

It is necessary to establish multidisciplinary data collection system of national RTA with the collaboration of Police, NCDC, and SSD, but these data must be properly coded. Reliable and accurate data guarantee developing and implementing injury prevention and control programs.

877 DEATHS AND SERIOUS INJURIES CAUSED BY ROAD TRAFFIC CRASHES USING DATA RECORD LINKAGE IN BRAZILIAN MACRO-REGIONS

Polyana Maria Pimenta Mandacarú, Otaliba Libânio de Moraes Neto, Luiz Arthur Franco Beniz, Fernando Rezek Rodrigues, Caio Ferro Botacin. *University Federal of Goiás*

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Background Low and middle income countries account for 92% of deaths from road traffic injuries (RTI) in the world. Furthermore, the mortality data completeness and reliability are poorer than high income countries. Because of that, it's necessary to qualify the databases to produce health indicators that adequately portray that situation. The data record linkage enables greater use of existing data in different sources of data. The objective was to measure the magnitude of deaths and serious injuries by using record linkage and to estimate correction factors for health and road traffic databases and in five urban areas that represent all macro regions of the Brazil.

Method Cross-Sectional study, using the road traffic victim database (VIT), Information System of Hospitalisation (SIH) and Mortality Information System (SIM), the year of 2013 for Teresina and 2012 for the remaining four cities. For the linkage procedure, the software ReLink 3 was used. The number of deaths and serious injured victims of RTI were identified. The overall global percentage of correction of the underlying cause of death and the hospitalisation diagnosis were estimated and the victim condition in the road traffic database.

Result The overall percentage of correction of the underlying cause of death for the SIM were 29.9, 11.9, 4.2, and 33.5 respectively to Belo Horizonte, Campo Grande, Curitiba and Teresina. For the city of Palmas, there was no correction. For the SIH, the percentage of correction of the hospitalisation cause were 24.4 for Belo Horizonte, 96.9 for Campo Grande, 100 for Palmas and 33 for Teresina. For the VIT, there were changes in the victim's severity classification with overall percentage of 100 for Belo Horizonte and Teresina, 48 for Campo Grande and 51 for Palmas.

Conclusion There are considerable gaps and limitations on information system that record RTI, requiring the incorporation of national standards and integration between health databases and traffic databases.

878 SURVEILLANCE IN THE SERVICE OF SAFETY

Rashid Jooma. *Department of Surgery, Aga Khan University and Road Injury Research and Prevention Centre, Karachi, Pakistan*

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Background It has been recommended that the newly motorizing countries establish road injury surveillance to define the burden, identify high risk groups, plan intervention and monitor their impact. Despite its stated importance in the literature, very few examples of sustained surveillance systems are reported from low income countries. We present the results of an urban road

injury surveillance program that has been running for the past 8 years in the emergency departments of five major hospitals in Karachi, Pakistan.

Methods We describe the process of establishing the road injury surveillance system incorporating a multi-institution research group including physicians and transportation engineers. Data was collected from 5 hospitals with details of the injury, severity scoring and information of the circumstances of the crash. Crash site visits supplemented this data and the results were disseminated to municipal authorities along with low cost engineering solutions to rectify hazards in the road network. The impact of these interventions were monitored in the surveillance.

Results In the 8 years between 2007 and 2014, 262,269 road injury victims were registered. Though 76% of the injuries were categorised as "minor", 20% led to hospital admission and in 3% deaths occurred. The information on location of crashes and site visits led to an extensive catalogue of road network hazards and their rectification led to demonstrated reductions in crash frequency. Data was also used for safety advocacy in groups found to be vulnerable in the surveillance, such as motorcyclists, road sweepers and school going pedestrians.

Conclusions We demonstrate that a functional road injury surveillance program can be established and effectively managed in a developing country. The data collected and analysed from the victim's perspective can be a potent tool for effecting safety education and hazard rectification.

879 DATA MINING IN PROMOTING FLIGHT SAFETY

Olli Sjöblom. *Turku University School of Economics, Finland*

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Background The global rate of aviation accidents has recently been stabilising and the situation can now be regarded as satisfactory, but because of the growth in air traffic, the absolute number of fatal accidents per year might increase, if the flight safety will not be improved. The collection of data and reporting systems have reached their top level. The focal point in increasing the flight safety is analysis.

Methods The source of aviation safety data are those from the aviation field collected deviation and incident reports that include both structured and narrative fields. 1200 flight safety reports from a three-year period were used as test material. The narratives of these written in Finnish were processed with three text mining tools applying clustering. One is totally language independent, the other has a specific configuration for Finnish and the third was originally created for English, but encouraging results achieved with other languages, a Finnish test was undertaken, too. The totally language independent one is a Finnish prototype created in one of the Universities of Technology, the two others commercial products. The mining was carried out by performing one round with all the systems and the second with two of them in order to get more accurate mining results after refining the mining definitions.

Results It is obvious that in case events leading to lethal trends would have existed in the data, they would have been discovered and brought out. The text mining tools used were capable of extracting trends – actually recurring events – that turned out to be incidents. However, in the cases studied they did not develop into dangerous risks or accidents.

Conclusions All systems provided encouraging results, as well as proved challenges still to be won. Flight safety can be

significantly improved through the development of data analysis. Narrative text mining is demanding also because of the multiplicity of languages spoken in the world.

880 DRIVE IN DRIVE OUT COAL MINERS: AN ACCIDENT WAITING TO HAPPEN

Jeremy Davey, Candice Potter, Kerry Armstrong. Queensland University of Technology, Centre for Accident and Road Safety

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Background Australian mining sites and cover vast areas of the country are often located hundreds of kilometres from major centres. Thousands of mine workers reside in major population centres in coastal communities and regularly drive hundreds of kilometres to and from their workplaces at remote mine sites. This exposes many workers particularly on completion of their working week to the behaviours of high-risk fatigue and remote area driving.

Methods Data was collected using in-depth interviews ($n = 37$) and a written survey ($n = 461$) of employees from a Queensland coal mine. As well as collecting demographic and behaviour data the survey also contained constructs on the theory of planned behaviour, to examine the workers decisions about driving immediately after their rosters of 12 to 14 hrs. shifts over seven to ten day periods.

Results Workers drove an average of 473 km at the end of their rosters and almost one third drove over 600 km. There was an overwhelming desire to leave site as soon as possible after rosters. This desire frequently overrides concerns about high risks associated with fatigue and remote area driving. Facilitating factors include *routine, sick of being on site, to get the drive over with*, and because workers perceive they are *experienced drivers*. There were notable variations between factors that facilitate leaving site immediately. These variations and different control beliefs are predominately due to the type of shift (i.e. day or night).

Conclusions This research identified that many workers could be driving after being awake for up to 20 hours on the last day of shift. This level of wakefulness can impair driving that is equivalent to a BAC of 0.10%. The current study is understood to be the first to provide insight into the factors that facilitate and act as a barrier to mine workers driving immediately following their shift blocks. Interventions need to consider different shift types and the variations in intention and behaviour of worker commuting.

881 PROFILE OF NON-FATAL ROAD TRAFFIC CRASHES AMONG ADOLESCENTS IN GALLE, SRI LANKA: A CROSS-SECTIONAL SURVEY

^{1,2}Enying Gong, ³Vijitha De Silva, ³Hemajith Tharindra, ¹Catherine Staton. ¹Duke University, US; ²Duke Kunshan University, China; ³Ruhuna University, Sri Lanka

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Background Road traffic crashes (RTC) affect all age groups, but their impact is most striking on the young people. Sri Lanka is experiencing an epidemic of RTC. Information on the patterns of the crashes is essential to identify emerging issues and potential strategies, but few studies targeted on adolescents in Sri Lanka. The objective of this study is to describe the profile of non-fatal

road traffic crashes among adolescents aged 16-18 years old in Galle, Sri Lanka and to explore related factors.

Methods We conducted a cross-sectional survey in 16 high schools in Galle, Sri Lanka during May-July, 2014. Students aged between 16–18 years old were selected to participate in the pencil-paper survey and reported their experience of RTC in the past 6 months. Descriptive analysis and logistic regression were performed by using STATA. Signed informed consents were given by all participants and the study was approved by IRB at Duke University and Ruhuna University.

Results 1370 adolescents (681 males and 689 females) with the average age 17.7 completed the survey. 206 (15.1%) respondents self-reported being involved in crashes in the past 6 months as victimised pedestrians (20.5%), cyclists (21.0%) and motorcycle passengers (25.7%). Among these victims, 47.1% often wear helmets and 15.1% often play on the roads. 25.7% of these crashes happened on the way between home and school. 98 and 7 respondents suffered minor or severe injuries respectively leading to on average 1.23 days off from the school. After controlled school as cluster, the regression model showed that males (OR = 1.58, 95% CI [1.19, 2.10]) and safe-road behaviours (OR = 0.78, 95% CI [0.71, 0.87]) were significantly associated with the crashes.

Conclusions RTC is one of the emerging threats to adolescents in Sri Lanka. More effective intervention should be targeted on adolescents to promote their safe behaviours on the roads and prevent them from road traffic injuries and deaths.

882 IMPACT OF THREE WHEELER BAN POLICY ON ROAD TRAFFIC INJURIES IN KARACHI, PAKISTAN

Fareed Ahmed, Zafar Fatmi. Aga Khan University Hospital, Karachi, Pakistan

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Background (issue) Ban on two wheelers or three wheelers on many roads in several Asian cities have been implicated; however their impact on road traffic injuries (RTI) have not been studied much. In Karachi, Pakistan, for past few years there is steadily increase of three wheelers as a most frequent mode of transportation. From August 2015 Sindh High Court (SHC) has ordered the authorities to take immediate action against operation of these three-wheelers, commonly known as Qingqis, across the province.

Description of the problem Frequency of RTI secondary to three wheeler (Qingqis) is one the emerging problem in our part of world. It was implicated that three-wheelers led to increase in the RTI in Karachi. However, to date no work has been done to estimate the contribution of three-wheelers on RTI in Karachi. This is (an ongoing) descriptive cross sectional study (pre and post) design, that is before and after implementation of ban policy on Qingqis using hospital based record review.

Effects This is our preliminary results on the basis of record review done from Feb. to July, 2015 (before ban policy) and from Aug. to Oct, 2015 (after ban policy, ongoing). A total of ($n = 638$) RTI reported in the period of pre-ban policy. Total fatal accident were (34.9%) majority were due to motorbike versus (vs) cars (57%), motorbike vs motorbike (21%), motorbike Vs three wheelers (16%), car vs car (5%) while in 1% single vehicle involved. In non-fatal accident ($n = 415$) majority were involved Qingqis (71%). In the period of post-ban policy, we have analyse the data of 3 months from Aug. to Oct. A total of ($n = 261$) RTI were reported. Fatal accident were (31.8%) majority again from