

health and safety program were evaluated, and farm-level tools were developed to improve safety and security management on farms.

Results As a result of the study new implication describing the farm manager's various tasks and the farm safety and security risk management approach is presented. The results point out the need for systematic risk management approach in farm safety management. The findings indicate that safety risks were connected to other management risks on farms. Injury risk were significantly connected to animal (vs. crop) production, larger farm size (field and herd size), dependence on one person, physical work strain, perceived fire risk, and infrastructural problems on farms. Regular monitoring of safety and security risks was protective against injury incidents. A contextual tool for preliminary farm risk identification, a Farm Risk Map, was constructed and tested.

Conclusions Mitigation of farm safety and security risks requires specific management tools and occupational skills applied to agriculture. Risk management tools to assist farmers are not currently in a sufficient level compared to safety and security risks faced by farmers. The Farm Risk Map helped the case farmers to visualise and identify major risk sources affecting the farm operations. It can be used to define the risk context on farms. Additional tools to assist managing and controlling major farm risk areas were presented. Improved knowledge management skills and holistic risk management tools are needed on farm risk management in the future.

Traffic Safety

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759 ROAD LIGHTING AND SAFETY: A PILOT STUDY OF ARTHABASKA REGION

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Background We investigate the specification of roadway lighting for safety to understand the elements needed in statistical analysis of road collisions during night time. Several goals were targeted. First, which type of response is best, or whether both responses should be used. Second, which indicator of lighting should we favour? Third, which other factors should be included in the analysis and fourth, how effective is lighting in reducing night-time collision.

Methods The case study comprised illuminance and luminance measurements collected for the Arthabaska region in Quebec, along with available operational and geometric variables expected to explain roadway collisions. A zero-inflated negative-binomial model was used to analyse the impact of predictors on collision frequency and severity using classical maximum likelihood validated by a Full Bayesian regression

Results It was found that collision severity is best, resulting in more factors being significant in the expected sense of contribution. Luminance was the best indicator for road lighting. A correlation matrix aided in the identification of linearly dependencies between factors and the response or other factors. The last goal was investigated by comparing daytime with night-time collision analysis. The night time analysis included luminance and glare. The results were very close between day and night, with luminance proving to be an effective countermeasure for night

collisions. A three-times difference on the coefficient for traffic volume was found. The use of a dummy variable related to standard levels of illumination is presented and will be key in future research for the estimation of effective levels of lighting.

Conclusions A connexion between roadway lighting and crash history can be used to support the warrant of lighting and identification of levels by using the statistical methods herein proposed adapted to test effectiveness of lighting levels and explanatory power of variables surviving co-linearity and significance tests.

760 PREDICTING AND ANALYSING THE TREND OF DEATH CAUSED BY TRAFFIC ACCIDENTS IN IRAN IN 2014 AND 2015

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Background Predicting the death trend caused by traffic accidents and its analysis is a useful tool for planning and policy-making by the authorities in the field of road traffic, conducting interventions appropriate with death trend, and taking the actions required for controlling future conditions.

Methods In a cross-sectional research, all the information related to the traffic accidents leading to death available in the database of Iran Legal Medicine Organisation from 2004 to the end of 2013 was used to determine the change points (multi-variable time series analysis). Role of regulations and rules in the variations of death caused by traffic load was studied using Box Jenkins multi-variable time series models and critical path analysis (CPA) over time. Using autoregressive integrated moving average (ARIMA) model, rate of death caused by traffic accidents was predicted for 2014 and 2015 and, finally, the actual rate of death caused by traffic accidents was compared with the predicted value to determine the efficiency of the model.

Results Results showed that rate of death in 2014 was almost equal to the actual rate of death recorded for this year, while rate of death in 2015 decreased compared with the previous year (2014) during all months. It was also predicted that, in January and February 2015, rate of death would reach its minimum value in that year, i.e. 4.1%.

Conclusions According to the prediction and analysis of the trend of death caused by traffic accidents, it was observed that applying and continuing the intervention conducted in the previous years for road safety improvement, motor vehicle safety improvement, particularly training and culture-fostering interventions, as well as approval and execution of deterrent regulations for changing the organisational behaviours can significantly decrease the loss caused by traffic accidents.

761 FIRST STEPS IN ENDORSING TRAFFIC SAFETY AMONG EMPLOYEES IN FINLAND

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Background Time spent on commuting is the most dangerous time of the workday. Over two million Finnish people commute on daily basis and 80% of the commuting accidents occur as pedestrians or by bicycle. Contacting working-aged people has

traditionally been through paid advertising and campaigning. Promoting traffic safety at workplaces is a new approach.

Objective This project aims to co-operate with different kind of organisations and develop functional operating models in different settings. The employer's motives are concordant with general traffic safety motives and traffic safety is an essential part of the corporate responsibility. The goal is to keep productive labour force safe, able-bodied and avoid unnecessary costs. This action activates workplaces in promoting employees traffic safety. The co-operation with five organisations at Seinäjoki region and the Finnish Traffic Safety Council started on 2015. During the years 2016 and 2017 the project is expanding nationwide. New workplaces are integrated in the project from all Finnish regions and different industries.

Results There have been multiple measures depending on the individual characteristics of the workplace and commuting. During this time inquiries and self-evaluations concerning employees' traffic safety have been used and developed and various training approaches and safety events have been applied to raise awareness about ones' traffic safety. Also a seasonal traffic safety planning tool has been created and there is co-operation with internal communications. This regional co-operation has created new applicable operating models for nationwide traffic safety work.

Conclusions Promoting traffic safety has motivated the occupational safety staff and management of the participating organisations and there are indications that accidents have already decreased. The most important challenge is succeeding in developing such a user friendly approaches that the occupational safety staff can use them as a part of their mundane routines.

762 DRIVER DISTRACTION IN ROAD TRAFFIC. PRELIMINARY RESULTS OF SAFETY CAMPAIGN

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Background Driver distraction and inattention in road traffic and the resulting accidents have become a world-wide problem. Studies have shown the risk of accident is increased manifold for drivers using a mobile phone while driving.

Methods Before planning of the campaign a total of 1503 persons were interviewed through internet-panel by TNS Gallup Oy. Immediately after the first phase of campaigning, with advertising, a total of 307 persons were interviewed by Dagmar.

Results Four out of ten motorists who had used a mobile phone while driving stated that they had been involved in a dangerous situation in the past two years as a result of their mobile phone use.

Four out of five will answer incoming calls while driving. Two out of three will make calls. One third of all respondents read text messages and social media messages. One quarter writes them while driving.

The distracting effect of mobile phones on driving is well acknowledged.

A three year campaign called "Kun Ajat Aja"- When You Drive, Drive was planned. The campaign aims to increase information on risks of distracted driving, motivate drivers not to text or use social media while driving and support the social norm that drivers should focus on driving.

Preliminary results for the campaign are very positive. Immediately after the first phase of campaigning, 63% percent of interviewed persons remembered they had seen the campaign.

Conclusions The campaign message was thought relevant and important. From the people surveyed 40% said the campaign could change their behaviour concerning cell phone use while driving and 38% said they could now prevent others from using a cell phone while driving.

763 VISION ZERO – ROAD TRAFFIC EFFECTS FOR SEVERELY INJURED IN A SWEDISH COUNTY

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Background Vision Zero is a long-term goal, decided by the Swedish Parliament in 1997, which means that no one should be killed or seriously injured as a result of accidents in road traffic and the design and function of the road transport system shall be adapted to meet the requirements that follow from Vision Zero. Based on this decision and strategy several different interventions have been implemented to create a road environment which allows human mistakes. In Sweden state is responsible for roads in rural area and municipalities for roads in urban area. The aim of the study is to evaluate the effects of road safety measures for the group severely injured (ISS > 8) in the county of Västmanland during years 2003–2014 in state and municipal road network.

Methods A longitudinal registry study of a statistical cohort comprised of the county of Västmanland. The study is based on data from emergency hospitals. These data have been combined with data from a national base for road data, NVDB. Descriptive statistics together with trend analysis are applied.

Results Preliminary results for 626 severely injured – 372 injured in municipal roads and 254 in state roads – means that 60% have been injured on municipal road network. Cyclist and pedestrians dominates the group by 83%. Of cyclists are 72 % 45 years and older, while 88% of pedestrians are 45 years or more. On state roads 70% of road users are motorists and they are younger than road users in municipal roads. On the municipal road network 69% were injured in single accidents, while the corresponding proportion of the state road network is 51%.

Conclusions The group severely injured in municipal roads is dominated by unprotected road users mostly older than 45 years, while protected road users are injured in state roads and are younger than injure in municipal roads. These results will be useful for future road safety measures for severely injured.

764 THE IMPACT OF WORKING MEMORY AND SELECTIVE ATTENTION ON ROAD SAFETY

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Background Distracted driving may have serious consequences on road safety. Yet little is known about the impact of some forms of inattention such as executive dysfunctions. In this study we aimed to evaluate the association between working memory, selective attention, and the risk of being responsible for a road crash.

Methods We conducted a responsibility case-control study in an adult emergency department of the Bordeaux university hospital