these individual actors are influenced by how social actors individually and jointly act and thus affect road transports. An area of knowledge that is greatly understudied is how societies, local communities and markets work from a safety perspective. Such knowledge would contribute to how safety issues can be solved most effectively and appropriately and thus be of practical benefit to both the individual and society. There is therefore a lack of understanding of the dynamic process that aims to formulate and implement road safety policy and understand how road safety measures are effectively disseminated.

The state, Parliament, Government and particularly the Swedish Road Administration, played a central role, both directly and indirectly, in the implementation of Vision Zero. With regards to its role as an influencer of different stakeholders, the state must decide whether to intervene or whether to let the market and society take care of itself.

Historically, traffic safety work has been focused on management by rule. In the work to realize Vision Zero, management by rules still exists, but occupies less space than in the past. New measures and new approaches have been introduced, in which networking and management by objectives are fundamental approaches.

The work to make roads safer, to achieve Vision Zero has been primarily characterized by four forms of governance which have shown to be effective and have driven the work forward:

- Management by objectives and results. In order to create long-term sustainability and a systematic way of working, the Swedish road safety efforts are based on management by objectives. The work includes setting objectives for various indicators judged to have the greatest impact on road safety, for example adherence to the speed limit, safe roads, safe vehicles and the use of helmets.
- Network governance. Collaboration between various parties has been and is a key factor in the work towards achieving Vision Zero. This has led to different parties working together in the same direction through coordination and harmonization. Especially important is the collaboration between the vehicle industry and road authorities.
- Benchmarking. The market's demand is the mechanism that governs development and results.
- Evidence-based work to improve road safety. Implementing new road safety measures requires fundamental information about the problems that need to be solved.

All these methods are examples of processes which are vital to make things happen.

The first important milestone in road safety network was the establishing of a special national agency for road safety in 1968. This institutional change was probably one of the most important factors to enable Sweden to take the step to a more systematic road safety work, the calculative/bureaucratic safety culture phase. A very important step which contributed to a more than 50% reduction of fatalities. This institution change also helped to increase the demand for knowledge and capacity to work with safety, until road safety became a specific area of expertise. On the other hand experience from 1980 shows that these kinds of achievements could, in a relatively short time, be reversed. An economic recession in the beginning of 1990 gave Sweden the necessary respite and time to more thoroughly reconsider its long term road safety strategies. Except for a short time in the middle of the 90s, when the Swedish government seemed to have abdicated its responsibility for safety and move. The Swedish Parliament's adoption of Vision Zero 1997 constitutes a new era in the Swedish road safety work. The adoption of Vision Zero is, from a safety culture perspective, a landmark which shows that Sweden climbs onto the safety culture ladder.

Knowledge based on investigations of actual traffic accidents that answer questions about why accidents happen, points sharply in the direction of the fact that it is the individual road user who is the missing link in the road transport system. The traditional road safety activities are to a significant extent based on behavioral science research which draws the conclusion that 90% of all road traffic accidents can be explained by the human factor. In the traditional safety work, the principal challenge is to prevent conscious and subconscious faulty human action. Vision Zero instead accepts, as a basic starting point, that human beings make conscious and subconscious mistakes. That is why accidents occur, and the safety work must in the first instance be directed at those factors which can prevent accidents leading to death and serious injury. Accidents in themselves can be accepted, but not their serious consequences.

According to Vision Zero, the principal cause as to why people die and are seriously injured is that the energy to which people are exposed in a traffic accident is excessive in relation to the energy that the human frame can withstand. Vision Zero is, among other things, based on the research that the famous American road safety expert William Haddon conducted in the 1960s. Knowledge of energy and tolerance has to a great extent served as a basis for the development we have seen of the passive safety characteristics of vehicles and for the development of different protection systems such as child safety seats, helmets, seat belts, etc. One important consequence of Vision Zero as a general policy for safety work is that the view of knowledge which has served as a basis for the development of a sub-component in the road transport system, namely the vehicle,has also become a general principle for the entire road transport system.

The long-term objective of Vision Zero is to create a road transport system in which nobody is killed or seriously injured as the result of a traffic accident. Thus, Vision Zero aims to create a safe road transport system. The justification for this absolute and uncompromising attitude is what philosophers would attribute to deontological ethics, i.e. nobody should need to be killed or seriously injured when moving via the transport system from Point A to Point B. Road transportation can be regarded as a type of production. Just as little as society can accept people killing or seriously injuring themselves as a consequence of producing goods and services within an industry, Vision Zero can accept it when transportation is produced. According to Vision Zero, mobility is therefore subordinate to safety, at least in the long term. If it is impossible to otherwise create a safe system, it should inexorably have consequences for mobility. Furthermore, Vision Zero is based on the fact that people do not want to die or get seriously injured as the result of a road traffic accident, and therefore each person has his or her own Vision Zero. Vision Zero and a traditional safety policy thus differ from each other when it comes to the long-term objective of the safety work. Traditional safety work is to a large extent based on the notion that individuals and society largely speaking do not ask for safety.

Vision Zero is different in several important respects. Specifically, in the formulation of the problem, the perception of responsibility, the demand for safety from road users, as well as the main aim of road safety work. It is therefore no exaggeration to claim that Vision Zero represents a kind of conceptual paradigm shift. This conceptual change has affected analysis, research and development (e.g. in-depth studies, STRADA, analysis models, etc.), in policy and implementation (e.g. performance management, benchmarking, etc.) and in the specific c road safety measures (e.g. 2 + 1 roads, safety cameras, speed systems, vehicle engineering solutions).

Vision Zero is a policy innovation and interventions based on this have contributed to a reduction in the fatalities of more than 50% during a ten-year-period. This is an outstanding achievement, especially for a country which was already performing well. This is very promising because it shows that continuous improvements of both strategies and interventions can help us do better. .

However, there is still a long way to go before we reach a safe road transport system where we will have eliminated fatalities and serious injuries. After that the next challenge would be to maintain a safe system.

Excerpts from TRIPP 9th annual lecture (24th March 2017, Indian Institute of Technology, Delhi, India.) which is a chapter in a forthcoming publication "The Safe Way: State of the Art Lectures on Road Safety."

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M.Tech. Projects

Completed

A Study on Classroom Evacuation Using Experiments and Simulation
Student: Aditya Arya
Safety Assessment of Selected Highways: Case Study – NH-8
Student: Geeta Shukla Jindal
Impact of Mix land use on Bus transit accessibility- A case study of Delhi
Student: Hemant Raj Sharma
Study On High Temperature Properties Of Recycled Asphalt Binder Containing Waste Engine Oil
Student: Irfan Ajaz Qurashi
Traffic Safety Assessment of Small Cities: The Cases of Patiala and Rajpura
Student: Kirat Kaur Dhanoa
A Study On Utilization Of Recycled Concrete Sand In Concrete Pavement
Student: Manoj Kumar Singh
Passenger Demand Analysis For Sample Routes In Delhi
Student: Priyanka Jorwal
Traffic Safety Assessment In Two Small Cities
Student: Raghuveer Singh
Inter City Freight Vehicle Characteristic
Student: Ramesh Kumar Sharma
Level of Service Estimation for Bus Transit Systems
Student: Shimelis Mecha Ababulgu

NEWS

Beyond affordable shelters: Subsidized housing and surrounding environments for pedestrian safety

Beyond the provision of affordable housing itself, planners and policymakers have raised concerns as to whether subsidized housing developments provide "suitable living environments" for the nation's poor. Despite numerous concerns regarding unfavorable living environments and the neighborhood context of subsidized housing, we have limited understanding as to whether built environments around subsidized housing ensure pedestrian safety. This study addressed this gap by examining how built environments around Low Income Housing Tax Credit (LIHTC) sites affect pedestrian-vehicle crashes in Austin, Texas. We employed the two-level negative binomial regression to clarify the impacts of street segment-level and neighborhood-level built environments on pedestrian crashes around LIHTC complexes. We found that higher speed roads, traffic-generating land uses, higher transit stop densities, and higher four-ormore- leg intersection densities may hinder pedestrian safety. Conversely, local roads as well as singlefamily esidential parcels and connected sidewalks along street segments may enhance pedestrian safety around LIHTC complexes. Our results may inform planners and policymakers on how to enhance pedestrian safety for subsidized housing by modifying surrounding environments and how to provide better site selection considerations for subsidized housing to ensure pedestrian safety.
Ayoung Woo, Chia-Yuan (2017) Applied Geography 83, 37e45

Pedestrian road safety in relation to urban road type and traffic flow

The paper presents an analysis of the relationship between pedestrian road safety, urban road type and motorists' traffic flow. A suitable index for the evaluation of the walkability level of an urban street is the pedestrian traffic flow and the walking behavior. The researchers examined six urban streets of various types in the city of Volos (a medium-sized Greek city, 130,000 inhabitants). They collected data of the pedestrian traffic flow and their legal or illegal walking behavior for each road segment of the examined streets. Furthermore, they collected data of motorists' traffic flow in the same road segments of the streets in the study area. The combination of those data with the administrative ranking of each road can indicate a walkability level of an examined street or a specific route and reveal pedestrians' mobility and safety issues. This study supports that walking behavior differs for various road types. Pedestrians with the highest rate of legal behavior were presented in main arterials (91.8%) and the lowest one in local streets (53.7%). Low level of motorized traffic flow in combination with maintenance and mobility problems in pedestrian infrastructure incites pedestrians to walk in the street thus underestimating their safety issues. Promotion of pedestrian mobility emphasizing in safety issues can change the modal split in favor of vulnerable road users, increase the sustainability index of an urban area and improve the citizens' quality of life.
Athanasios Galanis, George Botzoris and Nikolaos Eliou (2017). Transportation Research Procedia, 24, 220–227.

Course Announcement

The Transportation Research and Injury Prevention Programme (TRIPP) at the Indian Institute of Technology Delhi, is organizing an eight day **"International Course on Transportation Planning and Safety"**. The course will be held in New Delhi, India, from **November 30 - 7 December 2017**. The course will have a common component for the first three days, followed by three parallel modules on Traffic Safety, Biomechanics and Crashworthiness and Prehospital Care and Trauma.

The course will be followed by a one day **Young Researcher Symposium**. The symposium is to offer an opportunity to current doctorate students and recent graduates (graduated after 2012) working on different aspects of traffic safety to present and discuss their work with experts from all parts of the workd and to stimulate the exchange of ideas in the broad field of traffic safety.

Details of the course can be accessed from -http://tripp.iitd.ernet.in

Establishment funds have been received from
Ministry of Industry, Government of India
Asian Institute of Transport Development
Tata Motors, India
Volvo Research and Educational Foundations (VREF), Sweden

Endowments for perpetual Chairs
CONFER, India: TRIPP Chair for Transportation Planning
Ford Motor Co., USA: Ford Chair for Biomechanics and Transportation Safety
Ministry of Urban Development India: MoUD Chair for Urban Transport & Traffic Planning
MoUD Chair for Urban Transport and Environment
VREF: Volvo Chair for Transportation Planning for Control of Accident and Pollution

Transportation Research and Injury Prevention Programme
Room MS 815 (Main Building)
Indian Institute of Technology Delhi
Hauz Khas,
New Delhi 110016, India

Phone: 91-11-26596361, 26858703
Fax: 91-11-26858703, 26851169
Email: ird10165@cbme.iitd.ernet.in
http://tripp.iitd.ernet.in

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Some Observations on the Motor Vehicle (Ammendments) Act 2016: A TRIPP BULLETIN INSERT

The Motor Vehicles (Amendment) Bill, 2017 was passed by the Lok Sabha of India on 10th of April 2017. One of the purposes of these amendments was to make the Act commensurate with best practices internationally. In the comments below the provisions of the new act are italics and the international practices and research results in normal font.

Section 14: *License to be renewed at the age of 40, 50, 60, and then every 5 years (A renewal requires a medical certificate ensuring that the applicant does not suffer from epilepsy, colour blindness etc)*.

United Kingdom: License to be renewed at 70 years (can renew online). For vision test the driver must be able to read (with or without glasses) a car number plate from 20 metres. This doesn't include being short or long sighted or colour blind. The applicant must tell the licensing authority about some medical conditions as they can affect driving.

State of New York, USA: Driver's licenses in New York are generally valid for eight years and can be renewed online. The applicant needs to pass an eye test by an approved provider, like a pharmacy certifying Snellen test score of 20/40 or better with one or both eyes with or without glasses. This doesn't include being short or long sighted or colour blind.

Section 19: *"The licence holder whose licence has been suspended shall undergo the driver refresher training course from a school or establishment licenced and regulated under section 12 or such other agency, as may be notified by the Central Government*".

Cochrane review: "This systematic review provides no evidence that post-licence driver education is effective in preventing road traffic injuries or crashes" (Ker K, Roberts IG, Collier T, Beyer FR, Bunn F, Frost C. Post-licence driver education for the prevention of road traffic crashes. Cochrane Database of Systematic Reviews 2003).

Section 138: *"The State Government may, in the interest of road safety, make rules for the purposes of regulating the activities and access of non-mechanically propelled vehicles and pediestrians (sic) to public places and national highways"*.

France: Pedestrians are banned from crossing a street outside zebra crossings if there is one within 50 metres.

Scandinavia: It is legal to cross all roads except motorways. Cars and bikes are required by law to give way to pedestrians at zebra crossings—unless there is a traffic light. Pedestrians are encouraged to cross the road at zebra crossings if there is one nearby.

Switzerland: Pedestrians are in general allowed to cross the street everywhere. Pedestrians have priority on zebra crossings. If there is a zebra crossing within 50 metres, they have to use it.

Section 177: *for the words "one hundred rupees" and "three hundred rupees", the words "five hundred rupees "and" one thousand and five hundred rupees " shall respectively be substituted.*

Comment: In the amended Act fines have generally been increased by a factor of five compared to those in the 1988 Act. Prices for different items have increased by a factor of 6-8 in the same period.

Section 182 *(Driving without a license or invalid license): "…for the words 'which may extend to five hundred rupees', the words 'of ten thousand rupees' shall be substituted"*

Comment: In this provision, the fine has been increased by a factor of twenty.

Section 184 (Driving dangerously): *"(i) after the words 'dangerous to the public', the words 'or which causes a sense of alarm or distress to the occupants of the vehicle, other road users, and persons near roads,' shall be inserted…(iv)(f) driving in any manner that falls far below what would be expected of a competent and careful driver and where it would be obvious to a competent and careful driver that driving in that manner would be dangerous", and, "for the words 'which may extend to six months…', substitute the words 'which may extend to one year but shall not be less than six months' (emphasis added).*

Comment: Vague wording of offence gives discretionary power to enforcement officials. Jail duration doubled.

Section 187 (Punishment for offences relating to accident): *"(ii) for the words 'three months', the words 'six months' shall be substituted"…"(iv) for the words 'six months', the words one year' shall be substituted" (emphasis added).*

Comment: Jail duration doubled.

Section 192 (Using vehicle without registration or permit): "(i) after the words 'for the first offence with', the words 'imprisonment for a term which may extend to six months and' shall be inserted"

Comment: Jail term introduced

Evidence form international reports:

Reducing Traffic Injury - A Global Challenge: "The experiences of many countries at various levels of motorization suggest that strategies for reducing traffic injuries will be effectively applied only if there is a separate government agency which is given not only the responsibility, but also the authority and level of funding necessary to plan and implement its programme" (emphasis added) .

Implementing the Recommendations of the World Report on Road Traffic Injury Prevention:

"It is important that any initiatives designed to improve country road safety performance are centered on the lead agency role and driven from the fundamental objective of strengthening national leadership ... National coordinating bodies may exist, but unless their membership includes agencies fully accountable and funded for road safety results, experience suggests they will be ineffective. In good practice countries these coordinating bodies are usually the extension of accountable lead agencies that own and use them as plat-forms for mobilizing resources and coordinating and focusing multi-sectoral activities...It is essential that a central role is created for the lead agency that enables it to deliver effectively on its institutional management functions and build and strengthen its leadership and partnership capacity in the process... Successful practice underscores the need for the agency to be a governmental body and for its leadership role to be accepted and fully supported by the rest of government to ensure the development of appropriate funding and capacity. A review of road safety management in thirteen countries concluded that the main factor influencing the success or otherwise of different organizational arrangements was adequate human and financial resources (emphasis added)."

Dinesh Mohan, Honorary Professor, Department of Mechanical Engineering, Transportation Research and Injury Prevention Programme, Indian Institute of Technology Delhi. and Visiting Professor at Shiv Nadar University.

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Some Observations on the Motor Vehicle (Ammendments) Act 2016: A TRIPP BULLETIN INSERT

The Motor Vehicle (amendments) Act 2016 was passed in the Lok Sabha on 10 April, 2017. Mr. NitinGadkari while introducing the bill stated that he could not wait because he was in a hurry to reduce road traffic deaths by 50%. The commitment to reduce traffic crashes is certainly a laudable objective. In fact, road traffic accidents has been recognized as a serious problem at the national level and the Ministry of Roads and Highways(MoRTH) has been issuing policy statements and announcing programs to address the rapidly growing safety problem since the revision of the Motor Vehicle Act (MVA)in 1988. Since then a common theme in all policies and government initiatives has been the emphasis on improving driver education, driver training, driver licensing system and the need for higher penalties. The number of deaths have continued to increase at a rate of 8-9% per year over the past twenty years. About 75% of the victims are pedestrians, motorized two wheelers riders and bicyclists (the vulnerable road users-VRUs) both on intercity roads and intracity roads. National data available with MoRTH and NCRB does not report the involvement of pedestrians, motorcyclists and bicyclists in fatal crashes correctly. The rate of traffic fatalities has increased 3-4 times in cities where highways have been upgraded.

The MV (Amendments)2016has been proposed to primarily address the growing number of deaths in road traffic crashes. Once again the important amendments emphasize driver education, stricter licensing systems, and higher penalties for various traffic offences. The bill has 92 clauses with 16 new insertions, 4 omissions and 72 amendments. Penalties for all offences have been increased through insertions and few new penalties have been introduced like faulty registration details, the concessionaire or the contractor who is responsible for faulty road design or has not followed standards, the guardians of juvenile offenders to be penalized, and states to have power to increase penalties. While the penalties have to be there for offenders, there seems to be no correlation between stricter and higher penalties with the reduction in the number of road traffic crashes in countries where road traffic deaths have reduced over the years. Higher fines as a deterrent to traffic crashes is a notion based on the assumption that the driver is careless, and that the fear of a higher penalty will encourage “careful” behavior on the road. This goes against the current scientific understanding for reducing traffic crashes that promotes the design of a system which can forgive the mistakes made by road users. The Vision Zero which has been adopted in many countries-(Sweden, Australia, The Netherlands, OECD countries)- to address the problem of road traffic deaths recognizes as a basic starting point, that human beings make conscious and subconscious mistakes. That is why accidents occur, and the safety work must in the first instance be directed at those factors which can prevent accidents leading to death and serious injury. Accidents in themselves can be accepted, but not their serious consequences. According to Vision Zero, it is not the individual road-user who has the ultimate responsibility but rather the so-called system designers. In Vision Zero, the responsibility for safety is a chain of responsibility that both begins and ends with the system designers.The system designers in road traffic crashes happen to be the state and national governments responsible for making roads, and ensuring that the vehicle manufacturers produce safe vehicles, and systems are created to monitor performance of road standards, transport operations, and effectiveness of various laws and legislations. The current MVA includes provisions for recalling defective vehicles, holding the contractor or the concessionaire responsible for faulty road design, however if there are no systems to continuously monitor the performance of road designs and evaluate performance of vehicles, the effectiveness of these regulations despite good intentions will remain weak.

The amendment about safety devices –the use of safety belts and helmets (by all those riding motorized two wheelers) - is a welcome addition. The current bill requires the wearing of helmets by anyone on a motorized two wheeler over the age of 4 years. The importance of helmets for two wheeler rider cannot be ignored; however the question arises as to why most states in India have not implemented this when helmets were made compulsory in the 1988 Act itself. The use of safety belts and giving way to emergency vehicles are however requirements without mechanisms for implementation and as such, many of the amendments may remain as a wish list only. Insertion 66A allows the National Government to formulate a National Transport Policy to promote a better integration of road, rail and other transport systems. Insertion 66 B is to promote public private partnerships to improve last mile connectivity, improve rural transport, reduce congestion and improve safety. The assumption is that with more competition better public transport services will be available to the public at large. However private operators focus on maximizing profits. Externalities like accidents, pollution and service to the needy are ignored. Private operators have to be carefully regulated by public authorities for safe and efficient services. Without effective regulatory mechanisms private operators will come into the market and the existing State transport corporations will suffer; and all the negative externalities will increase. In short, the overall impact will be exactly the opposite of what this amendment is intended for.

The bill provides for an increased use of computerization for various services- issue or grant of licenses or permits, filing of forms, or applications (such as for licenses and registration), receipt of money (such as fines), and change of address. This is a welcome amendment. This will perhaps improve our data base for registered vehicles and drivers. Every state should be encouraged to propose a time bound road map for adopting this system. In the current system where often driver addresses are not updated and passenger vehicles do not require annual registration, electronic surveillance for speeding, red-light jumping and violation of other offences remain meaningless. If the driver address change requirement is implemented in all earnest, an e-challan system will become more effective. The protection of the Good Samaritan, the cashless payment for accident victims may look useful now; however, a careful evaluation of these systems in the coming year will be required to prove it.

I see a glimpse of hope in clause 91 which states that the National Government may institute a National Safety Board to look after various aspects of traffic safety. If because of this amendment we end up with a permanent agency with safety experts, we can hope to see a decline in traffic fatalities in the coming years. On the other hand if another version of the National Safety Council is established which acts on mere “common sense” as opposed to scientific evidence, then our dream of safety will remain just that in the years to come.

Geetam Tiwari, MoUD Chair Professor for Transport Planning, Department of Civil Engineering, Transportation Research and Injury Prevention, Indian Institute of Technology Delhi.