

# EU SAFETY 2022

VIENNA - AUSTRIA

23-24 JUNE

SAFETY IN A DIGITALIZED AND  
FAST-CHANGING WORLD.  
HOW SMART WILL INJURY  
PREVENTION GET?

## ABSTRACT BOOK

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# INTRODUCTION

## Preface:

# Welcome to EU-Safety 2022

### Welcome to EU-Safety 2022!

Organised by EuroSafe in collaboration with the Austrian Road Safety Board (KFV), co-sponsored by WHO-Europe, this conference continues the series of European Injury Prevention Conferences that EuroSafe has successfully organised over the past decades.

This year's event, however, taking place in Vienna in June 2022, is special. After two long years of COVID-19 enforced restrictions in social interaction and travelling, it was postponed for one year, and we are now delighted to welcome you in person to this "live" conference.

Still, COVID-19 is reflected both in the motto and the agenda of our meeting. "Fast changing world" implicitly refers to the pandemic and several presentations will deal with the various impacts of COVID-19 on injuries and the lessons learned for injury prevention in the wide range of other topics that are covered by the conference, such as safety for children, vulnerable road users, and in our ageing societies.

"Artificial Intelligence" versus "Humans aren't Robots", are just two keywords out of several talks that will feature the second motto of the conference, "Safety in a digitalized world". New technologies have repeatedly made decisive improvements to safety in the mobility and workplace sector. But what about the growing share of injuries in home, sports and leisure?

According to an expert-survey presented at the conference, the use of artificial intelligence, robotics and other digital tools could potentially prevent up to 25 percent of injuries by 2030 also in these "private sectors". Promise or perils? How smart will injury prevention get? Interesting discussions guaranteed.

Despite the dense schedule of presentations, we hope that the conference provides sufficient opportunities for informal and social communication as well. Judging from the area of virtual meetings we have lived through the last two years, this is the real added value of a "live" event.

We wish you an interesting conference, good discussions and a pleasant stay in Vienna.

**Errol Taylor**, EuroSafe



**Klaus Robatsch**, KFV



On behalf of the Organising Committee EU-Safety 2022

The series of EuroSafe bi-annual conferences takes place in the EU/EEA region and is hosted in rotation by EuroSafe members.

# The Austrian Road Safety Board (KFV)

Founded in 1959 as an independent non-profit association, the KFV has dedicated itself for more than 60 years to accident prevention and to increasing human safety in Austria. We focus thereby on activities that increase the safety and protection of all people and their property. We are active in the following fields: accident prevention on the roads and in the home, sports and leisure sector as well as protection of property.

## Comprehensive prevention work for a safe future

When it comes to safety, no other organisation in Austria covers as many and as diverse ranges of topics as the KFV. This broad spectrum of our research and development work is essential for increasing safety – especially since there is still often a lack of public awareness and of effective measures to prevent household, leisure and sports accidents and to protect people's property. This situation needs to change.

As an independent non-profit association, the KFV's sole obligation is to improve safety. All our safety goals are based on the interplay between a need for action and preventive measures. In our efforts, we always consider the social framework conditions and the available resources.

## Our Mission

We are committed to human life, to the physical safety and integrity of all people and to the protection of their property. We strive to reduce accidents and make people safer in all areas of their lives. We reduce both human suffering as well as economic costs, thereby raising the quality of life in our society. We are inclusive: our work considers and extends to people of all age groups, social classes, ethnic groups and regional backgrounds. We facilitate human activity and enable people to go about their business safely and without hindrance.

## Confronting new challenges head on

Many risks of human activities will not simply disappear in future from everyday life. Protecting ourselves from these risks will not become any less relevant. But we also have to prepare for the new dangers in a society that is characterised by modernisation and rapid technological advance. The goal of innovative prevention strategies is to confront these new challenges head on, in order to minimise the risks and to increase safety.

# Programme

## Members of the Programme Committee

(in alphabetical order)

**Chair:** Gerald Furian, KFV (Austrian Road Safety Board), Austria

- **Tatiana Alves**, National Institute of Health (INS), Portugal
- **Mirjam Bächli**, Beratungsstelle für Unfallverhütung (bfu), Switzerland
- **Martijntje Bakker**, Consumer Safety Institute (CSI), The Netherlands
- **Dritan Bejko**, Luxembourg Institute of Health (LIH), Luxembourg
- **Nathan Davies**, Royal Society for the Prevention of Accidents (RoSPA), UK
- **Persephone Doupi**, National Institute for Health and Welfare (THL), Finland
- **Gabriele Ellsäßer**, Public Health Expert, Germany
- **Mari Leppänen**, UKK Institute, Research Center of Sports Medicine, Finland
- **Laurent Malisoux**, Luxembourg Institute of Health (LIH), Luxembourg
- **Jeannot Mersch**, European Federation of Road Victims (FEVR), Luxembourg
- **Peter Spitzer**, Safe Kids Austria, Child Injury Research Center, Austria
- **Eva Jakobson Vaagland**, Norwegian Safety Forum, Norway

# Conference Programme

Day 1 | 23 June 2022

## DAY 1

08:00-09:00

**Registration**

**Landtagssaal**

**Opening**

09:00-10:30

**Plenary 1 How Smart will Injury Prevention get?**

Mari Lang (ORF), Errol Taylor (EuroSafe)

**PI.1** Artificial intelligence: Promise, Perils and Predictions (Charlotte Stix, AI HLEG)

**PI.2** Artificial Intelligence in Home & Leisure Accident Prevention (Erich Prem, Eutema)

10:30-11:00

**Coffee Break**

**Landtagssaal**

**Herrensaal**

**01 Child Safety - Growing Up Safely**

Gabriele Ellsaesser (BAG),  
Peter Spitzer (Safe Kids Austria)

**O1.1** RePLAY: how pedagogical documentation supports childcare professionals' assessment of children's risk competence (Helena Sienaert)

**O1.2** CounterRisk New skills to deal with the risks of counterfeiting in consumer goods for children (Sandra Nascimento)

**O1.3** Risk factors for hospital admission after a trampoline related injury in children and adolescents – a cross-sectional study based on EU-IDB (Dritan Bejko)

**O1.4** Children on wheels – mobile on wheels with muscle + electric + motor power (Peter Spitzer)

**O1.5** Child Defenestration: An Unexpected collateral Effect of the first Covid-19 Lockdown! (Nathalie Beltzer)

**O1.6** The Botnar Child Road Safety Challenge: why monitoring multi-country projects is so important (Atsani Ariobowo)

**02 Injury Surveillance - Data Systems**

Mari Leppänen (UKK),  
Susanne Nijman (CSI)

**O2.1** The French Home and Leisure Injuries Surveillance System EPAC (Marion Torres)

**O2.2** A national representative and comprehensive healthbased injury monitoring system is launched in Norway from 2022 (Johan Lund)

**O2.3** Pilot-testing an Injury Registry in Eastern Europe – learning from iCREATE Project (Diana Dulf)

**O2.4** From community-based registrations of traffic accidents towards prevention (Susanne Nijman)

**O2.5** Accidents in Germany 2019/2020 - Results from a representative health survey of adults (Anke-Christine Sass)

11:00-12:00

	Landtagssaal	Herrensaal	Prälatensaal
12:05-12:30	<p><b>EP1 Child Safety - Everyday Risks</b> Gabriele Ellsaesser (BAG) Peter Spitzer (Safe Kids)</p> <p><b>EP1.1</b> E-Learning with the Safety Bear (Elisabeth Fanninger)</p> <p><b>EP1.2</b> Educating Children on Health &amp; Safety (Grigorios Gkogkas)</p> <p><b>EP1.3</b> Promoting fun and safe play on inflatable playgrounds (Mieke Cotterink)</p> <p><b>EP1.4</b> Hold Hands - encouraging Early Childhood Education and Care Practitioners to teach water safety (Roger Sweeney)</p> <p><b>EP1.5</b> Child injury mortality and morbidity in Croatia (Ivana Brkić Biloš)</p> <p><b>EP1.6</b> Self-reported knowledge on suicidal risk and suicidal behavior in schoolchildren aged 16 to 19 years in Lithuania (Birute Strukcinskiene)</p>	<p><b>EP2 Injury Surveillance - Data Collection</b> Dritan Bejko (LIH), Susanne Nijman (CSI)</p> <p><b>EP2.1</b> Methodological issues for recording occupational accidents and evaluation of aftereffects (Battaivan Byamba)</p> <p><b>EP2.2</b> National data on drownings in Italy (Giuseppe Balducci)</p> <p><b>EP2.3</b> A registry-based pilot study of traumatic brain injury in two middle-income countries (Angela Cazacu-Stratu)</p> <p><b>EP2.4</b> Injury ED and inpatient admission rates in Europe (Marco Giustini)</p> <p><b>EP2.5</b> Alcohol related emergency department treatments in the Netherlands: trends in alcohol intoxications and alcohol related injuries during the Covid-19 pandemic (Susanne Nijman)</p> <p><b>EP2.6</b> Taking severity seriously: looking beyond the maximum abbreviated injury score (Marjolein Versteeg)</p>	<p><b>EP3 Digital Solutions - Home &amp; Leisure Safety</b> Michael Nader (KFV), Martijntje Bakker (CSI)</p> <p><b>EP3.1</b> Potentials and Challenges of Artificial Intelligence and Robotics for the Safety in Home and Leisure. (Michael Nader)</p> <p><b>EP3.2</b> Benchmarking Natural Language Processing tools for automatic classification of Trauma mechanism in French emergency free-text clinical notes (Gabrielle Chenais)</p> <p><b>EP3.3</b> Virtual Reality - an opportunity for safe and realistic power wheelchair training (Eva Aigner-Breuss)</p> <p><b>EP3.4</b> Development and Implementation of a Digital Falls Prevention Program for Community-dwelling Older Adults (Emma Stanmore)</p> <p><b>EP3.5</b> Experiences and Perceptions of Community Safety (Lorraine Gillies)</p> <p><b>EP3.6</b> Machine Learning techniques for the prediction of hospital Length Of Stay from injuries (Alessio Pitidis)</p>
	12:30-13:30	<b>Lunch Break</b>	

	Landtagssaal	Herrensaal	
13:30-14:30	<p><b>03 Road Safety - Smart Solutions</b> Klaus Machata (KFV), Maria Fleischer (KFV)</p> <p><b>03.1</b> The SOULMATE app: facilitating elderly mobility by increasing the feeling of security while travelling through the use of a mobility app, secure navigation and a helpline (Karin Kuchler)</p> <p><b>03.2</b> Warning signals as solution to increase cyclists' safety in automated, connected mobility (Eva-Maria Hollauf)</p> <p><b>03.3</b> Predicting cyclists' intentions by measuring eye, head and body movements (Stephan Odenwald)</p> <p><b>03.4</b> Effectiveness assessment of a warning driver assistance system for trucks to avoid accidents with pedestrians (Ernst Tomasch)</p> <p><b>03.5</b> Legal Challenges of automated driving to ensuring road safety (Konrad Lachmayer)</p>	<p><b>04 Home Safety - COVID-19 Impacts</b> Tatiana Alves (INS), Mirjam Bächli (BFU)</p> <p><b>04.1</b> Emergency admissions for domestic accidents during the first Covid-19 lockdown in France (Nathalie Beltzer)</p> <p><b>04.2</b> Fall fighters and Later Life Roadshows: Working with the private sector to implement a falls prevention and strength and balance programme during the Covid 19 pandemic (Ashley Martin)</p> <p><b>04.3</b> Impact of the Covid-19 pandemic on unplanned hospitalizations and mortality for falls/injuries and femoral neck fracture in France (Marion Torres)</p> <p><b>04.4</b> Implementation fidelity of the 'Stay One Step Ahead' home safety intervention; a mixed methods analysis (Sabrina Stewart)</p> <p><b>04.5</b> TOM &amp; Co: the (im)possibilities of implementing digital technology in the fall prevention program TOM (Branko Olij)</p>	
	14:35-15:00	<p><b>EP4 Child Safety - Injury Patterns</b> Stephanie Gerzabek (KFV), Michael Nader (KFV)</p> <p><b>EP4.1</b> Assessment of pediatric TBI patterns using the Glasgow Scale at all levels of medical care (Eugeniu Mindrigan)</p> <p><b>EP4.2</b> Prevalence of road traffic accidents among children 0-16 years old: a retrospective study in Yerevan (Artashes Tadevosyan)</p> <p><b>EP4.3</b> Trampoline related injuries in children aged up to 18 years – a multinational study based on EU-IDB (2008 and 2018) (Dritan Bejko)</p>	<p><b>EP5 Home Safety - Behaviours and Circumstances</b> Tatiana Alves (INS), Mirjam Bächli (BFU)</p> <p><b>EP5.1</b> Causation factors of unintentional injury in the home (Dawn Exley)</p> <p><b>EP5.2</b> Home falls among people 65 years and older: circumstances and patterns of falls. Results from the ChuPaDom survey - 2018 (Marion Torres)</p> <p><b>EP5.3</b> Gas hazards at home – an invisible threat (Stefan Georgiev)</p> <p><b>EP5.4</b> Fireworks - Behaviour of Dutch households (Branko Olij)</p>



	Landtagssaal	Herrensaal	Prälatensaal	
14:35-15:00	<p><b>EP4.4</b> How our safety policy changed from “as safe as possible” to “as safe as necessary” (Veerle De Vliegheer)</p> <p><b>EP4.5</b> Dutch child injury prevention model (Hedy Goossens)</p> <p><b>EP4.6</b> “Safe &amp; Healthy” A Safe School short film project on youth injury prevention and safety promotion (Isabella Kranacher)</p>	<p><b>EP5.5</b> Collaboration on fire safety for socially vulnerable groups (Anja Kristin Kleiven)</p> <p><b>EP5.6</b> Results from 5 consecutive years of natural hazard awareness in Austrian population (Timo Lücksman)</p>	<p><b>EP6.4</b> Bow-tie analysis for patient safety risk management in Bulgarian hospitals (Rositsa Dimova)</p> <p><b>EP6.5</b> Standardization of life-guarding job regulations as a form of drowning prevention (Olga Marques)</p> <p><b>EP6.6</b> Internationalization of a professional drowning prevention and water safety and rescue course - lessons from Portugal and application in Europe and Africa in 2022 (Fernando Martinho)</p>	
15:00-15:30	<b>Tea Break</b>			
	Landtagssaal	Herrensaal		
15:30-16:30	<p style="text-align: center;"><b>05 Sports and Recreational Safety - Exposure and Risk</b></p> <p>Mari Leppänen (UKK), Laurent Malisoux (LIH)</p> <p><b>O5.1</b> KFV Exposure Survey (Carl Neumayr)</p> <p><b>O5.2</b> Trends in sports-related emergency department visits in the Netherlands, 2009-2018 (Branko Olij)</p> <p><b>O5.3</b> Situation of Drowning and Drowning Prevention in Europe (Detlev Mohr)</p> <p><b>O5.4</b> Trampoline Park Safety – the perspective of users (Sandra Nascimento)</p> <p><b>O5.5</b> Is the prescription of “appropriate” running shoes an evidence-based preventive measure for running-related injury? (Laurent Malisoux)</p>	<p style="text-align: center;"><b>06 Technology Solutions for Safety - Reality Checks</b></p> <p>Martijntje Bakker (CSI), Hanna Kettunen (THL)</p> <p><b>O6.1</b> Improving cyclists’ safety via new C-ITS technologies in automated and connected mobility (Cornelia Zankl)</p> <p><b>O6.2</b> Digital “Mind your step” weather warning for people of advanced age (Martin Pfanner)</p> <p><b>O6.3</b> Evaluation of an intervention to improve home safety for preschool children: a controlled before and after study (Michael James Taylor)</p> <p><b>O6.4</b> Portuguese e-maritime incident processing (José Coelho)</p> <p><b>O6.5</b> Advanced driver assistance systems in professional driving: About loopholes, attitudes, knowledge and training (Martin Winkelbauer)</p>		

## DAY 1

Landtagssaal	
16:30-17:30	<p><b>Plenary 2 Influencing Risk-Coping Behaviour</b> Eva Vaagland (EuroSafe), Armin Kaltenegger (KFV)</p> <p><b>P2.1</b> The Role of Social Media in Safety Promotion (Shayoni Lynn, Lynn PR) <b>P2.2</b> Humans aren't robots (Natalia Shakhina, Behavioural Insights Team) <b>P2.3</b> Trends in Safety Culture Research (Nic Ward, Center for Health &amp; Safety Culture)</p>
19:00	<p><b>Walking Tour</b> (Start in front of conference venue)</p>
20:00	<p><b>Dinner</b> (<a href="https://glacisbeisl.at">https://glacisbeisl.at</a>)</p>

# Conference Programme

## Day 2 | 24 June 2022

## DAY 2

	Landtagssaal	Herrensaal
09:00-10:00	<p><b>07 Road Safety - Vulnerable Road Users</b> Klaus Machata (KFV), Veronika Zuser (KFV)</p> <p><b>07.1</b> Engaging European citizens in improving road safety: the European Road Safety Charter initiative (Wouter Van den Berghe)</p> <p><b>07.2</b> trafficsafety4you - drowsiness and fitness to drive (Joachim Rauch)</p> <p><b>07.3</b> Safety in Urban Micromobility and the Ride-SafeUM Initiative (Josep Ramon Morros Rubio)</p> <p><b>07.4</b> About a safe distance ... in cycling (Martijn Kiers)</p> <p><b>07.5</b> Road Safety and Vulnerable Road Users as the key focus in the Sustainable Mobility planning process on the road towards 'Vision Zero'. (Dirk Engels)</p>	<p><b>08 Child Safety - Severe Threats (Drowning and Burns)</b> Peter Spitzer (Safe Kids Austria), Gabriele Ellsaesser (BAG)</p> <p><b>08.1</b> Parents' risk perception of drowning among young children (Mieke Cotterink)</p> <p><b>08.2</b> Motor storytelling as a drowning prevention tool (Ana María Domínguez Pachón)</p> <p><b>08.3</b> Teaching water safety without water – a digitized solution for primary school children (Roger Sweeney)</p> <p><b>08.4</b> Pediatric burn injuries in Georgia: a retrospective hospital-based study (Nino Chikhladze)</p> <p><b>08.5</b> Implementing outcomes of aetiological research in an online programme to prevent burn accidents in children under 5 years of age (Eva van Zoonen)</p>

	Landtagssaal	Herrensaal	Prälatensaal
10:05-10:30	<p><b>EP7 Road Safety - Active Mobility</b> Klaus Machata (KFV), Veronika Zuser (KFV)</p> <p><b>EP7.1</b> How to reduce the e-scooter parking problem in European cities (Ernestine Mayer)</p> <p><b>EP7.2</b> Stand up for your ride! Introducing a foreign road safety program (Branko Olij)</p> <p><b>EP7.3</b> The burden of road traffic injuries among patients treated in the largest trauma hospitals in the Republic of Moldova (Svetlana Cociu)</p> <p><b>EP7.4</b> Road Safety. Wrong-way driving on highways (Martijn Kiers)</p> <p><b>EP7.5</b> Implementation of a model of awareness-raising for taxi motorcyclists in Benin in relation to helmet use: a quasi-experimental study (Yolaine Glele Ahanhanzo)</p> <p><b>EP7.6</b> Demographic variation in traffic injury conflicts – implications for vehicle driving simulators (Kristian Kjaergaard)</p> <p><b>EP7.7</b> Risk estimation including risk compensation with cyclists (Wolf Dietrich Zuzan)</p>	<p><b>EP8 Injury Surveillance - Epidemiology</b> Susanne Nijman (CSI), Dritan Bejko (LIH)</p> <p><b>EP8.1</b> Epidemiology of falls-related traumatic brain injury in Georgia: Evidence from observational study (Nato Pitskhelauri)</p> <p><b>EP8.2</b> The prevalence and characteristics of physical activity-related injuries among university students in Yerevan. (Artashes Tadevosyan)</p> <p><b>EP8.3</b> Annual rate of falls in Portugal (2010-2018): Different methodological estimation approaches using hospital admission data (Andreia Costa)</p> <p><b>EP8.4</b> Assessment of Health-Related Quality of Life in Traumatic Brain Injury Patients from Eastern Europe (Madalina Coman)</p> <p><b>EP8.5</b> Effect of the COVID-19 measures on the number of severe injuries after traffic accidents and one-sided pedestrian accidents in the Netherlands (Inge Krul)</p> <p><b>EP8.6</b> 15-year trends in injury related health care use and costs in the Netherlands (Inge Krul)</p>	<p><b>EP9 Technology - Learning from Workplace Safety-</b> Hanna Kettunen (THL), Michael Nader (KFV)</p> <p><b>EP9.1</b> IoT and AI based Structural Health Monitoring of safety critical assets (Christoph Schwald)</p> <p><b>EP9.2</b> The digital tool that saves lives (Ana María Domínguez Pachón)</p> <p><b>EP9.3</b> An Open-Innovation Challenge for “out of bed detection” (Martin Morandell)</p> <p><b>EP9.4</b> Experienced-based Safety Training - Impactful in-person training with long-lasting memory impact! (Matthias Kroepe)</p> <p><b>EP9.5</b> Exposure Assessment of Electromagnetic Radiation in a Smart Factory (Klaus Schiessl)</p> <p><b>EP9.6</b> Changing the driving behavior of forklift drivers by means of gaze analyses (Peter Schwaighofer)</p> <p><b>EP9.7</b> Security for Safety Risk Assessments for the production industry (Martin Steiner)</p>
	10:30-11:00	<b>Coffee Break</b>	

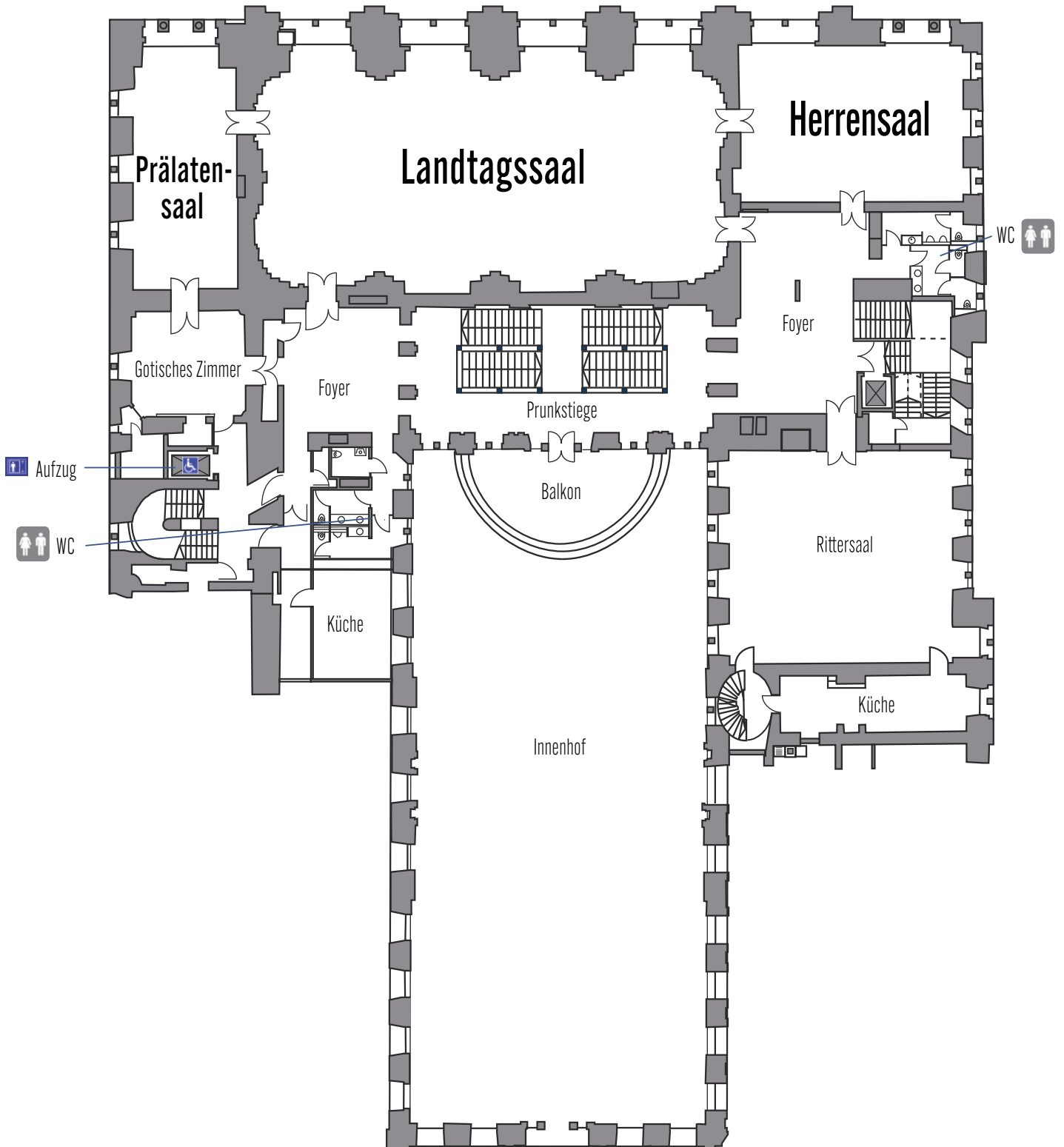
		Landtagssaal	Herrensaal
11:00-12:00		<b>09 Safety Promotion - The European View</b> Nathan Davies (ROSPA), Christian Halbwachs (Sports Austria)	<b>010 Injury Surveillance - Injury Epidemiology</b> Susanne Nijman (CSI), Dritan Bejko (LIH)
		<b>O9.1</b> Status of Home and Leisure Accident Prevention in Western Europe (Robert Bauer) <b>O9.2</b> Why the lack of EU-wide pool safety regulation? (Lloyd Owens) <b>O9.3</b> Factfulness – a way to increase interest for safety promotion (Eva Vaagland) <b>O9.4</b> Pilot application of influencers in road safety communication in Germany: short term effects on knowledge, attitudes and behaviour of the target group (Walter Funk) <b>O9.5</b> The same fall, a different cause? - Comparing the accidents of consumers and workers (Jakko van Kampen)	<b>O10.1</b> Pattern of traumatic spinal cord injuries in the Piedmont Region (Italy): a 13-year retrospective cohort-based study (Alberto Borraccino) <b>O10.2</b> Home accidents in Europe: a descriptive analysis from the IDB-FDS databank (Marco Giustini) <b>O10.3</b> Changes in home and leisure accidents in children and young people during the COVID-19 pandemic, in Portugal (Tatiana Alves) <b>O10.4</b> Emergency department treatments due to bicycle accidents in the Netherlands: effects of increasing e-bike popularity (Susanne Nijman) <b>O10.5</b> UK injury data: The feasibility of collecting accident data relating to consumer products from the NHS (National Health Service) (Geraldine Cosh)
<b>Landtagssaal</b>			
12:00-13:00		<b>Plenary 3 Risk Perceptions and Communication</b> Errol Taylor (EuroSafe), Klaus Robatsch (KFV)	
		<b>P3.1</b> Zero means a lot - A New Paradigm for Safer City Streets (Pedro Homem de Gouveia, Polis) <b>P3.2</b> Accident prevention with Deep Learning language models (Andreas Stöckl, FH OÖ) <b>P3.3</b> Risk Communication - from mapping to interacting in a changing natural environment (Thomas Hlatky, VVO)	
<b>Landtagssaal</b>			
13:00-13:15		<b>Closing</b>	
		<b>Farewell Lunch</b>	
		<b>Herrensaal</b>	<b>Prälatensaal</b>
14:00-16:00		<b>EU IDB Network (EuroSafe)</b>	<b>CEE Round Table (KFV / VVO)</b>
		<b>Business and Network Meetings</b>	

**Presentation formats in Breakout Sessions:**

**Oral Session (O):** Up to 5 authors will make a presentation of max. 10 minutes each.

**E-Poster Pitch Session (EP):** 5 to 8 authors will make an oral presentation of max. 4 minutes each.

# FLOOR PLAN



# PLENARY 1

# How Smart will Injury Prevention get?

## P 1.1

### Artificial intelligence: Promise, Perils and Predictions

■ THURSDAY 23 JUNE 2022    ⌚ 9.00

👤 **Charlotte Stix, AI HLEG**

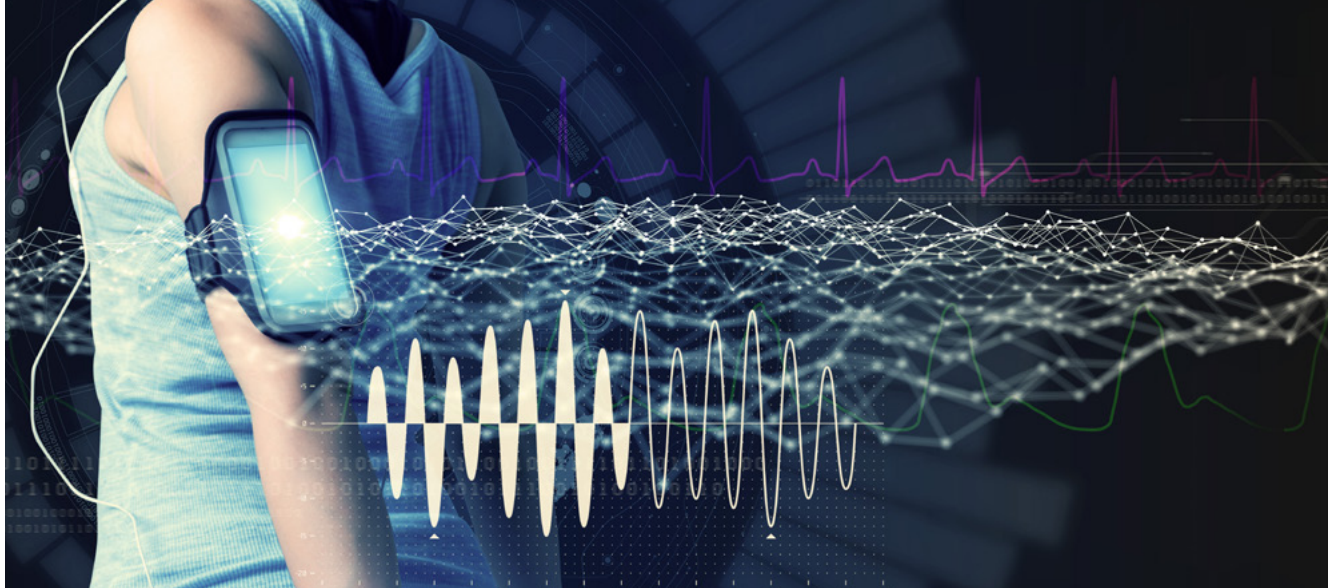


Charlotte Stix is an experienced technology policy expert in AI governance. Most recently, she was the Coordinator of the High-Level Expert Group on AI of the European Commission (EC) and an Expert to the World Economic Forum's Global Future Council on Neurotechnologies. Formerly, she was a Researcher at the University of Cambridge, managed robotics and AI projects at the EC, and was a Policy Officer to international start-up Element AI. Charlotte was awarded as a 2020 Forbes' 30 under 30 (Europe).

Charlotte Stix | Artificial Intelligence Policy [<https://www.charlottestix.com>]

This talk will address the current landscape of AI applications, ranging from autonomous vehicles to care robots, and tackle the question as to how we can ensure that these systems are safe, ethical and deserving of our trust. Given the proliferation of AI-based systems across all sectors, for example the healthcare sector, the public sector or online platforms, and recent impressive developments in general artificial intelligence based systems such as GPT-3 and DALLÉ-2, it is important to both sketch a picture of what our future with this technology can look like, and how we can set boundaries today, to achieve such a future. Innovation and prevention go hand in hand when it comes to encouraging safe path dependencies for AI technologies deployed in citizen's daily lives and homes. This talk will give a broad overview of the main ethical and safety considerations around AI, today. In doing so, it will cover the biggest clusters of debate, ranging from Human Oversight to Bias and Transparency, Safety and Robustness, as well as introduce the most relevant governance approaches to tackle these concerns, both from a

regulatory and technical perspective. Particular focus will be devoted to the EU's current approach which has led from Ethics Guidelines for Trustworthy AI to a proposed horizontal regulatory framework for high-risk AI systems. This will then be located within the broader geopolitical background through a brief review of actions other international players, such as the US, have taken to ensure the safe development and deployment of AI systems. Finally, the talk will conclude by returning to the micropicture of the individual themselves, tackling questions of acceptance, autonomy and control.



## P1.2 Artificial Intelligence in Home & Leisure Accident Prevention

■ THURSDAY 23 JUNE 2022    ⌚ 9.00

👤 **Erich Prem, Eutema**



Erich Prem is Chief RTI Strategy Advisor and CEO of Eutema. He is an internationally renowned expert in research and innovation strategy. Erich is a certified managerial economist and a researcher in artificial intelligence, research politics, innovation, and epistemology. Holding doctorates in philosophy and in computer science he teaches at TU Vienna and the University of Applied Arts Vienna.

[Erich Prem | Eutema \[https://www.eutema.com/en/\]](https://www.eutema.com/en/)

Artificial Intelligence has come to play an important role in the avoidance of traffic accidents. However, its role for accidents in the home, at leisure, or in sport has not yet reached a level comparable to applications in mobility. This talk provides insights into current trends and applications of Artificial Intelligence (AI) technology in home and leisure accident prevention. AI systems can help to address different stages of an accident, from the analysis of a potentially dangerous situation to accident recognition, the actual prevention, and the support of post-accident actions. However, accident prevention provides significant challenges such as the complex and variable situations at home or in sport, the relatively high prices and an early-stage technology development, as well as concerns about safety and privacy of users and third parties. Some of the current challenges can be addressed with novel sensor systems. This includes specialized systems and off-the-shelf systems that are already used for other purposes, e.g. fitness trackers and smart clothing. Existing systems in routine use focus on the detection

of falls and the monitoring of elderly patients. This includes early detection of critical situations and specialized support systems targeting patients with dementia. Examples from sport include the recognition of high-impact collisions in contact team sports as well as falls in skiing. Development and use of AI for accident prevention often faces complex legal and ethical challenges. This ranges from privacy aspects to aspects of reliability and second-order behavioural effects. More research in this domain and in increased robustness and reliability will be needed for a wider roll-out of AI to harvest the full potential of this technology for accident prevention.

## PLENARY 2

# Influencing Risk-Coping Behaviour

### P 2.1

## The Role of Social Media in Safety Promotion

■ THURSDAY 23 JUNE 2022    ⌚ 16:30

👤 **Shayoni Lynn, Lynn PR**



**Shayoni Lynn** is CEO and Founder at multi-award-winning strategic communications and behavioural science consultancy, Lynn PR. With over 15 years' experience, Shayoni is an industry leader in data-driven strategic communications and applied behavioural science. She sits on the UK PR Council and is an Associate Lecturer at Cardiff University.

Shayoni Lynn | Lynn PR [<https://lynn.global/>]

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Can social media help you persuade your audiences to demonstrate safer behaviours? In this session, Shayoni Lynn FCIPR FPRCA CMPRCA, CEO and Founder at Lynn PR, one of the UK's leading behavioural science firms, will showcase how the power of behavioural science can influence audiences to improve their behaviours to keep them safe - all using simple social media channels. Learn about how an understanding of human behaviour and psychology can supercharge communications and engage audiences in new, innovative ways. Shayoni will share examples of how behavioural science has been used in Lynn PR campaigns to create safer behaviours that improve and save lives.





## P 2.2 Humans aren't robots

THURSDAY 23 JUNE 2022 16:30

**Natalia Shakhina, Behavioural Insights Team**



**Natalia Shakhina** is a Senior Advisor in the Behavioural Insights Team, a world-leading behaviour change consultancy focused on applying the science of human behaviour to help address some of society's biggest challenges. She works on projects related to consumer and business markets, with a particular focus on digital markets, and has a background in behavioural science and economics.

Natalia Shakhina | Behavioural Insights Team [<https://www.bi.team>]

During this session, Natalia Shakhina from the Behavioural Insights Team (world-leader in applying the science of human behaviour to real world problems for social impact) will present a simplified framework for behaviour change in safety and injury prevention work. Natalia will introduce the foundations of the science of human behaviour (why people do what they do, even if it's not in their best interest) followed by a framework for how you can apply this science of human behaviour to safety projects aimed at preventing accidents and injuries. The framework is based on the insight that our decisions in many situations are habitual and automatic rather than reasoned and deliberative, meaning practitioners need to focus on designing products, processes and programmes

that align with how humans actually behave, rather than how we as safety specialists and practitioners want them to.

# PLENARY 2

## P 2.3

### Trends in Safety Culture Research

■ THURSDAY 23 JUNE 2022    ⌚ 16:30

👤 **Nic Ward, Center for Health & Safety Culture**



Nicholas J. Ward teaches systems thinking, product design, and usability engineering at the College of Engineering, Montana State University. He is Director of the Center for Health and Safety Culture. His research focuses on the role of traffic safety culture on road user behaviors and stakeholder actions that impact traffic safety and Vision Zero.

Nic Ward | Center for Health & Safety Culture [<https://chsculture.org>]

Many of the injuries and deaths that we seek to reduce are the result of deliberate behavior. Deliberate behavior is the result of a decision that is influenced by our system of beliefs. To develop strategies to change those behaviors, we need to identify and change the beliefs that influence the decision process. To help design such strategies, we need to understand more about beliefs and how they form. These beliefs are often influenced by the culture of the groups with identify with. This presentation summarizes a recently completed project to understand how beliefs form and influence our behaviors. This project produced a tool to help organizations self-assess the strategies they are using and developing. This assessment can help organizations identify strategies that can be effective in changing beliefs by targeting relevant beliefs.

## PLENARY 3

# Risk Perceptions and Communication

### P 3.1

## Zero means a lot - A New Paradigm for Safer City Streets

FRIDAY 24 JUNE 2022 12:00

**Pedro Homem de Gouveia, Polis**



Pedro Homem de Gouveia coordinates the Road Safety & Security Working Group of POLIS, a network of European cities and regions for transport innovation. He's an architect with extensive experience in universal design, public space, pedestrian accessibility, street safety, urban governance, and public participation. In the City of Lisbon, he implemented the Pedestrian Accessibility Plan, and kick-started the Vision Zero planning process.

Pedro Homem de Gouveia | Polis [<https://www.polisnetwork.eu>]

Accelerating the shift to sustainable mobility has become a civilizational challenge, a matter of survival, the holy grail of urban policies. While dealing with the climate crisis is essential, road safety cannot become secondary. In fact, it should actually become even more important, as mobility has to be safe, in order to become sustainable. How can we expect mass adoption of walking, cycling, public transport and shared mobility, if people don't feel safe using these modes, i.e., outside of a one-ton steel cage we call private car?

Profound changes are required in urban mobility. Road safety must play a central role in that change, but it, too, must evolve. The major challenge posed by Vision Zero is not statistical, but rather conceptual, political, and organizational. We need to adopt and speed up the diffusion of a new paradigm for safer city streets, support practical commitments, and build the organizational capacity to deliver on these commitments. Without these efforts, Vision Zero will be no more than magical thinking.

We must also bring road safety "out of the ghetto", place it front and centre in urban mobility policies, as pre-con-

dition for unlocking the full potential of streets, and streamline it into the various decision-making processes, especially the micro-decisions that occur every day within public administration, and can either change or sustain the status quo. As if in 'urban acupuncture', we must make the most of common interventions, instead of waiting for the 'magic flagship project' that will one day 'make everything right'.

Understanding the structural nature of road danger, we must move beyond a focus on individual guilt towards a focus on professional responsibility on structural factors, and on the decisions that shape and manage each street, each intersection, each pedestrian crosswalk. When we board an airplane, or a train, we trust the team running the vehicle and all support operations and infrastructure with our lives. In that situation, "good enough" isn't enough, and "better than nothing" is nothing. The same must apply to all those using the road and street networks we plan, design, build, manage and maintain.

# PLENARY 3

## P 3.2

### Accident prevention with Deep Learning language models

FRIDAY 24 JUNE 2022 12:00

**Andreas Stöckl, University of Applied Sciences Upper Austria**



Andreas Stöckl is head of the Digital Media Department at the School of Informatics, Communications and Media at the University of Applied Sciences Upper Austria. He studied mathematics at the University of Linz and has published several books and scientific articles on data science topics and, since 1996, has also established several start-up companies, like Cyberhouse, Contextity, and 506 Data & Performance (506.ai).

Andreas Stöckl, University of Applied Sciences Upper Austria [<http://www.stoeckl.ai>]

#### 1. INTRODUCTION

There are many measures that can be taken to prevent accidents or reduce their consequences, including regulations such as mandatory helmet use as well as investments in infrastructure or training activities. Accident descriptions (narratives), in an explicit way or within medical anamneses, hold useful information as to which measures could have prevented a particular case and should therefore be promoted.

#### 2. OBJECTIVES

The aim of this study is to develop an automated procedure for deriving preventive actions from accident descriptions with the help of machine learning. This could then be applied to large amounts of data, and quantitative statements could be made about which interventions have which impact on accident prevention.

#### 3. METHODS

In a first step, 1,000 sports accident descriptions from the IDB Austria injury surveillance system are analysed by human experts, and possible prevention measures are

derived for each case. Then, existing deep learning language models are evaluated by means of these training data. The best fitted model is adapted to the task by fine tuning and applied to the full amount of available data (50,000 sports accidents).

#### 4. RESULTS

The results are lists of interventions for prevention and harm reduction for all available cases together with the number of accidents in which these interventions would have had an influence. The results will be presented in the form of a data dashboard that lists the top measures, broken down by further data items like type of sport, age and sex.

#### 5. CONCLUSION

Preliminary results indicate that recent deep learning language models are apt to automatically analyse large amounts of textual accident data in the view of supporting evidence-based injury prevention strategies and policies.

# PLENARY 3

## P 3.3

### Risk Communication - from mapping to interacting in a changing natural environment

FRIDAY 24 JUNE 2022 12:00

**Thomas Hlatky, VVO**



Thomas Hlatky heads, among other functions, the Natural Catastrophe Insurance Division and the HORA Project of the Austrian Insurance Association (VVO). He is Head of Reinsurance at GRAWE Group in Graz, Austria, and Head of Sustainability at Insurance Europe in Brussels (Property and NatCat Insurance, Climate Change).

Thomas Hlatky | VVO Team [<https://www.hora.gv.at>]

Targeted natural hazard communication enhances risk awareness: Over the past years, numerous large natural catastrophic events have demonstrated how exposed property and even human life are to natural hazards. Protection against natural hazards is therefore a key responsibility of our society, governments, municipalities as well as of individuals, especially homeowners.

The insurance industry has seen significant losses over the last decades and exceptional damages in 2021. As an industry it has also a vital interest in the provision of data on various natural hazards. Science provides rigorous analyses and the related knowledge base.

Due to multiple major flood events in the last two decades, there is a trend towards an increasing risk awareness of the population along with an increasing interest in freely accessible information on natural hazards and on ways of coping with them. In this context, the Austrian Insurance Association VVO together with the Austrian Ministry of Agriculture BMLRT and a team from science and research, very successfully promotes a huge number of awareness-raising measures, in particular on the internet-based HORA natural hazards platform, which has been successful for more than fifteen years.

The latest modelling approaches combined with improved computer performance contribute to setting new

standards with the expansion and ongoing updating of the extensive map series. For the first time in history of risk zoning and mapping, online risk information about natural perils will be available for free in 3D formats combined with significant interactive risk communication tools for an entire country. This will create the possibility of a totally new approach to risk perspective, leaving hundreds of years of mapping history behind and shifting perspectives into interaction in risk management online with individuals.

For individual risk surveys this offers new ways of interaction while surveying on site with stakeholders. For spatial and land use planning the modelling of scenarios will be visible within seconds. For disaster management this creates new means of planning and executing of local and regional measurements, just to name a few applications. HORA 3D is a totally new model of risk communication between technical experts and citizens, authorities and stakeholders. It is closing the knowledge gap between technical expertise and scientific accuracy and the individual need of having risk information available and accessible in updated and most convenient form.

# ORAL PRESENTATIONS

## 01 Child Safety - Education



## O 1.1 RePLAY: how pedagogical documentation supports childcare professionals' assessment of children's risk competence

THURSDAY 23 JUNE 2022 11:00

**Helena Sienaert<sup>1</sup>**

<sup>1</sup>Artevelde University of Applied Sciences, Ghent, Belgium

### BIOGRAPHY

Since 2011, **Helena Sienaert**, Master of Pedagogy, has been working as a lecturer and researcher at the Bachelor program of Early Childhood Education at Artevelde University of Applied Sciences. Her RePLAY research projects about young children's risky play are significantly impacting both policy and practice in early childhood education and care in Belgium.

### INTRODUCTION

Child injury prevention often starts from the assumption that children are vulnerable and at risk. In recent years, risky play research has shown that children as young as toddlers also deliberately take risks, and that they seem to be surprisingly competent at it. By taking risks, children gradually enhance their risk competence, i.e. the competence to see the possibilities a risky situation offers to participate and expand the experience, or to transform it into a more acceptable situation (including the possibility to stop participation), or to decide not to participate. This is based on children's accurate assessment of the risks in the situation and of their own experiences and capacities. As a result, seemingly contradictory, their play becomes safer. Children, therefore, benefit from growing up in an environment that is 'as safe as necessary', as opposed to 'as safe as possible'. However, because of their training from a risk-averse paradigm, childcare professionals often tend to create surplus safety to the detriment of children's risk competence.

### OBJECTIVES

The RePLAY Toddler research project explored ways to support childcare professionals' assessment and scaffolding of children's risk competence.

### METHODS

Through design research, the RePLAY Toddler research project translated international insights about risky play to meet the needs of Flemish childcare professionals. Mixed methods (e.g. observations, in-depth interviews, focus groups) were used to gain a profound understanding of risky play in the context of Flemish childcare.

### RESULTS

An intensive co-creation process with childcare professionals and policymakers resulted in, among other things, tailor-made risk-reframing workshops for childcare professionals.

Joint analysis of pedagogical documentation (e.g. videos and photos of children) is a valuable method for childcare professionals to observe and reflect on signs of children's well-being, involvement, and risk competence during risky play. This helps them to stay closer to the Zone of Proximal Development that children are creating for themselves, and, therefore, also to scaffold children's risk competence.

### CONCLUSION

Joint analysis of pedagogical documentation of children's risky play is a valuable method to support childcare professionals' assessment and scaffolding of children's risk competence.

## O 1.2 CounterRisk New skills to deal with the risks of counterfeiting in consumer goods for children

THURSDAY 23 JUNE 2022 11:00

👤 Maria Cruz Arenas<sup>1</sup>, Karina Pernias<sup>1</sup>, **Sandra Nascimento**<sup>2</sup>, Oleksandr Bulayenko<sup>3</sup>, Caroline Paolini<sup>3</sup>, Jiri Stastny<sup>4</sup>, Joan Albert<sup>5</sup>, Mariano López<sup>5</sup>

<sup>1</sup>AIJU, The Technological Institute for Children's Products and Leisure, Ibi, Spain, <sup>2</sup>APSI, Portuguese Association for Child Safety Promotion, Lisboa, Portugal, <sup>3</sup>CEIPI, Centre for International Intellectual Property Studies, University of Strasbourg, Strasbourg, France, <sup>4</sup>SHS, Czech Toy and Game Association, Prague, Czech Republic, <sup>5</sup>Lucentia-LAB, Alacant, Spain

### BIOGRAPHY

#### **Sandra Nascimento, APSI President and Technical Director**

Psychologist, with specializations in Health and Clinical Psychology and Community Psychology, with more than 20 years of experience in health and safety promotion, protection of children's and consumer rights and safety of children's products. She is involved in the design and the coordination of programs, action plans and projects and is a member of several technical committees and working groups on these areas.

### INTRODUCTION

Counterfeiting is both economically damaging to business and to the health of consumers. In the case of children's products, counterfeits can pose a serious health risk to the most vulnerable consumers, such as children. A majority of counterfeit children's products present harmful substances and they do not comply with the relevant safety regulations.

Consumers and companies, especially SMEs, have lack of knowledge to face the problem of counterfeiting and how to protect children and their business.

### OBJECTIVE

The aim of the CounterRisk project ([www.counterrisk.eu](http://www.counterrisk.eu)) is to improve the key competences on the protection from counterfeiting of professionals from consumer associations and SMEs of the children's products sector through the increase of knowledge on intellectual property and children's products safety and on how the implementation of new technologies in products can be instrumental in ensuring their authenticity and safety to companies and consumers.

### METHOD

The LEAN E-LEARNING DESIGN method, a new application of the Lean Canvas tool for training courses, was used to create CounterRisk educational resources. Using this method, the competences and training contents were established for two courses in a NOOC format (nano online open course). The Lean e-Learning Design method allows

to involve final users in the training tool development. In this way, the courses provide the competences required by the professional profiles.

### RESULTS

- A NOOC for consumer associations specifically designed for the staff of these organizations and other professionals involved in consumer awareness and education activities with a focus on why and how to avoid buying counterfeit products for children.

- A NOOC for SMEs aimed at the staff of companies in the children's sector with the spotlight on protecting companies and brands through intellectual property, product safety and new technologies.

The courses integrate lessons in blended multimedia format combining audiovisual materials, quizzes, and text lessons together with case studies designed in augmented reality. They will be accessible from smartphones, free of charge, in five languages – English, Spanish, French, Portuguese, and Czech.

### CONCLUSION

The CounterRisk project implementation, funded by the European Commission's Erasmus+ Programme, will provide an innovative training tool that will help consumer educators and businesses:

- to combat counterfeiting,
- to reduce the impact of counterfeit products on children's health and safety, and
- to understand how new technologies work for IP and safety protection.



## 1.3 Risk factors for hospital admission after a trampoline related injury in children and adolescents – a cross-sectional study based on EU-IDB

THURSDAY 23 JUNE 2022 11:00

**Dritan Bejko**<sup>1</sup>, Michaël Schnell<sup>1</sup>, Sophie Couffignal<sup>1</sup>, Jessica Pastore<sup>1</sup>

<sup>1</sup>Luxembourg Institute of Health, Strassen, Luxembourg

### BIOGRAPHY

**Dritan Bejko**, Epidemiologist, Department of Population Health at the Luxembourg Institute of Health Project - Leader IDB-Luxembourg, Member of Advisory Board IDB and Executive Board of EuroSafe

### INTRODUCTION

Trampolines enjoy a high popularity among children at home, on playgrounds and other recreational areas. Injuries in trampoline parks, falls while on the trampoline, adolescent age, and type of injury have been identified as risk factors causing an increase in hospital admissions for Trampoline Related Injury (TRI) in the US.

### OBJECTIVE

Identifying risk factors associated with hospital admission after a trampoline related injury in European countries.

### METHODS

The Netherlands, Luxembourg, Austria, Sweden, Denmark, and Slovenia have uploaded to the European Injury Data Base (EU-IDB) systematically collected data on product related injuries in the Hospital's Emergency Department (ED) for at least four consecutive years between 2008 and 2018. Accidents of children under 18 years old were selected if the object code I0.0310 (Trampoline) was registered. Two multivariate logistic regressions were used to study the association between hospital admission and gender, age group, place of occurrence, mechanism of injury, period of the year (month), and country. In a second model, the type of injury was added among the risk factors.

### RESULTS

There were 1,319 (8.9%) hospital admissions registered in the participating hospitals after a TRI. After adjusting for gender, age group, place of occurrence, mechanism, month of occurrence and country, the TRI occurring in trampoline parks were more likely to be admitted to hospital compared to home garden TRI  $OR(CI95\%) =$

1.80(1.46-2.21). Compared to overexertion, falls  $OR(CI95\%) = 4.51(3.27,6.22)$ , contact with an object  $OR(CI95\%) = 1.94(1.28,2.95)$  and contact with a person  $OR(CI95\%) = 2.73(1.84,4.07)$  were more likely to be admitted to hospital. Boys were more likely  $OR(CI95\%) = 1.16(1.03,1.308)$  to be admitted to hospital. The proportion of hospital admissions is higher in the Netherlands, in Austria, Sweden, and Denmark, compared to Slovenia. After adjusting also for injury type, the risk of admission remained higher among the 15-17 years old, if the mechanism was a fall and the place of occurrence was a trampoline park. Compared to contusions to the extremities, fractures to the upper extremities  $OR(CI95\%) = 61.94(34.02;11.76)$ , head and neck injuries  $OR(CI95\%) = 30.27(16.37;55.98)$  and fractures of lower extremities  $OR(CI95\%) = 27.56(14.96;50.76)$  were more likely to be hospitalized.

### CONCLUSION

Trampoline parks, falling, and being 15-17 years old, are risk factors for hospital admission after a TRI. The significant country variations could reflect the functioning of the health care services with more or less primary health care centers treating injury patients leaving the more severe cases for hospitals' EDs.

## 0 1.4 Children on wheels – mobile on wheels with muscle + electric + motor power

THURSDAY 23 JUNE 2022 11:00

**Peter Spitzer<sup>1</sup>**, Holger Till<sup>1,2</sup>

<sup>1</sup>Research Center for Childhood Accidents, Graz, Austria, <sup>2</sup>Medical University of Graz, Dept. of Ped. Surgery, Graz, Austria

### BIOGRAPHY

**Peter Spitzer** is Head of the Research Center for Childhood Accidents and Secretary General of Safe Kids Austria. This Center is based at the Medical University Hospital of Graz and running a Styria-wide hospital-integrated injury database. Peter is responsible for the research activities, for the Injury Data Base and for trainings in Injury Prevention. The research activities are focused on childhood injuries till the age of 16.

### INTRODUCTION

Exercise is the elixir of human health: The so-called “common” fall is the number one cause of accidents in humans and accounts for about a quarter of all injuries. Accidents that occur during play and sports are in second place. The severity of injuries in an accident is directly related to the energy involved in the accident. The height of the fall and the force (i.e. the impact speed), which is counteracted by the protective equipment worn, influence the injuries suffered by the child. However, are humans even designed for “artificial” speed faster than walking or running?

### OBJECTIVES

Are children and teenagers attracted by mobility devices on wheels, which are electrically powered or motor-driven, or do they prefer muscle powered wheelers? Which preferences can we find in hospital injury data?

### METHODS

In this research project entitled “E + M + Power: Children on Wheels”, we analysed data from accidents that occurred after falls involving wheeled vehicles of all kinds, ranging from bobby cars / toddler ride on cars to mopeds. These accidents were associated with mobility devices moving on wheels and powered by an electric motor, a combustion engine, or pure muscle power. The data were analysed for 0 to 16-year-old children and adolescents who were treated at the University Clinic for Paediatric and Adolescent Surgery in Graz over a three-year period.

### RESULTS

A total of 3,538 specific mobility devices were included in the study. The bicycle makes up the largest share with 43%, followed by the moped / motorbike with a share of 23.3%. Just less than 3% of the devices studied were powered by an electric motor, these vehicles were almost exclusively hoverboards.

We define engine power as referring to power provided by a combustion engine and, thus, primarily to engines in mopeds. Our results indicate that the e-moped is not very relevant for young people. Muscle power for locomotion is still very important for children, with bicycles accounting for the largest share of non-motorised vehicles.

### CONCLUSION

Central factors that can prevent accidents:

- Correct environment
- Do not provide children with age-inappropriate devices
- Correct device size
- Protective equipment
- Correct device maintenance
- Learn how to use the device properly
- Parents themselves use the device and set an example

## O 1.5 Child Defenestration: An Unexpected collateral Effect of the first Covid-19 Lockdown

THURSDAY 23 JUNE 2022 11:00

Marie-Prisca Chaffard-Luçon<sup>1</sup>, **Nathalie Beltzer**<sup>1</sup>, Annabel Rigou<sup>1</sup>, Isabelle Claudet<sup>2</sup>

<sup>1</sup>Santé publique France, Saint-Maurice, France, <sup>2</sup>Paediatric Emergency Department, Children's Hospital, Toulouse, France

### BIOGRAPHY

**Nathalie Beltzer** holds a PhD in health economics and earned an experience of 15 years at a regional health agency (Observatoire régional de santé Île-de-France). In 2014, she joined the department of non communicable diseases at "Santé publique France". Currently she is leading a team working on the surveillance of injuries, seniors' health and neurodegenerative diseases. She is also leading a project focused on the burden of diseases in France.

### INTRODUCTION

In March 2020, several countries, including France, implemented a total lockdown policy to fight the spread of the COVID-19 epidemic, involving a closure of schools and restriction on travel to only what is necessary close to home. These measures have forced children to stay at home for an extended period of time. Several studies have shown an increase in the number or proportion and severity of defenestrations among children during this period.

### OBJECTIVES

The French National Public Health Agency and the Toulouse University Hospital paediatric emergency department have conducted a study on the effects of the first lockdown on admissions for defenestration of children in France.

### METHODS

The study was conducted using data from nine French emergency departments (ED) participating in the French home and leisure injury permanent survey (EPAC), which is based on the exhaustive daily collection of data on admissions for home and leisure injuries (HLI).

All non-intentional falls from a window, balcony or terrace of children under 15 years of age were included. The data analysed included the demographic characteristics of the victims, the circumstances of the accident and medical data. Additional data on the accident were collected by questionnaire from the ED. The Pediatric Trauma Score and the simplified Injury Severity Score were used to assess injury severity. The frequencies and characteristics of emergency admissions for defenestration were analysed over the period 17 March to 11 May 2020, and compared with those over the same period in 2016-2019.

### RESULTS

During the lockdown period, 4,309 HLI in children under 15 years of age were recorded in the EPAC survey, 79% (3,410) of which were domestic accidents. Over the same period in 2016-2019, this proportion was 41% (16,593 domestic accidents / 40,899 HLI). Among the total number of domestic accidents for the two periods, 28 defenestrations were identified: 2016-2019 (n=17) and 2020 (n=11). A significant rise in defenestration cases was observed during this lockdown with a 3.2-fold increase in risk (OR=3.16 [95% CI: 1.48-6.74], p=0.002). Among hospitalizations (7 out of 11 cases), more than half of the defenestration victims (4 out of 7 cases) were admitted to paediatric intensive care units.

### DISCUSSION

These results show that health policies should consider the collateral effects induced by certain measures implemented to manage the epidemic (ventilating homes, closing schools etc.), and that prevention messages should not focus solely on biomedical aspects.

## O 1.6 The Botnar Child Road Safety Challenge: why monitoring multi-country projects is so important

THURSDAY 23 JUNE 2022 11:00

Margaret Peden<sup>1,2,4</sup>, **Atsani Ariobowo**<sup>3</sup>, Prasanthi Puvanachandra<sup>1,2,4</sup>

<sup>1</sup>The George Institute UK, London, United Kingdom, <sup>2</sup>Imperial College London, London, United Kingdom, <sup>3</sup>Global Road Safety Partnership, Geneva, Switzerland, <sup>4</sup>University of New South Wales, Sydney, Australia

### BIOGRAPHY

**Atsani Ariobowo** is the Manager of Global Road Safety Projects for the Global Road Safety Partnership (GRSP) hosted programme of the International Federation of Red Cross, based in Geneva. Atsani has had experience implementing international projects in over twenty-five countries, funded by governments, multilateral banks, and philanthropies. His work so far has spanned multiple industries- from the private sector (electricity & gas, consulting), State Government and now the Humanitarian Movement.

### INTRODUCTION

Every year, about 350,000 children are killed in road traffic crashes (RTCs) globally. The burden is disproportionately higher among low- and middle-income countries despite their population sizes and number of vehicles. Approximately 30% of all fatal RTCs in LMICs involve children – many on their way to school. These rates are three times higher than in high-income countries as a result of poor road infrastructure, limited enforcement of laws, poor vehicle standards, outdated urban planning and poor road user behaviour.

### OBJECTIVES

In 2018, the Global Road Safety Partnership (GRSP) launched a multi-country Botnar Child Road Safety Challenge (BCRSC) with the aim of reducing deaths and injuries among children on their way to school in 7 countries.

### METHODS

A call for proposals went out in 2018. 12 projects in 6 countries were initially chosen (Tanzania was added later). The Challenge is designed to address locally relevant problems that affect children in secondary cities in India, Mexico, Romania, South Africa, Tunisia, Tanzania and Vietnam with practical, innovative and evidence-based interventions. Interventions are implemented by local NGOs and governmental partners with support from GRSP. The George Institute (TGI) provides capacity development and technical guidance to assess the impact of interventions. A logic model and RE-AIM framework are used to monitor and evaluate the projects using mixed-methods.

### RESULTS

The Challenge is being implemented in two phases. All 13 phase 1 projects have been completed and 10 grantees were invited to submit phase 2 proposals: the majority of which commenced in mid-2021. Grantees were provided with institutional, M&E training and technical assistance to develop and implement a monitoring framework. Individual project reports are submitted 6-monthly. A mid-term evaluation review, including in-depth interviews with the lead investigators, identified challenges and opportunities as well as documenting outputs and some early outcomes. Despite being unable to aggregate information – because projects are quite different in each country – GRSP and the donor have found these data useful to guide future projects and investments.

### CONCLUSION

Many NGOs are beginning to implement good road safety practices, however, unless these are carefully monitored, evaluated and the information disseminated, lessons cannot be learnt. Country case studies are an important contribution to the body of knowledge but NGOs should be guided to document the impact of these projects.

## ORAL PRESENTATIONS

# 02 Injury Surveillance - Data Systems



## 2.1 The French Home and Leisure Injuries Surveillance System EPAC

THURSDAY 23 JUNE 2022 11:00

**Louis-Marie Paget<sup>1</sup>**, Nathalie Beltzer<sup>1</sup>, Marion Torres<sup>1</sup>

<sup>1</sup>Santé publique France, Saint-Maurice, France

### BIOGRAPHY

**Louis-Marie Paget** has been a project manager at Santé publique France in the department of non communicable diseases since 2014. He is specialized in the epidemiological surveillance of home and leisure injuries. He is currently responsible for the implementation of the EPAC survey.

### INTRODUCTION

Home and leisure injuries (HLI) represent an important public health issue. The prevention of these HLI requires a precise knowledge of their circumstances. The French EPAC (HLI permanent survey) monitoring system is specifically designed to produce detailed information on products, activities, place and mechanism involved in or source of these HLI.

### OBJECTIVES

The objective of the EPAC monitoring system is to provide detailed, reliable and up-to-date descriptive results on the number and characteristics of HLI occurring in France treated in emergency departments (ED) of hospitals.

### METHODS

The EPAC methodology is based on the former European Home and Leisure Accident Surveillance System (EHLASS). EPAC has been conducted in France since 1986, based on a dozen EDs of hospitals. These ED teams are volunteers and were chosen on the basis of geographical criteria, size and adherence to the project.

Characteristics of the injured person and accident; consequences of the accident; follow-up (orientation when the patient leaves the emergency care) and accident description of the injury case in free text variable were collected for each patient supported by ED for an HLI. The codes used are based on the coding manual V2000 for HLI. Trained staff and financial resources assigned to these EDs allow having exhaustive and good quality data. Regular quality analyses are performed.

### RESULTS

Information about 100,000 injuries is recorded annually in EPAC. These data are used to produce general reports on HLI managed in EDs in France. Specific studies are annually produced from these data, as on product related injuries or their circumstances. Recently EPAC data have been used for monitoring HLI during the lockdown due to the covid-19 pandemic. These data are also used to respond to numerous official requests of ministry and alert notifications.

### CONCLUSION

EPAC is the main point of referral in France for HLI. This system will evolve to provide more accurate knowledge for accident prevention, to better meet the needs of our partners and to make recommendations in terms of prevention.

## O 2.2 A national representative and comprehensive health-based injury monitoring system is launched in Norway from 2022

THURSDAY 23 JUNE 2022 11:00

**Johan Lund<sup>1</sup>**

<sup>1</sup>National Institute of Public Health, Oslo, Norway

### BIOGRAPHY

**Johan Lund** has a background from technology, sociology and a doctorate in community medicine. Since 1977, he has worked with injury registration and accident prevention. He has worked at the Norwegian Institute for Consumer Research, the Health Agency in Oslo Municipality, Norwegian Safety Forum, University of Oslo and the Norwegian Directorate of Health. He is now affiliated with the Norwegian Institute of Public Health as an injury researcher.

### INTRODUCTION

After piloting from 1977, national health-based injury monitoring systems have existed in Norway since 1990. From 2009, it was mandatory to register an Injury Minimum Data Set (MDS) on all hospitals, both for in- and out-patients, about 300,000 injuries annually. Due to lack of registration resources, the coverage rate and the quality of the data have been too low. 350,000 injuries are treated solely by GPs and municipality AEDs. No MDS is registered from them.

For the traffic safety authorities, the police register is the main database for monitoring the traffic injuries. A study was made on the initiative from Safe Traffic which found that the police register only one of three severe traffic injuries. For giving better data on traffic injuries to traffic authorities, it was proposed to establish a health-based “lighthouse” injury monitoring system.

### OBJECTIVES

Traffic safety authorities were convinced about the necessity to establish this “lighthouse system”. An annual sum of 700,000 euros is allocated for 3-5 years for designing and running a monitoring system for all injuries treated on ten hospitals and seven municipality AEDs across Norway, a representative sample.

### METHODS

A crucial factor for succeeding is having a 20% employee (injury secretary) at the units for overlooking the registration of an MDS for all injuries. A collaboration with the trauma registrars at the hospitals will assure that data on severe injuries will be complete. One full-time em-

ployee will be allocated at the National Patient Register for following up the registration, instructing the injury secretaries, collecting and quality-checking the data and delivering data to relevant users. At the National Institute of Public Health, one full-time person will be allocated to analyse data and supply statistics to the traffic authorities. A coordination group will be established, and a steering group consisting of representatives from the Ministry of Transport and the Ministry of Health.

### RESULTS

The new system will cover about 50% of injuries treated at the hospitals and about 6% of those treated in the primary health system, a representative sample. The experiences by June 2022 will be reported.

### CONCLUSION

In Norway, traffic safety authorities are now playing an important role in getting a comprehensive and representative injury monitoring system working, especially for severe injuries.

## O 2.3 Pilot-testing an Injury Registry in Eastern Europe – learning from iCREATE Project

THURSDAY 23 JUNE 2022 11:00

**Diana Dulf<sup>1</sup>**, Madalina Coman<sup>1</sup>, Serghei Cebanu<sup>2</sup>, Nino Chikhladze<sup>3</sup>, Artashes Tadevosyan<sup>4</sup>, Corinne Peek-Asa<sup>5</sup>

<sup>1</sup>Babes-Bolyai University, Cluj-Napoca, Romania, <sup>2</sup>Nicolae Testemitanu State University of Medicine and Pharmacy, Chisinau, Republic of Moldova, <sup>3</sup>Ivane Javakhishvili Tbilisi State University, Faculty of Medicine, Tbilisi, Georgia, <sup>4</sup>Yerevan State Medical University, Yerevan, Armenia, <sup>5</sup>University of California, San Diego, USA

### BIOGRAPHY

**Diana Dulf** is an assistant professor at Babes-Bolyai University, Department of Public Health and head of Injury Research in the department. Dr. Dulf has developed her expertise on injury and violence prevention at University of Iowa and coordinated several research grants funded under the NIH trauma training grant and participated in the EU-ID B project, representing the Romanian partner.

### INTRODUCTION

Traumatic injuries significantly affect both adults' and children's physical and psychological well-being. Injuries are among the leading causes of death and disability worldwide and contribute disproportionately to premature life loss, with higher rates in middle- and low-income countries. As part of the U.S. NIH-funded iCREATE Project (Increase Research Capacity in Eastern Europe), an emergency-based injury registry was pilot-tested in Armenia, Georgia, and Moldova.

### OBJECTIVES

To document the burden of injuries using existing medical records and pilot-test an injury registry in low-resource hospitals.

### METHODS

Registry guidelines and codes from WHO, ICD-10, IDB-JAMIE (European Injury Database) and the Iowa Trauma Registry were used to develop the iCREATE Injury Registry. In 2018, the registry was pilot-tested by extracting retrospective data from patient records in three emergency departments in Yerevan, Armenia (N=4342), one emergency department in Tbilisi, Georgia (N=794) and two emergency departments in Chisinau, Moldova (N=7946). Participating hospitals treated from 9,000 to 48,000 patients in 2018, this being the first attempt to pilot-test an injury surveillance system in these countries.

### RESULTS

The registry had a core group of variables and specific sections focusing on transport, intentional self-harm, violence, sports, and traumatic brain injury. Most injuries recorded as part of the registry come from urban areas, 61.3% (Georgia), 76.9% (Moldova) or metropolitan area, 72.8% (Armenia). Most of the injuries required treatment and follow up, 54.3% (Armenia), 44.8% (Georgia) and 52.4% (Moldova). For example, in Moldova, 7% (N=550) of injuries had assault registered as the mechanism of injury, and almost all cases had information on perpetrator age (N=529) and sex (N=505), assault context (N=535) and relationship with the victim (N=527). The RTI section in Armenia included 350 injured patients, but data on restraint use and injured person's role was only documented for around half of the patients.

### CONCLUSIONS

Existing medical records have the potential to identify the main mechanisms and types of injuries and set up a minimum injury registry. Variables like age, sex, intent, mechanism, activity, and type and body part injured provide a good overview of injuries treated in an emergency department. But most specific sections were missing data, except two: RTI and violence. Therefore, preliminary assessments support the possibility of implementing a minimum database to document injuries in all three countries and implementing specific registries to document interpersonal violence and road traffic safety, providing evidence for future prevention strategies and policies.



## 0 2.4 From community-based registrations of traffic accidents towards prevention

THURSDAY 23 JUNE 2022 11:00

**Susanne Nijman<sup>1</sup>**, Birgitte Blatter<sup>1</sup>

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Susanne Nijman** has been working as a senior researcher/project leader at the Dutch Consumer Safety Institute since 2002. She works in the areas of road safety, product safety, fireworks related injuries and alcohol related injuries. Susanne is project leader of the registration on road traffic accidents data, obtained by Dutch Emergency Departments and ambulance services.

### INTRODUCTION

In order to prevent road traffic accidents, policy makers need information on characteristics of victims, accidents and circumstances. They need answers to questions like: “Was it behaviour that caused the accident?” and “Was the road safe enough?”. In the Netherlands, road safety policy makers use police registration of road traffic accidents for information on victims and accidents. However, it is well-known that the police registration is not complete, because police officers are not present at all road traffic accidents, especially not accidents without any form of collision. Therefore policy makers lack information on a large group of (vulnerable) road traffic victims.

### OBJECTIVES

Injured road traffic victims are treated by ambulance personnel and at Emergency Departments. In their medical registrations, information on victims, accidents and circumstances is recorded. The objective of this project is to determine whether innovative techniques can be developed to automatically select data on road traffic victims from these medical registrations, transfer the data to the Consumer Safety Institute and transform open text data into coded information on traffic accidents. These innovative techniques make it possible to use information in medical registrations for prevention purposes, without administrative burden for medical services.

### METHODS

The Consumer Safety Institute started pilots in two regions in the Netherlands with local Emergency Departments and ambulance services to investigate the (legal

and technical) feasibility of a community-based registration of road traffic accidents. Since the requested effort of medical services must be minimal, the registration was based on information that was already registered for medical purposes. We used innovative techniques to obtain data and transform data from open text fields into coded information.

### RESULTS

In both regions we succeeded in starting a community-based registration of road traffic accidents, based on medical records. It was possible to obtain characteristics of victims and accidents from medical registrations. Additionally, information was available on road users' behaviour and on infrastructure. Initial results have shown that medical records contain far more records on road traffic victims than police registrations, especially on vulnerable road users.

### CONCLUSIONS

With innovative techniques it is possible to use information in medical records for prevention purposes, with minimum effort from medical staff. The new registration reveals valuable information on number and characteristics of road traffic victims and accidents that was formerly not available, and will be continued nationwide.

## O 2.5 Accidents in Germany 2019/2020 - Results from a representative health survey of adults

THURSDAY 23 JUNE 2022 11:00

**Anke-Christine Sass<sup>1</sup>**, Ronny Kuhnert<sup>1</sup>

<sup>1</sup>Robert Koch Institute, Berlin, Germany

### BIOGRAPHY

**Anke-Christine Sass, PhD** in public health, has been working as a research assistant at the Robert Koch Institute, Federal Health Reporting unit, since 2004, she has been deputy head since 2015. Her main tasks are the conception and coordination of reporting for Germany on many public health-relevant topics (digital and print). Additional foci of her research work have been set in the areas of gender and health, she has been working on the epidemiology of accidental injuries for many years.

### INTRODUCTION

In Germany, too, accidents cause a lot of harm, high costs for treatment and lost working hours, and they are a relevant cause of death, especially at a young age. This paper presents recent data from a nationwide survey conducted in this way across the European Union (European Health Interview Survey, EHIS).

### OBJECTIVES

The prevalence of non-fatal accidents in Germany overall and at three accident locations is presented (at home, during leisure time, in traffic). Differences between women and men and between age groups are discussed.

### METHODS

The data come from a nationwide study, "German Health Update" (GEDA 2019/2020-EHIS), which was conducted by telephone between April 2019 and September 2020. 22,708 randomly selected people aged 18 and over took part. They were asked about accidents in the last 12 months and any medical care they had received. The data set was weighted by age, gender, education and regional characteristics. Accident frequencies and 95% CI are presented. Significance is assumed if  $p > 0.05$ . Only significant group differences are reported.

### RESULTS

Overall, 12.1% of women and 13.1% of men in Germany suffered at least one accident within 12 months. 45.0% of the accident victims were treated in hospital, 28.4% were treated as outpatients. The most common accidents reported by respondents were leisure accidents (7.7%), followed by domestic accidents (5.1%) and traffic accidents (2.1%). Women are less frequently affected by accidents than men, both in leisure time and in traffic. The clearest age differences (18-29 y. vs. 65+ y.) are found in leisure accidents, younger women (11.1%) and men (19.8%) are affected considerably more often than older ones (women: 4.5%, men 3.4%). Only in the case of domestic accidents there is an inverse age gradient in the group of women, with the highest age group being more affected (8.9% (65+ y.) vs. 4.2% (45-64 y.) vs. 3.5% (30-44 y.)).

### CONCLUSION

The present results underline the high importance of accidental injuries. The survey data provide a good overview, although the European questionnaire excludes occupational accidents, so the picture is not complete. In the COVID 19 pandemic, there were shifts in accident occurrence, e.g., the official traffic accident statistics report significantly fewer traffic fatalities. An analysis of the separate survey months is planned, because in a good half of them there were containment measures - to varying degrees.

## ORAL Presentations

# 03 Road Safety - Smart Solutions



## 0 3.1 The SOULMATE app: facilitating elderly mobility by increasing the feeling of security while travelling through the use of a mobility app, secure navigation and a helpline

THURSDAY 23 JUNE 2022 13:30

**Karin Kuchler<sup>1</sup>, Martijn Kiers<sup>1</sup>**

<sup>1</sup>FH JOANNEUM, University of Applied Sciences, Institute of Energy, Transport and Environmental Management, Kapfenberg, Austria

### BIOGRAPHY

**Karin Kuchler** has been working as a lecturer and researcher at the degree programmes “Energy, Mobility and Environmental Management” and “Energy and Transport Management” since 2016. As an expert for international marketing and management, she is particularly interested in topics linked to eco-mobility, active mobility, and sustainability management.

### INTRODUCTION

The ageing population, new forms of mobility and digital innovation create a variety of challenges for society, but also compelling opportunities in all three fields. It is common knowledge that daily chores or necessary journeys can become a struggle with increasing age, as cognitive and physical challenges limit one’s ability to flexibly navigate through neighbourhoods. Additionally, these limitations lead to situations of falls or accidents and create an obstacle to active mobility and the ability of senior citizens to independently care for themselves.

### OBJECTIVES

The research project SOULMATE, winner of the VCÖ prize 2021 in the category “Design for all”, addresses the promotion of elderly mobility in a rapidly transforming mobility landscape, with special focus on the question of how digital solutions, like navigation applications, can support the health and active mobility of senior citizens, while decreasing the likeliness of accidents or injuries while travelling. The project aims at prolonging independence of senior citizens and help them navigate in the world of modern mobility.

### METHODS

The SOULMATE solution is an example of a digital safety net, which was developed by an international research consortium from Austria, the Netherlands and Belgium. One key aspect of the project is the SOULMATE naviga-

tion app with integrated SOS functionalities, which was developed in co-creation workshops with senior citizens from all three countries. During a benchmark survey and field trials with the target group not only the functionalities, but also the perceptions of end-users towards such an app were evaluated and serve as input for further development of safety solutions for active senior mobility.

### RESULTS

The app, which currently exists as a fully functioning pilot-version, offers a variety of safety functions to senior citizens, aged 65 or older. It accompanies users on all routes and enables them to feel confident during their journeys on foot, by bike or when using public transport. This is achieved by providing various safety assistance functions, like an SOS-call function with which help can be called when the traveller is lost or feels insecure.

### CONCLUSION

Despite the proven functionality of the SOULMATE app, a tool in the e-health sphere, the question remains whether senior citizens are likely to accept and use such a digital support offer. Generally, the acceptance of the SOULMATE tool is closely linked to the end-users’ ability to use smart phones and online technologies.

## O 3.2 Warning signals as solution to increase cyclists' safety in automated, connected mobility

THURSDAY 23 JUNE 2022 13:30

**Eva-Maria Hollauf<sup>f</sup>**, Veronika Hornung-Prähauser<sup>1</sup>, Claudia Luger-Bazinger<sup>1</sup>, Raffaella Neustifter<sup>2</sup>, Hatun Atasayar<sup>2</sup>, Maria Fleischer<sup>2</sup>

<sup>1</sup>Salzburg Research Forschungsgesellschaft, Salzburg, Austria, <sup>2</sup>Kuratorium für Verkehrssicherheit, Vienna, Austria

### BIOGRAPHY

**Eva-Maria Hollauf** is a researcher at the non-profit research institution Salzburg Research in the department of Innovation & Value Creation. Her research focus lies on the usage of open and collaborative methods to include users in the early innovation process, developing novel motion-data-based service and product innovations.

### INTRODUCTION

Rapid developments in the field of autonomous driving and its implications for society, traffic and safety management will shape our daily lives. Stakeholders along the intelligent road traffic system and bicycle industry aim to actively contribute to this challenge and are collaboratively working on new solutions. The safety of cyclists in the automated traffic of the future is the core focus of a current Austrian applied research project, which investigates novel data-based warning alerts exchanged between cyclists, a new generation of automated driving cars and roadside infrastructure ([www.bike2cav.at](http://www.bike2cav.at)).

### OBJECTIVES

The aim of this contribution is to present and discuss the challenges and limitations of data-driven warnings and related new safety signal applications from a user perspective. These were identified in "Bike2CAV" during 2021 using an empirical mixed-methods approach.

### METHODS

First, a user survey among active cyclists (n=892) in the DACH region investigated and prioritised the most risky situations for a cyclist collision with cars (e.g., intersections, overtaking, near-miss situations). Second, the survey investigated needs and expectations for data-based digital warning applications and safety-enhancing devices (e.g., smart textiles, helmets, lights) to mitigate such situations in automated traffic.

### RESULTS

The survey results were explored in greater depth in two open innovation workshops with selected cyclists, and three automated warning concepts (acoustic, visual, haptic) were designed based on the user preferences (n=17; 5/2021). These solutions were evaluated in an interdisciplinary workshop with invited bicycle users, bicycle initiatives, the bicycle industry, road safety experts and researchers from the field of automated driving. The user needs analysis showed that cyclists prefer not to be overloaded with information and to be warned only when the automated vehicle has not detected the cyclist's motion or the cyclist's intention (e.g. to turn). Furthermore, the survey did not clearly ascertain a preference for a modality in the processing of warning signals. The envisaged solution is based on a smartphone, which alerts cyclists by a warning sound transmitted through either a Bluetooth-enabled bicycle helmet, and/or a red flashing screen in a bicycle navigation app and/or by vibrating handlebars.

### CONCLUSION

The designed prototypes will be re-evaluated by the BikeCitizens community and field-tested during May 2022. Open issues to be considered during the test phase: How do the preferred designs and modes of warning signals affect road safety of users? Do smartphones or smart textiles offer the possibility of giving cyclists an advantage as a vulnerable group in the automated traffic of the future?

## O 3.3 Predicting cyclists' intentions by measuring eye, head and body movements

THURSDAY 23 JUNE 2022 13:30

**Stephan Odenwald<sup>1</sup>**, Ellen Fricke<sup>1</sup>, Wolfgang Einhäuser<sup>1</sup>

<sup>1</sup>Technische Universität Chemnitz, Chemnitz, Germany

### BIOGRAPHY

**Professor Stephan Odenwald** is a teacher and researcher in the field of physical man-machine interaction and Sports Engineering. He received his PhD degree in 2001 (lightweight composite structures). In 2004 he was appointed assistant professor and in 2011 full professor for Sports Equipment and Technology at Chemnitz University of Technology. His research interests are sensor-based characterization of man-machine-environment-interaction in field testing and mechanical simulations for testing sports equipment and medical devices.

### INTRODUCTION

Besides explicit signalling, road users communicate their intentions implicitly by their eye, head and body movements. The term intention in the context of this study is simply understood as a road user's plan, how to act in the immediate future.

### OBJECTIVES

The objective of the research work is to evaluate if the intention of a cyclist can be predicted by the analysis of posture, head and body movements as part of his or her multimodal communicative behavior. For the proof-of-principle, we approximated gaze direction by head orientation and did not measure the cyclist's eye movements. For our purposes this is likely an appropriate approximation, as a.) cyclists' gaze shifts in traffic are typically of a size that must involve a substantial head movement and often even require gaze shifts out of the effective oculomotor range (e.g., when looking backward to check for oncoming vehicles), and b.) head movements are a robust signal available to other road users, while eye movement estimates are more brittle. Nonetheless, we intend to verify this assumption by quantifying the role of eye movements in further research.

### METHODS

The experimental setup consists of a set of three ENVIS-IBLE Dialogg Dataloggers with integrated 6-DOF-IMUs. They are attached 1) on top of the helmet, 2) on the left

wrist and 3) on the bicycle's seattube, mounted in the bottlecage position). An additional sensor to supervise the cadence was attached to Unit 3). The subjects commuted on a defined route through the city, followed by a second cyclist that documented the ride on video for verification of the estimated behavior.

### RESULTS

This pilot study yielded two major results. Firstly, the chosen setup of the sensor systems successfully recorded the parameters of interest, namely the pedaling motion, the head rotation and the movement of the left arm. Secondly it could be demonstrated that posture and body movements of a cyclist are strongly related to his intended traffic behavior.

### CONCLUSION

Multimodal communication is the key to understand and predict behavior of road users.

Sharing relevant information to fellow road users early, will allow them to augment their own sensory capabilities, to direct their attention to safety-relevant signals, to react more efficiently to time-critical events and thereby to avoid hazards and increase road safety.

## 3.4 Effectiveness assessment of a warning driver assistance system for trucks to avoid accidents with pedestrians

THURSDAY 23 JUNE 2022 13:30

**Ernst Tomasch<sup>1</sup>**, Stefan Smit<sup>1</sup>

<sup>1</sup>TU Graz, Graz, Austria

### BIOGRAPHY

**Ernst Tomasch** is a Project Senior Scientist with focus on accident investigation and analysis. His research work includes future accident scenario development based on the changing accident configurations due to advanced driver assistance systems and automated driving as well as effectiveness assessment in terms of accident avoidance and injury mitigation of advanced driver assistance systems and automated driving.

### INTRODUCTION

The blind spot at trucks is a leading factor contributing to accidents with pedestrians. Accidents between trucks and pedestrians usually involve serious to fatal injuries to the pedestrian. Compared to passenger cars, the relative risk of being killed as a pedestrian in accidents involving trucks is 10 times higher. Driving assistance systems (DAS) that continuously monitor the blind spot are believed to have great potential for accident avoidance.

### OBJECTIVES

The objective of the study, which was commissioned by the BMK and the Austrian Road Safety Fund (VSF), is to assess the effectiveness of a warning DAS for trucks.

### METHODS

The method of the prospective virtual forward simulation is applied. The effectiveness of the DAS results from a before-after comparison of reconstructed real accidents of the CEDATU (Central Database for In-Depth Accident Analysis) road accident database. These cases are labelled as baseline. Each of the original cases are re-run under the condition that the truck involved is virtually equipped with a DAS (labelled as treatment). The assessment of the effectiveness is based on the collision speed of the baseline and treatment simulations.

In the treatment simulations, the DAS is simulated to the corresponding technical specifications of the Mobileye Shield+TM. The truck is equipped with two virtual camera systems that monitor the blind spot on the right and left

sides. A third camera monitors the front area of the truck. Pedestrians entering the detection range of the camera sensors of the DAS are detected in a vehicle speed range of 1 to 70 km/h. If the truck and the pedestrian are on a collision path, a warning is given by the DAS to the driver. Four different intervention strategies are investigated.

### RESULTS

Accident avoidance is clearly associated with conspicuity time. Scenarios with pedestrians from right (short conspicuity time) show a far lower avoidance potential compared to pedestrians from left (longer conspicuity time). The accident avoidance for all accident scenarios ranges between 12% and 50% depending on the conspicuity time and intervention strategy. The average potential for accident avoidance of up to 15% could be determined across all of the selected intervention strategies.

### CONCLUSION

Even though the results show a huge impact of DAS on the accident avoidance, the assessment shows that some accident scenarios cannot be avoided by such a system.

## O 3.5 Legal Challenges of automated driving to ensuring road safety

THURSDAY 23 JUNE 2022 13:30

Konrad Lachmayer<sup>1</sup>, **Susanne Gstöttner**<sup>1</sup>, Nik Widmann<sup>2</sup>

<sup>1</sup>Sigmund Freud PrivatUniversität, Wien, Austria, <sup>2</sup>PRISMA Solutions, Mödling, Austria

### BIOGRAPHY

**Konrad Lachmayer** is Professor of Public Law and European Law at the Sigmund Freud University Vienna.

**Susanne Gstöttner** is a research assistant at the Chair of Public and European Law at the Sigmund Freud University Vienna.

**Nik Widmann** is CEO at PRISMA Solutions.

### INTRODUCTION

The introduction of automated vehicles is closely connected with the issue of road safety. On the one hand, this safety has to be ensured whenever they are used; on the other hand, their very development offers great potential for reducing traffic accidents. However, the use of automated vehicles raises questions about the binding implementation of existing traffic regulations, which aim at ensuring said road safety for all road users by laying down the rules of conduct.

### OBJECTIVES

Existing regulatory approaches in central Europe seem to assume that automation systems observe traffic rules. However, their compliance with traffic rules is far from being a given. On the contrary, many rules directed at human drivers cannot easily be implemented by automated systems. For example, a number of general principles enshrined in traffic rules (like the crucial principle of not endangering other road users) assume central importance for controlling the behaviour of road users. Yet, one and the same principle might call for very different adaptations of behaviour in different contexts. This makes it difficult for automated systems to discern the concrete legal requirements. In light of such problems, this contribution aims to identify the legal framework and legal policy necessities under which traffic rules can be adequately communicated to and implemented by automated vehicles.

### METHODS

Based on the existing rules legal possibilities and limits are exemplarily shown in three legal systems (Germany, Austria, Switzerland). This analysis uses the functional method of legal comparison searching for solutions in problem-oriented manner. Since this area deals with issues at the interface between law and technology, special emphasis was placed on interdisciplinary discourse.

### RESULTS

Simply communicating the existing regulations to automated vehicles will not have the desired effect. A possible solution consists in digitising as well as concretising road traffic rules and thus increasing legal certainty as well as road safety. In order to do so, a separate set of legal rules that can be implemented by programming code is required.

### CONCLUSION

The use of automated vehicles on public roads raises questions about compliance with existing traffic regulations and ensuring road safety. A new separate set of legal rules that can be implemented by programming code can offer the required clear instructions and legal certainty. This link between law and technology enables a technically meaningful concretisation and structuring while prioritising road safety.



# ORAL PRESENTATIONS

## 04 Home Safety - COVID-19 Impacts



## 0 4.1 Emergency admissions for domestic accidents during the first Covid-19 lockdown in France

THURSDAY 23 JUNE 2022 13:30

Annabel Rigou<sup>1</sup>, **Nathalie Beltzer**<sup>1</sup>

<sup>1</sup>Santé publique France, Saint-Maurice, France

### BIOGRAPHY

**Nathalie Beltzer** holds a PhD in health economics and earned an experience of 15 years at a regional health agency (Observatoire régional de santé Île-de-France). In 2014, she joined the department of non communicable diseases at "Santé publique France". Currently she is leading a team working on the surveillance of injuries, seniors' health and neurodegenerative diseases. She is also leading a project focused on the burden of diseases in France.

### INTRODUCTION

In France, as in other countries, a total lockdown policy was implemented to fight the spread of the Covid-19 epidemic between March 17th and May 11th in 2020. During this first lockdown, Emergency Departments (EDs) reported a decrease in the use of their services for home and leisure injuries (HLI) for mild cases and an increase in severe cases, particularly among young children and the elderly.

### OBJECTIVES

In order to objectify what the EDs observed, the objective of this study was to describe the effects of lockdown on the use of EDs for HLI and the epidemiology for HLI, in metropolitan France.

### METHODS

We used data from six general EDs and three French paediatrics EDs participating in the French home and leisure injury permanent survey (EPAC) in 8 regions among 13. The EPAC methodology is based on the former European Home and Leisure Accident Surveillance System (EHLASS). We described and compared the number and percentage of HLIs treated in EDs during the lockdown period to those treated for the same period in 2019. We presented results by age, sex, location of injury, activity at time of injury, and injury mechanisms. We calculated hospitalization rates, as an indicator of severe case. We specifically studied two age groups: children under 15 years of age and people over 45 years.

### RESULTS

The number of HLIs treated in EDs decreased by almost 50% during the lockdown period compared to the same period in 2019 (7,115 vs. 15,881). This decrease occurred at all ages and among both men and women. Hospitalization rates, indicators for severe domestic accidents, increased among children under 15 years of age (+20%; 227 vs. 273) and people over 45 years of age (+5%; 449 vs. 470). The number of severe cases related to falls increased among children aged 2-6 years (+12%; 78 vs. 86) and those aged 65-84 years (+15%; 215 vs. 248). The number of severe cases related to housework among the over 45-year-olds (+25%, 40 vs. 50) has increased compared to 2019, especially during gardening activities.

### CONCLUSION

These results confirm what emergency services observed. They stressed the need for health policies to adapt HLI prevention during a lockdown period, particularly for prevention of domestic accidents for young children and the elderly.

## O 4.2 Fall fighters and Later Life Roadshows: Working with the private sector to implement a falls prevention and strength and balance programme during the Covid 19 pandemic

THURSDAY 23 JUNE 2022 13:30

**Ashley Martin<sup>1</sup>**

<sup>1</sup>The Royal Society for the Prevention of Accidents, Birmingham, United Kingdom

### BIOGRAPHY

**Ashley Martin** is the Public Health Adviser for the Royal Society for the Prevention of Accidents (RoSPA). He joined RoSPA in 2009 after over 20 years in injury prevention and public health in local government. Ashley advises on home safety policy and manages a range of falls prevention, home and product safety programmes, working with the public, national and local government, the health service, business and charity sectors.

### INTRODUCTION

The social distancing, self-isolation and “lockdown” guidelines during the COVID-19 outbreak have caused concern about accident prevention particularly in the home where most accidents occur. Deconditioning and isolation have led to an increasing risk of falls among older people, which already result in a third of a million hospital admissions in the UK every year. The restrictions have meant far fewer opportunities for older people to attend exercise classes or services like physiotherapy, chiropody, ophthalmology and their GP. Opportunities to have face-to-face conversations about safety or to rectify problems that lead to falls have been limited.

### OBJECTIVES

The project aimed to support people to make positive decisions about preventing falls in a positive life affirming way and to help relatives and friends support them in making choices that would improve safety in later life.

### METHODS

RoSPA worked with insurance company RSA to provide a suite of online resources to equip people to take action themselves at home. Research was conducted that showed that many people feel uncomfortable talking to older friends and relatives about the risks of falls. Twelve online strength and balance roadshows were delivered, providing taster sessions in strength and balance activity, Q&A sessions led by Later Life Training, and advice on improving safety in their homes. A web hub provided

further support with videos and downloadable materials containing exercises that can be undertaken at home, home safety information and signposting to local sources of support when face-to-face services resume.

Building on this programme, the RoSPA Fall Fighter scheme was launched in October 2021. Via a choice of routes, including an e-learning session, or live virtual classroom, individuals are equipped and empowered to promote key fall prevention messages.

### RESULTS

Over 260 people attended the roadshows. Delivering the initiative online was not a barrier to people in later life participating. 85% of people in later life said that the demonstration of strength and balance exercises would help them build such movements more regularly into their daily routine. 69% said the initiative would help them make their home safer. Media about the initiative reached 900,000 people. Full evaluation of the roadshows, and Fall fighters initiative will be presented.

### CONCLUSION

This innovative online approach to reaching people in later life and their families with clear advice about how to remain active and safe in later life has the potential to change many lives.

## O 4.3 Impact of the Covid-19 pandemic on unplanned hospitalizations and mortality for falls/injuries and femoral neck fracture in France

THURSDAY 23 JUNE 2022 13:30

**Marion Torres**<sup>1</sup>, Joël Coste<sup>1</sup>, Florence Canouï-Poitrine<sup>2,3</sup>, Jacques Pouchot<sup>4</sup>, Antoine Rachas<sup>5</sup>, Laure Carcaillon-Bentata<sup>1</sup>

<sup>1</sup>Santé publique France (French Public Health Agency), Saint-Maurice, France, <sup>2</sup>Univ Paris Est Creteil, Inserm, IMRB, Créteil, France, <sup>3</sup>APHP, Hôpital Henri-Mondor, Service de Santé publique, Créteil, France, <sup>4</sup>Service de médecine interne, hôpital européen Georges Pompidou, AP-HP, Université de Paris, Paris, France, <sup>5</sup>Department of Strategy, Studies and Statistics, French National Health Insurance (Cnam), Paris, France

### BIOGRAPHY

**Marion Torres**, PhD Epidemiology, Public Health

### INTRODUCTION

Falls are common in individuals aged 65 years or older and consequential. Control measures taken since the beginning of the crisis due to COVID-19, especially during the first lockdown, have modified lifestyles and utilization of the healthcare system.

### OBJECTIVES

The aim was to study the national and regional impact of the Covid-19 pandemic on unplanned hospitalizations and mortality for falls/injuries and femoral neck fracture among persons aged 65 years and older between January and October 2020 in France.

### METHODS

The French National Health Database was used to identify unplanned hospitalizations for falls/injuries and femoral neck fracture from January 2017 to October 2020 and to identify mortality by these causes (excluding COVID-19 as associated cause of death) during the first lockdown and one month after in 2020. National and regional incidence rate ratios for hospitalizations (2020 versus 2017-2019) and mortality (2020 versus 2015-2017) were estimated using Quasi-Poisson regressions (during and after lockdown) adjusted for potential time trends. Subgroups analysis according to age, sex, comorbidities, type of residence (home, nursing home/long-term care) and region (grouped into four areas according to the regional level of COVID-19 mortality rate during the first lockdown) were performed.

### RESULTS

During the first lockdown, a significant decrease in hospitalization rate was observed: -30% for falls/injuries and -13% for femoral neck fracture with a dose-response relationship between decrease in hospitalization and regional level of Covid-19 mortality. During this period, a significant increase in mortality was also observed: +21% for falls/injuries and +57% for femoral neck fracture, especially at home or in nursing home/long-term care. After this lockdown, decrease in hospitalization rate and increase in mortality persisted for falls/injuries but not for femoral neck fracture.

### CONCLUSION

In France, a dramatic decrease of unplanned hospitalizations for falls/injuries occurred during the Covid-19 pandemic, mostly during the first lockdown, while the mortality due to falls/injuries or femoral neck fracture increased, especially at home. These results suggest an underuse of care, which could also concern other important health issues and may have a mid- to long-term impact on frailty, functional decline and mortality. It seems necessary to monitor this evolution in a longer period and to propose alternative care access in crisis contexts.

## 0 4.4 Implementation fidelity of the ‘Stay One Step Ahead’ home safety intervention; a mixed methods analysis

THURSDAY 23 JUNE 2022 13:30

**Sabrina Stewart**<sup>1</sup>, Denise Kendrick<sup>1</sup>, Mike Hayes<sup>2</sup>, Michael Craig Watson<sup>3</sup>, Michael Taylor<sup>1</sup>, Elizabeth Orton<sup>1</sup>

<sup>1</sup>University Of Nottingham, Nottingham, United Kingdom, <sup>2</sup>Child Accident Prevention Trust, London, United Kingdom, <sup>3</sup>Institute of Health Promotion and Education, Lichfield, United Kingdom

### BIOGRAPHY

**Dr Sabrina Stewart** is a Junior Clinical Fellow in the Paediatrics Emergency Medicine Department at Imperial College Healthcare NHS Trust. She received her bachelor’s degree in Anthropology from Dartmouth College and her medical degree from the University of Nottingham. Her research interests include health inequalities, injury prevention in paediatric and elderly populations, and acute pain management.

### INTRODUCTION

Rates of unintentional home injuries in pre-school children including serious and fatal injuries, are higher in those living in socioeconomically disadvantaged circumstances. Evidence supports using education and providing home safety equipment to improve safety behaviours, and home visiting programmes to reduce child injury rates. Translating this evidence into effective home safety programmes remains a challenge. Few child injury prevention programmes evaluate intervention fidelity despite its role in moderating outcomes and likely success when replicated. Stay One Step Ahead (SOSA) is a multi-component intervention delivering evidence-based resources by Children’s Public Health 0-19 Nursing Service, children’s centres and Small Steps Big Changes (SSBC) family peer mentors to parents living in disadvantaged communities in Nottingham, UK, to improve safety practices and reduce unintentional child injuries within homes.

### OBJECTIVES

(a) to evaluate the fidelity of implementation of each intervention component and (b) to examine the impact of planned facilitation strategies on intervention fidelity to inform future implementation.

### METHODS

A mixed methodological evaluation of SOSA was conducted using a conceptual framework for implementation fidelity triangulating data from questionnaires and semi-structured interviews with parents and practitioners, observations of parent-practitioner contacts, and intervention stakeholder meeting minutes. Quantitative

data were analysed using logistic regression and descriptive statistics. Thematic analysis was used for qualitative data.

### RESULTS

Parents in intervention areas were more likely to receive home safety advice from a practitioner than those living in matched control areas. Monthly safety messages and home safety activities were delivered by SSBC family peer mentors with fidelity. Content most frequently adapted were the home safety checklist used by the Children’s Public Health 0-19 Nursing Service, and safety week resources in children’s centres. Fidelity facilitators included collaboration between practitioner groups and practitioner engagement. Planned strategies comprising standardised training and intervention stakeholder meetings maintained fidelity initially but their effect was not always sustained. Fidelity was challenged by realignment of service delivery and staffing resources within children’s centres and Children’s Public Health 0-19 Nursing Service, the Covid-19 pandemic altering parent-practitioner contacts, and changing practice as time elapsed from training due to competing priorities faced by practitioners.

### CONCLUSION

Consistent with similarly complex interventions, SOSA was delivered with variable fidelity in a challenging environment. The findings add to the small body of evidence on implementation fidelity of home injury prevention programmes, offering insight for future delivery.

## O 4.5 TOM & Co: the (im)possibilities of implementing digital technology in the fall prevention program TOM

THURSDAY 23 JUNE 2022 13:30

**Kirsten Evenblij**<sup>1</sup>, Rozan van der Veen<sup>1</sup>, Marian Broere<sup>2</sup>, Inge Mohede<sup>3</sup>, Barry Wittebol<sup>4</sup>, Branko Olij<sup>1</sup>

<sup>1</sup>VeiligheidNL, Amsterdam, Netherlands, <sup>2</sup>Purpose, Utrecht, Netherlands, <sup>3</sup>Nutricia, Zoetermeer, Netherlands, <sup>4</sup>ONVZ Health Insurance, Houten, Netherlands

### BIOGRAPHY

**Kirsten Evenblij** has a master's degree in Global Health and Epidemiology and a PhD in end-of-life care. In 2020 Kirsten started working at VeiligheidNL as a researcher and consultant. She loves to combine scientific knowledge with experiences from professionals in the field and focusses on implementing tools and programs for fall prevention.

### INTRODUCTION

Thuis Onbezorgd Mobiel (TOM) is a multidisciplinary 14-week group-based fall prevention program for adults aged 65 years or older with an increased risk of falling. The COVID-19 measures complicate the implementation of TOM. However, the need for fall prevention programs such as TOM is higher than it has ever been: COVID-19 increases risk factors for falls such as inactivity, malnutrition and social isolation among older adults. This shows the need for a COVID-proof version of TOM. Digital technology can be a useful method for delivery of TOM during COVID-19.

### OBJECTIVE

To develop, execute and evaluate a COVID-proof version of TOM.

### METHODS

Focus groups were performed to gather input from former TOM participants and professionals on how to adapt TOM to a COVID-proof version, including digital technology. Based on this information "TOM & Co" was developed and tested during a 6-week pilot. Afterwards, focus groups were held with TOM & Co participants and professionals to evaluate the program.

### RESULTS

The main changes to TOM included a maximum group size of 6 persons (instead of 12) for exercise training, performing exercises outside (instead of inside), individual lunches at home (instead of group lunches), digital nutrition

education and digital fall prevention education (instead of live meetings). Participants were pleased to partake in a program that met the COVID-19 measures. However, both participants and professionals did not consider TOM & Co to be a good alternative for TOM, mainly because of the limited social contacts as a result of restricted group sizes and the limited number of live meetings. The implementation of digital components was also very challenging: older adults found it very difficult to work with and communicate using a digital communication platform and the digital buddies spent a lot of time on it. Because of these issues, participants and professionals did not enjoy TOM & Co as much as TOM and they experienced less social bonding compared to the original TOM program.

### CONCLUSION

Social bonding is TOM's largest success factor and the most important motivator for older adults to participate and keep participating. It proved to be challenging to adhere to the COVID-19 measures and implement digital technology in TOM without subtracting from its main success factor. The lessons learned from TOM & Co provide relevant suggestions for modifying interventions when future developments, such as COVID-19, demand a different approach.

# ORAL PRESENTATIONS

## 05 Sports and Recreational Safety - Exposure and Risk



## O 5.1 KfV Exposure Survey

THURSDAY 23 JUNE 2022 15:30

**Carl Neumayr<sup>1</sup>**

<sup>1</sup>KfV, (Austrian Road Safety Board), Vienna, Austria

### BIOGRAPHY

**Carl Neumayr** studied sociology at the University of Graz specializing in quantitative research methodology and data analysis. In 2014-15 he was a doctoral research fellow with the Minnesota Population Center at the UoM. In 2016 he was awarded the young scientist award by the KfV. He has been teaching data analysis and applied science at the KfV in Graz since 2013. Carl is working as a Data Scientist at the KfV (Austrian Road Safety Board).

Risk assessment is an important aspect of injury prevention. While risk is always a matter of probability, there is an important distinction between the probability of the occurrence of an event such as an accident, and the probability of serious injury or even death resulting from such event. The second form of risk is often looked at solely through injury data, which does give a very good indication of the level of injuries one can expect if a certain accident occurs. There are usually very well documented sources for injury data in the form of register data as well as explicit surveys such as the IDB, which is also conducted by the KfV.

In order to assess the risk of an accident happening in the first place though, additional information about the level of activity is necessary. To that end we introduced a survey that keeps track of the extent to which people do certain activities and use certain means of transportation.

We ask about habits regarding traffic and transportation, sports and recreation, as well as household. The survey is conducted biannually, in order to account for seasonal differences and is representative of the general population of Austria. We specifically designed the survey in a way that allows us to compare different activities with each other and use them in connection with the IDB data.

My presentation will showcase our data's potential for risk assessment, based on different types of sports. That means we will not only look at individual sports, but at different groups of activities that can be grouped together based on statistical commonalities. Based on our injury data, we can look at the risk of different types of activities by age groups and gender. This allows us to target specific groups, dependent on their particular risks, for injury prevention. It also gives us a better understanding of how dangerous activities really are, in relation to the extent to which they are exercised.



## 5.2 Trends in sports-related emergency department visits in the Netherlands, 2009-2018

THURSDAY 23 JUNE 2022 15:30

**Branko Olij<sup>1</sup>**, Ellen Kemler<sup>1</sup>, Huib Valkenberg<sup>1</sup>

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Branko Olij** obtained his master's degree on Nutrition & Health at Wageningen University. After University, he started his PhD at the Erasmus Medical Centre, which resulted in his thesis 'The impact and prevention of fall-related injuries among older adults'. In 2019, Branko started working as a research/data analyst for the Consumer Safety Institute. He currently works in the areas of road safety, product safety, sports injury prevention, and falls prevention.

### INTRODUCTION

Even though maintaining a physically active lifestyle through sports has many health benefits, sports activities also entail a risk for injury among both youngsters and adults. These sports injuries have a major financial impact, with an estimated annual societal cost of 3 billion euros in the Netherlands. In addition to the economic impact, sports injuries affect an individual's physical and psychosocial wellbeing. Prevention of sports-related injuries is therefore warranted. To understand emerging sports injury trends and guide policy development aimed at preventive efforts, it is important to monitor and describe nationwide trends of sports injuries.

### OBJECTIVES

We aimed to describe time trends of emergency department (ED) visits for severe sports-related injuries in the Netherlands, from 2009 to 2018.

### METHODS

Data were extracted from the Dutch Injury Surveillance System by age, gender, type of sports activity and injury diagnosis, from 2009 to 2018. Absolute numbers and time trends of ED visits for severe sports-related injuries were calculated.

### RESULTS

Between 2009 and 2018, the overall number of ED visits for severe sports-related injuries in the Netherlands have significantly decreased by 14%. This trend was seen among men (-12%), women (-19%) and individuals aged 18-34 years (-19%). The number of ED visits has significantly decreased over time in soccer (-15%), ice-skating (-80%) and in inline/roller skating (-38%). This was not the case in road cycle racing (+135%) and mountain biking (+80%). In terms of sports injury diagnoses, the number of fractured wrists (-15%), fractured hands (-37%), knee distortions (-66%), and fractured lower legs (-38%) significantly decreased over time.

### CONCLUSION

Our study showed a promising reduction in the number of ED visits for severe sports-related injuries across most age groups and sports activities. As the number of ED visits increased in road cycle racing and mountain biking, it is important to find out what caused these increases. Furthermore, it is essential to determine trends in exposure hours and to evaluate and implement injury prevention programs specific for these sports activities.

## O 5.3 Situation of Drowning and Drowning Prevention in Europe

THURSDAY 23 JUNE 2022 15:30

**Detlev Mohr<sup>1</sup>**

<sup>1</sup>International Lifesaving Federation of Europe, Potsdam, Germany

### BIOGRAPHY

born in 1954

1975-1980 Study of Physics in Magdeburg

1990 Dr. rer. nat. in Biophysics

1980-1990 Scientific Staff of OSH Authority in Potsdam

1990-2014 Director of OSH Authority Land Brandenburg

2014-2020 President of State Office for OSH, Consumer Protection and Public Health Land Brandenburg

1998-2021 Vice President German Lifesaving Association DLRG

since 2012 President of International Lifesaving of Europe ILSE

since 2012 Vice President of International Lifesaving ILS

### INTRODUCTION

One of the leading causes of accidental death worldwide is drowning – also in Europe. In average 3.5 people drown every hour in Europe.

There are huge differences between the countries in Europe. In 2018 and also in the Corona summer 2020, the number of drownings has dramatically increased.

23,000 people die every year in European waters. Thousands suffer lifelong brain damage as a result of non-fatal drowning accidents.

### OBJECTIVES

Drowning is preventable. Undertaking preventive measures to enhance safety is therefore essential. 90% of the deaths among children could be averted. Such actions need to be intersectoral to ensure safe water environments using the combined approaches of engineering and modifying the environment, legislation and education.

### METHODS

Proven interventions to reduce drowning among children include removing or covering water hazards, installing four-sided pool fencing, using personal flotation devices and instituting immediate resuscitation.

The lifesaving federations started a program to increase the ability to swim in children. The program consists of various measures, such as public information, supporting communities to keep public pools open and helping with lifeguard services, supporting schools by taking over swimming lessons and special programs to teach the

teachers, to provide information on swimming programs to less educated parents and to families with a migration background and the cooperation with financial supporters.

### RESULTS

In April 2021, the UN General Assembly passed its remarkable Resolution on Global Drowning Prevention. On July 25th, 2021, we celebrated the first World Drowning Prevention Day ever.

ILSE has analyzed the data of the ca. 22,000 DBAs in Europe. The huge majority of the DBAs have a good or excellent bathing water quality (health aspect) but they differ significantly regarding the safety aspects. Only a small part of the DBAs has an appropriate safety standard. Other data demonstrate that supervision by lifeguards reduces the number of drownings dramatically and significantly. Public information, i.e. to the parents, would support our efforts to reduce child drowning.

### CONCLUSION

The EU bathing water policy should be amended to reduce the number of drownings. The EU Bathing Water Directive should be given a safety dimension in addition to its health dimension in order to protect not only the health of the EU citizens but also the safety of their life.

ILSE urges every region, every nation, every municipality and everybody to take action to reduce and to end drowning. Anybody can drown – but no one should!

## O 5.4 Trampoline Park Safety – the perspective of users

THURSDAY 23 JUNE 2022 15:30

**Sandra Nascimento<sup>1</sup>**, Joana Albuquerque<sup>1</sup>, Miguel Moreira<sup>2</sup>, Vasco Peixoto<sup>3,4</sup>

<sup>1</sup>APSI, Portuguese Association for Child Safety Promotion, Lisboa, Portugal, <sup>2</sup>Universidade de Lisboa, Faculdade de Motricidade Humana, Spertlab, Lisboa, Portugal, <sup>3</sup>NOVA National School of Public Health, Public Health Research Centre, Universidade NOVA de Lisboa, Lisboa, Portugal, <sup>4</sup>Comprehensive Health Research Centre - Universidade Nova de Lisboa, Lisboa, Portugal

### BIOGRAPHY

**Sandra Nascimento**, APSI President and Technical Director

Psychologist, with specializations in Health and Clinical Psychology and Community Psychology, with more than 20 years of experience in health and safety promotion, protection of children's and consumer rights and safety of children's products. She is involved in the design and the coordination of programs, action plans and projects and is a member of several technical committees and working groups on these areas.

### INTRODUCTION

In the past two decades, the use of trampolines in leisure activities has greatly increased worldwide. With the appearance of trampoline parks, related injuries increased and are a common source of paediatric injury. Although fatalities and permanent disability are rare, they imply significant burden together with other injuries such as sprains and fractures.

### OBJECTIVE

It is recognised that the safety of Trampoline Parks (TP) is related with the operation procedures. We aimed at identifying problems reported by users in TPs.

### METHODS

A content analysis on online reviews available in different TPs was conducted. The data collected on the main users' complaints was extracted based on two cumulative criteria: reviews with low ratings and reviews with complaints or negative descriptions about the trampoline parks. Through a content analysis of 560 reviews, 249 registration units were obtained, which were coded into four main categories.

### RESULTS

The registration units mainly reported situations and issues related to the safety of users (58%), linked with the supervision of the activity by staff; the instructions of use and safety rules; number of users per trampoline space and area; the characteristics of the users and the equipment conditions. The quality and hygiene of the parks' facilities and equipment (21%) were also topics that emerged. There were references to accidents or injuries that occurred during the activity in the park (12%), and to other situations that have implications in the use of trampolines (9%), such as the lack of inclusion and accessibility.

### CONCLUSION

Adequate staff intervention, compliance with safety rules (e.g., one user per trampoline, capacity of areas/equipment) and information and instructions supplied to the users do not seem to be a matter of course. There is a need to guarantee the presence of qualified and well-trained staff in a sufficient number for adequate supervision. TPs must provide clear and understandable information to users through adequate safety briefings before activities and before entering TPs.

## O 5.5 Is the prescription of “appropriate” running shoes an evidence-based preventive measure for running-related injury?

THURSDAY 23 JUNE 2022 15:30

**Laurent Malisoux<sup>1</sup>**

<sup>1</sup>Luxembourg Institute of Health, Luxembourg, Luxembourg

### BIOGRAPHY

**Laurent Malisoux** is the leader of the Physical Activity, Sport & Health research group at LIH. His main fields of expertise are sports injury prevention, running biomechanics and physical activity. Laurent completed his PhD in 2006 on the impact of training and unloading on contractile properties of single human muscle fibres. Over the last years, he focused on the prevention of running-related injuries, and the objective measurement of physical activity.

### INTRODUCTION

Endurance running is one of the most popular forms of physical activity around the world, with numerous health benefits. Running can be practiced almost everywhere and requires mainly a pair of “appropriate” running shoes. However, the term “appropriate” is ambiguous, and the properties of running shoes have always generated hot debates among clinicians, coaches and athletes, whatever the level of practice.

Indeed, the main drawback of regular running practice is the high incidence of musculoskeletal injuries, which is considered a major barrier to continued participation. The running shoe may potentially play an important role in injury prevention as it represents the main interface between the foot and the ground. Consequently, some shoe features may influence the burden of repetitive external mechanical load applied to the musculoskeletal system. Over the last decades, running shoes have been prescribed based on matching shoe features to foot morphology. This strategy aligns with the popular belief that footwear is one of the main extrinsic factors influencing running-related injury risk. Despite the constant progress in running footwear technology, injury rate remains high.

### OBJECTIVES

Therefore, the purpose of this presentation is to clarify what scientific evidence is available for clinicians and coaches to provide the runners with advice for the choice of “appropriate” running shoes with the view to reducing injury risk.

### METHODS

The literature used is based on a non-systematic search of the MEDLINE database and focuses on work investigating the effect of shoe features on injury risk in running.

### RESULTS

Few randomised trials have been conducted so far. These studies investigated minimalist footwear (n=3), motion control systems (n=2), heel-to-toe drop (n=1) and cushioning (n=2).

### CONCLUSION

Overall, it is still too early to formulate evidence-based prescriptions regarding the choice of running shoe features. Nevertheless, some results suggest that some shoe features may be of benefit to certain subgroups of runners. It seems that some motion control in cushioned shoes is of relevance to injury risk, especially for runners with highly pronated feet. In addition, it seems safe to recommend low drop footwear for occasional runners. Recent findings also suggest that cushioning has a preventive effect, especially in light runners. Of course, these studies need to be confirmed before any shoe prescription guidelines are scientifically justified. Caution should be taken when generalizing these preliminary findings from research, as well as when facing simplistic explanations and common sense.

## ORAL PRESENTATIONS

# 06 Technology Solutions for Safety - Reality Checks



## O 6.1 Improving cyclists' safety via new C-ITS technologies in automated and connected mobility

THURSDAY 23 JUNE 2022 15:30

**Cornelia Zankl<sup>1</sup>**, Karl Rehr<sup>1</sup>

<sup>1</sup>Salzburg Research Forschungsgesellschaft, Salzburg, Austria

### BIOGRAPHY

**Cornelia Zankl** is working as an experienced project manager at Salzburg Research focussing on Mobility-as-a-Service, automated and connected transport and e-mobility solutions. Currently she is responsible for the research project Bike2CAV, and she coordinates the Salzburg pilot site in the Horizon-2020 project SHOW (Shared automation operating models for worldwide adoption) as well as the demonstration phase in the KLIEN-project EMotion (Electric Mobility in L-Category Vehicles for all generations).

### INTRODUCTION

Recent studies argue that the rollout of connected and automated vehicles (CAVs) will have significant impact on vulnerable road users (VRUs). New technological developments in the field of Vehicle-to-X-communication (ITS-G5, Cellular-V2X), combined with sensor systems, lay the ground for cooperative detection and mitigation of collision risks, not only focusing on the reliable detection of VRUs as passive traffic participants, but enabling them to play an active role by transmitting their own position.

### OBJECTIVES

The Austrian research project Bike2CAV (the acronym stands for "Bicycle to Connected Automated Vehicle") aims at improving cyclists' safety via C-ITS technologies. Using an integrated proof-of-concept prototype and real-world data, the project's goal is to validate methods for applying the cooperative detection of collision risks and non-distracting warning systems<sup>1</sup> to benefit cyclists.

### METHODS

Within the scope of the project, methods in four research areas are developed and evaluated:

- (1) precise self-localisation of cyclists
- (2) cyclists' perception of CAVs
- (3) detection of cyclists' intentions
- (4) cooperative detection of collision risks for cyclists

Methods (1) to (3) are the prerequisite for the cooperative detection of collision risks (method (4)).

### RESULTS

In the first 15 months of the project, the above-mentioned methods were developed. The validated methods will then be combined for the first time in a proof-of-concept prototype. This prototype will be tested in two real-world scenarios at intersections in a rural and an urban area in Salzburg through controlled experiments. At the EU Safety Conference, preliminary results of the first real-world tests on the precise self-localisation of cyclists (method (1)) will be presented. In a real-world study, the localisation accuracies of the following three technologies will be compared and evaluated with the help of a high-precision map (HD-map): 1) prototype with external INS-supported multi-frequency GNSS-RTK, 2) Smartphone Xiaomi Mi9 with a multi-frequency and IMU-supported GNSS sensor, 3) C-ITS enabled bike with IMU/GNSS-sensor. The main focus is on positioning accuracy and reliability, whereby values of less than 50 cm and 99.9% respectively are targeted.

### CONCLUSION

This study is a contribution to test new methods for a more precise self-localisation of cyclists and thus to increase the safety of cyclists in road traffic.

<sup>1</sup> The non-distracting warning systems are subject of a separate abstract submitted by Eva Hollauf et al.

## O 6.2 Digital “Mind your step” weather warning for people of advanced age

THURSDAY 23 JUNE 2022 15:30

Christoph Feymann<sup>1</sup>, **Martin Pfanner**<sup>2</sup>, Michael Marte<sup>3</sup>, Marcus Mayer<sup>3</sup>

<sup>1</sup>KFV (Austrian Road Safety Board), Vienna, Austria, <sup>2</sup>KFV (Austrian Road Safety Board), Bregenz, Austria, <sup>3</sup>UBIMET GmbH, Vienna, Austria

### BIOGRAPHY

- Studies in Commercial Science at the Vienna University of Economics and Business; Graduation in 1992
- A.C. Nielsen Company GmbH, global marketing research company, Vienna
- Head of organisational projects at Gebr. Fleck GmbH, recycling company, Leipzig
- Head of customer service at Walter Bösch KG, house technology company, Lustenau
- Since 2006 at the Austrian Road Safety Board, communications and marketing, Bregenz

### INTRODUCTION

Nearly every second accident in Austria occurs at home. People of advanced age are particularly affected by domestic accidents. 90 percent of the victims of fatal domestic accidents are older than 64 years. The risk of an accident in the residential environment is also particularly high for seniors. To prevent older people from weather-related falling accidents, the KFV has developed a digital warning service together with UBIMET GmbH, Austria's leading private weather service. This warning service is based on a correlation analysis between hospital and weather data and considers the influence of specific weather conditions, such as heat stress, cold stress, air pressure changes, rain, snow or black ice, on the risk of indoor and outdoor falls.

### OBJECTIVES

In the course of this project, an innovative SMS alerting system, warning of thermophysiological effects, weather changes, air pressure fluctuations, snowfall and freezing rain, has been developed. This warning system is based on scientific correlations of large amounts of data and thus accurately and much earlier (as it would be possible with the help of conventional weather forecasts) shows corresponding falling risks.

### METHODS

Aid organisations and private persons are warned at an early stage via SMS of dangerous local weather situations. Within this warning message, preventive measures to reduce the risk of falls are recommended. The rescue and nursing staff can draw the attention of vulnerable persons, especially seniors, to this increased risk and pre-

vent avoidable falls by taking appropriate measures. A pilot project in cooperation with important multipliers (Red Cross, Samaritan Association, Mobile Aid Services, Home Nursing) is being conducted in Vorarlberg, Austria. In a second step, interested private persons, in particular seniors and their relatives and caregivers, will receive this “Mind your step” notification and concrete recommendations for preventive measures directly on their smartphones.

### RESULTS

With this new digital information service, we can make a valuable contribution to reducing the number of accidents and preventing a lot of human suffering. We can also reduce the high accident costs in the leisure sector – medical treatment costs, care costs, administrative costs, insurance costs – and organisational effort.

### CONCLUSION

The overarching goal is to establish an early warning system based on the results of the pilot project. As a result, vulnerable sections of the population are to be warned at an early stage about dangerous situations both in the household and in familiar environments that clearly correlate with certain weather conditions – via multipliers (emergency services, home nursing, mobile aid services, media etc.) or directly by SMS. At the same time, preventive measures to reduce the risk of falling are communicated.

## 6.3 Evaluation of an intervention to improve home safety for preschool children: a controlled before and after study

THURSDAY 23 JUNE 2022 15:30

**Michael James Taylor**<sup>1,2</sup>, Elizabeth Orton<sup>2</sup>, Michael Craig Watson<sup>3</sup>, Mike Hayes<sup>4</sup>, Tina Patel<sup>2</sup>, Matthew Jones<sup>2</sup>, Carol Coupland<sup>2</sup>, Denise Kendrick<sup>2</sup>

<sup>1</sup>Healthcare Public Health Team, National Health Service Midlands, Nottingham, United Kingdom, <sup>2</sup>School of Medicine, University of Nottingham, Nottingham, United Kingdom, <sup>3</sup>Institute of Health Promotion and Education, Lichfield, United Kingdom, <sup>4</sup>Child Accident Prevention Trust, London, United Kingdom

### BIOGRAPHY

**Dr Michael James Taylor** is a Specialty Trainee in Public Health Medicine. His training is taking place in the East Midlands region of the United Kingdom and his research interests include preventative medicine, behavioural science and obesity.

### INTRODUCTION

Injuries at home contribute substantially to morbidity and mortality in preschool children, particularly in socio-economically disadvantaged families. Multicomponent interventions have been shown to improve child home safety but are not consistently implemented in practice.

### OBJECTIVES

To evaluate, using parent-reported outcomes, an intervention to improve child home safety for families living in urban areas. The primary outcome (having a safe home) was whether families practiced all three of: safe poison storage, safe stairgate use, and having a working smoke alarm. Secondary outcomes included injury rates and additional safety practice (such as fire evacuation planning) adoption.

### METHODS

A multicomponent child home safety intervention, collaboratively produced by parents, researchers, and practitioners, was implemented in four Nottingham City electoral areas ('wards'). Components included: monthly safety messages; home safety activity sessions and quarterly family 'safety weeks'; and home safety checklists. Questionnaires were completed by families who had a child aged 2-7 months at baseline and lived in either an intervention ward, or one of five local matched control wards. Follow-up time was 24 months. Families could opt to report injury data at three-monthly intervals. Non-injury measures were reported at baseline and 12-month and 24-month follow-up. Data collection ceased in March

2021. Multilevel regression was used to assess adoption of safety practices and injury rates.

### RESULTS

At baseline 762 families were recruited (including 361 [47.4%] intervention families); 531 (including 233 [43.9%] intervention families) completed the final 24-month questionnaire. At 24 months, the intervention was not associated with significant changes to the primary outcome (odds ratio 1.58 [95% confidence interval 0.98 to 2.55],  $p = 0.06$ ) or rate of injuries (incident rate ratio 0.89 [95% CI 0.51 to 1.56],  $p = 0.68$ ), but was associated with increased likelihood of safe poison storage (OR 1.81 [95% CI 1.06 to 3.07],  $p = .029$ ), having a fire evacuation plan (OR 1.81 [95% CI 1.06 to 3.08],  $p = .030$ ), and more home safety practices being performed ( $\chi^2 = 0.46$  [95% CI 0.13 to 0.79],  $p = .006$ ).

### CONCLUSIONS

The intervention did not significantly affect the primary outcome but led to increased adoption of safe household poison storage, having a plan for fire evacuation, and more home safety practices being performed. Funders should consider commissioning evidence-based multicomponent child home safety interventions. Further large-scale evaluations are required to explore their effect upon injury occurrence. The COVID-19 pandemic might have affected findings.



## O 6.4 Portuguese e-maritime incident processing

THURSDAY 23 JUNE 2022 15:30

João Pombo<sup>1</sup>, José Coelho<sup>1</sup>

<sup>1</sup>Portuguese Maritime Authority, Lisbon, Portugal

### BIOGRAPHY

Commander **José Coelho** was born in Portugal in 1980. Having joined the navy in 1998, he served, at sea, for 10 years. Ashore, after serving in the joint Command for Military Operations he was assigned as Captain of the Port and Local Maritime Police Commander. Since 2020, he has been the head of the National Maritime Authority's Safety Division. He is a regular presence on maritime safety forums.

### INTRODUCTION

The MAR+SEGURO platform is made up of a structured database correlated with internal and external services. This allows the analysis of contextualized information according to time, place, and activity, which can generate risk scenarios and assess the possibility of intervention, so as to make the sea, bathing areas, and coastline safer for all. The presentation will focus on one of those systems, Segmar@Mobile, which was launched last year. It enables emergency situations that are dealt with by lifeguards to be reported digitally using devices such as mobile phones, tablets, and computers.

### OBJECTIVES

With this platform, Portugal's shoreline and bathing areas will be safer and easier to navigate for everybody, from domestic users to foreign tourists. This allows better information exchange and better response to potential emergency situations.

### METHODS

Portuguese Maritime Authority is responsible for beachgoers' safety. Additionally, it is supported by the Portuguese Institute of Lifesaving, which regulates lifesaving activities, and by the Capitánias, as the Local Maritime Authorities, which ensure safety compliance in accordance with Portuguese regulations. Thinking about how technological advances could facilitate this effort Portuguese Maritime Authority developed "SEGMAR@Mobile", a system that makes information flow between lifeguards and local authorities easier, more reliable and effective.

### RESULTS

Only one year after launching the platform, there has still been limited feedback received. Additionally, the major benefit of this system will only be realized once the large system "MAR+SEGURO" is up and running and correlating information on maritime accidents, pollution events, meteorological data, and maritime traffic. So far, the main results are an increase in information flow, the automatic validation of data, and the reduction of paper used for delivering the information.

### CONCLUSION

Considering that prevention is as effective as knowing the real risks at a given time and location, these indicators will be crucial to the implementation of safety measures by the Portuguese Maritime Authority and all the agencies involved in emergency response, thereby paving the way for a reduction in the number of maritime accidents and their consequences in Portuguese Sea bathing areas, and coastline.

## O 6.5 Advanced driver assistance systems in professional driving: About loopholes, attitudes, knowledge and training

THURSDAY 23 JUNE 2022 15:30

**Martin Winkelbauer<sup>1</sup>**

<sup>1</sup>KFV, (Austrian Road Safety Board), Vienna, Austria

### BIOGRAPHY

Researcher at KFV's road safety division since 1993. Mechanical engineer from education, initially concerned with driver education and vehicle technology. Currently focussing on truck safety, advanced driver assistance systems, cargo securing, bicycle and motorcycle safety.

### INTRODUCTION

Currently, obstacles to the implementation of autonomous driving are detected faster than they can be removed. Predictions for the first autonomous mass production car to enter the market have been shifted repeatedly. This extends the period for drivers to deal with a most diverse road traffic system. Even without scientific proof we know that hardly any car driver reads the owner's manual.

Experience has shown that the diversity of vehicle handling is strongly increasing. It is not just that the vehicles offer different levels of driver support and different advanced driver assistance systems (ADAS), these systems show very diverse performance among different manufacturers, among types and even different releases of the same type. There are different buttons, levers, or menu positions to activate the ADAS and change their parameters.

To make the most out of the idea of an ADAS, there are several conditions, starting with a reliable function: No missing alarms, no false alarms. The systems must be bought, they must be properly used, not deactivated, and their limitation must be understood by the users. The most critical problem is probably misuse.

### OBJECTIVES

The work to be presented focused on the loopholes of the process outlined above in the field of professional driving. What are the motives of truck owners and fleet managers to purchase universally equipped vehicles, how do they inform their employees, what are the rules set up

by companies? Where does the knowledge of the fleet owners and operators come from? Are there differences between heavy and light trucks and probably passenger car fleets as well? What is the role of the truck manufacturers? What about lifetime of trucks and market (or fleet) penetration?

### METHODS

A training course was developed and piloted. Fleet owners, operators, academics and drivers were interviewed.

### RESULTS

The presentation will provide some answers to these questions. It will outline differences between small and large fleets as well as between small and large vehicles. In addition, it will feature a proposed measure, i.e. a training lecture for professional drivers and the experiences made during the pilot phase of the training project.

### CONCLUSIONS

Loopholes can be found in all parts of the process, from acceptance of manufacturers' training to drivers' understanding of ADAS functions. A two-hour course was well received by participants.

# ORAL PRESENTATIONS

## 07 Road Safety - Vulnerable Road Users



## 0 7.1 Engaging European citizens in improving road safety: the European Road Safety Charter initiative

FRIDAY 24 JUNE 2022 09:00

**Wouter Van den Berghe<sup>1</sup>**, Isabel Verwee<sup>1</sup>, Sophie Vanhove<sup>1</sup>, Alexandra Humphris-Bach<sup>2</sup>

<sup>1</sup>Vias institute, Brussels, Belgium, <sup>2</sup>Ricardo Energy & Environment, Harwell, United Kingdom

### BIOGRAPHY

**Wouter Van den Berghe** has two Master's Degrees in Engineering and has just obtained a PhD in relation to road safety policy at UCL in London. He has 40 years of professional experience as a researcher, consultant, trainer and manager, mainly in the public and non-profit sector. In 2013 he joined Vias institute as the Research Director. He is leading several European projects in the field of road safety.

### INTRODUCTION

The European Road Safety Charter (ERSC) is a large civil society platform on road safety, based on a free and active membership. It is currently the biggest civil society network on road safety in the world.

### OBJECTIVES

The objectives of the European Road Safety Charter are to encourage and support associations, schools, universities, companies and authorities to take action in the field of road safety, acknowledge contributions to road safety improvements by civil society, support civil society members in acquiring and sharing knowledge, and facilitate dialogue for the transfer of experiences and practices at all levels in the European Union.

### METHODS

The members of the European Road Safety Charter are supported by a central coordination team, currently resourced by Ricardo and Vias institute, funded by the European Commission. Since 2021 National Relays have been established in every EU Member State. The role of the central coordination team is to engage and collaborate with the National Relays, and to collect and promote good practice from across Europe. A quarterly newsletter is issued in all national EU languages and the Charter is promoted through social media (Facebook & Twitter). The most visible activity is the annual Excellence in Road

Safety Awards, celebrating the best practices from across Europe (the last issue was on the 18th of November 2021). The award winners are clear examples where a community strongly collaborates in co-creation to improve road safety, e.g. actions to make access to schools safer, create a road safety culture in companies or improve safety of pedestrians. The Charter also stimulates innovative approaches and actions to improve road safety, such as original campaigns or successful apps for smartphones. The National Relays are expected to support the members in their country, help in spreading good practice, organize an annual event and increase membership in their country.

### RESULTS AND CONCLUSION

Thanks to the European Road Safety Charter, a community of some 3,500 members has been created – companies, associations, research institutes, universities, NGOs, public authorities and schools. These members take specific, measurable actions in their areas of responsibility with the aim of contributing to the common goal of improved road safety in Europe. They have a significant impact in the different sectors of society, generating a network to foster exchanges of best practices and expanding progressively its coverage throughout Europe.

## O 7.2 trafficsafety4you - drowsiness and fitness to drive

FRIDAY 24 JUNE 2022 09:00

👤 Bettina Schützhofer<sup>1</sup>, **Joachim Rauch**<sup>2</sup>, Martin Söllner<sup>1</sup>, Barbara Soukup<sup>1</sup>

<sup>1</sup>sicher unterwegs - Verkehrspsychologische Untersuchungen GmbH, Wien, Austria, <sup>2</sup>Allgemeine Unfallversicherungsanstalt AUVA, Wien, Österreich

### BIOGRAPHY

#### Mag. Dr. Bettina Schützhofer

Since 1999 working in the field of traffic psychology (focus: traffic safety education, test development, interdisciplinary road safety research), lecturer (University of Graz and FH Joanneum), managing director of sicher unterwegs - Verkehrspsychologische Untersuchungen GmbH

#### Mag. Joachim Rauch

Since 1998 working in the field of traffic safety, since 2006 in the department of prevention of the AUVA, responsible for prevention projects at educational institutions

Young novice drivers are among the most vulnerable groups in road traffic. The range of traffic education offered between the completion of the voluntary cycling test at the end of primary school and the acquisition of a (moped) driver's license is sparse.

Based on the findings of prevention programs offered before, during, or shortly after obtaining a driver's license, the prevention program trafficsafety4you - drowsiness and fitness to drive was developed.

Trafficsafety4you is a proven, theory-based and empirically evaluated primary prevention traffic education program for 14- to 18-year-old adolescents. It is conducted by traffic psychologists at schools and consists of four teaching units. So far, there have been three main topics: alcohol, drugs and medication, and distracted driving. The fourth newly developed module on the topic of drowsiness and fitness to drive will be presented.

Developed interactively and as a peer-to-peer approach, it addresses an often underestimated road safety risk and raises awareness of the importance of current fitness to drive. When developing the trafficsafety4you module on drowsiness and fitness to drive, attention was paid to ensuring that the tools can be conducted in an inter-

active and experiential manner, interactively and experience-based even under strict hygiene regulations imposed by the recent pandemic. This was achieved with contemporary digital tools that were developed and produced with the involvement of the target group.

The goal of the program is to close traffic-specific knowledge gaps on the topic of drowsiness in road traffic and to change or consolidate the target group's traffic-specific attitudes and behaviors in such a way that drowsiness-related accidents no longer play a role in young people's future driving careers.

Reference is made not only to motorized traffic participation, but also to active traffic participation by bicycle, scooter, or on foot. At the end of each intervention tool, it is important to transfer what has been learned and experienced to individual situations in a resource-oriented way and to apply it in everyday traffic situations.

## 0 7.3 Safety in Urban Micromobility and the RideSafeUM Initiative

FRIDAY 24 JUNE 2022 09:00

Josep Ramon Morros Rubio<sup>1</sup>, George Voulgaroudis<sup>1</sup>, **Irene Cobian**<sup>1</sup>

<sup>1</sup>RideSafeUM Consortium, Barcelona, Spain

### BIOGRAPHY

**Irene Cobian** is a Civil Engineer (Transport Specialisation) at Universidad Politecnica de Madrid (Spain) and holds an MSc in Sustainable Transport Planning from the Institute for Transport Studies at University of Leeds (UK). Irene worked for different transport consultancy firms in the UK and Spain for six years. Currently she works as Project Manager for CARNET Barcelona and leads the RideSafeUM initiative.

Micromobility has grown exponentially in our cities. While bicycles have been popular for a while and bike sharing systems started blooming in the mid-2000s, the unprecedented growth in micromobility offer that our cities have witnessed since the mid-2010s can surely be classed as a revolution.

At the same time, micromobility has presented itself as a deal-breaker when it comes to solving some of our most pressing urban mobility challenges. These small and physically or electrically powered modes can be the cornerstone to make better use of public space, decrease carbon emissions and health issues and boost multimodality to achieve efficient and sustainable systems.

However, there are still lessons to be learnt to unleash the full potential of micromobility. Safety is one of these key issues. Safety has been stated to be one of the most important aspects to consider in increasing user engagement with micromobility. Safety should be a priority, and it is becoming so as many cities are joining Vision Zero and uniting different goals (health, inclusion, economic efficiency etc.) under the same wonderful mantra, quoting Susan Engelking: safety, safety, safety.

RideSafeUM is an initiative co-funded by EIT Urban Mobility that will bring micromobility safety benefits to users, public authorities and operators through the use of

innovative technology. This initiative will proactively prevent micromobility accidents, provide smooth reaction in case of accidents and gather data for wider learning, policy-making and management purposes. The project is born in response to the need to make micromobility safer and encourage increased ridership of what have become key modes for the future of our mobility systems.

The RideSafeUM solution will be based on the integration of computer-vision software, with camera, GPS and a gyroscope. This technology will be either supported by users' smartphones or through integrated equipment in the operator's hardware. In addition, a city dashboard will enable authorities to identify and dynamically manage micromobility safety issues.

The system will work on a bi-lateral communication basis. Real-time digital information (via an app or the operator's front-end) of regulations will be displayed to the user. At the same time, alerts will be sent to the authorities if an accident occurs, using a black-box function. The system will allow to notify emergency services, while accident data will help to build the foundations for authorities' decision-making.

## O 7.4 About a safe distance ... in cycling

FRIDAY 24 JUNE 2022 09:00

**Martijn Kiers**<sup>1</sup>, Simone Feigl<sup>2</sup>, Katrin Lenes<sup>1</sup>, Florian Gorfer<sup>1</sup>, Karin Kuchler<sup>1</sup>

<sup>1</sup>FH JOANNEUM, University of Applied Sciences, Institute of Energy, Transport and Environmental Management, Kapfenberg, Austria, <sup>2</sup>Radlobby ARGUS Steiermark, Graz, Austria

### BIOGRAPHY

**Martijn Kiers**, born in 1971 in the Netherlands.

Study of “Built Environment”, specialisation: urban planning; University of Applied Sciences, Utrecht

Study of “Spatial Planning”, specialisation: Traffic management; University of Amsterdam

Project manager, Ministry of Transport, Water Management and Public Works, Utrecht (1997-2006)

Since 2006 Senior Lecturer / Senior Researcher in transportation, mobility and regional planning; FH JOANNEUM GmbH, Institute of Energy, Transport and Environmental Management, Kapfenberg. Research in mobility behaviour and urban planning.

### INTRODUCTION

The topic of “safe distance” has been on everyone’s lips since the COVID-19 pandemic and is also an important research topic. In road traffic, the safe distance to other road users always plays a critical role. Especially in the interaction between bicycles and cars, accidents often occur during narrow overtaking manoeuvres.

### OBJECTIVES

In Austria, the subject of “safe distance” during overtaking manoeuvres has great potential for improvement. Currently, the Austrian road traffic regulations stipulate that “when overtaking, the road safety and driving speed must be kept at a lateral distance”. This definition leaves room for interpretation and does not provide sufficient legal certainty. Studies from Switzerland and Germany show that bicycles are often overtaken far too closely by cars. In 2018 more than 50% of all overtaking manoeuvres in Berlin took place with a lateral distance of less than 1.5 meters. These risky manoeuvres make cycling dangerous and unattractive. Germany reacted quickly and has set a legal minimum distance of 1.5 meters in built-up areas when overtaking. This clarity is also necessary for Austria.

### METHODS

For this, a study is conducted to research the current distance between car and bicycle during overtaking. 46 Styrian cyclists were equipped with open-bike-sensors which were developed to measure the overtaking dis-

tance and provided valuable input for around 600 trips and the corresponding overtaking manoeuvres. The test riders cycled in everyday situations with different safety-relevant equipment (e.g., with/without helmet or high-visibility vest) and bike types (e.g., city-bike, e-bike, cargo-bike, or racing-bike).

### RESULTS

To determine the overtaking distance at which cyclists feel comfortable, safety-relevant aspects and the subjective sense of security are currently analysed. A logbook and survey provided data to determine the required safety distance. Furthermore, the technical aspects of the local road sections are currently evaluated in terms of road width, parking areas or oncoming traffic by using the bicycle traffic analysis tool Bike Citizens Analytics, to see if it is even possible to overtake at a safe distance, or are the road sections too narrow for this?

### CONCLUSION

These considerations are intended to provide statistical data about overtaking distance, that can support the requirement for a legally defined minimum overtaking distance. Furthermore, the psychological and infrastructural outcome of the project provide essential data for raising public awareness about the safety issue when overtaking with a too small distance between bicycle and vehicle.

## 7.5 Road Safety and Vulnerable Road Users as the key focus in the Sustainable Mobility planning process on the road towards 'Vision Zero'

FRIDAY 24 JUNE 2022 09:00

**Dirk Engels<sup>1</sup>**

<sup>1</sup>Transport & Mobility Leuven, Leuven, Belgium

### BIOGRAPHY

**Dirk Engels** is Master of Science in Transport Engineering and is recognised EIR expert for 'Human & Mobility'. He works as Mobility Expert for TML (linked to University of Leuven) with 35 years of expertise in the design and evaluation of multi-modal transport systems on urban, regional and EU level. Road safety is an important focus of his work as active member of the Flemish Road Safety Forum.

### INTRODUCTION

The basic concept of a strong safety strategy is the Safe System approach adopted at EU level in the third Mobility Package starting from 'Vision Zero'. Efforts all over Europe prove that this can only be achieved if strong sustainable mobility planning processes with safety as the basic criterion for all choices are put in place.

### OBJECTIVES

This presentation will synthesise the key elements of this approach based on the conclusions of the CIVITAS Road Safety Advisory Group, the SUMP Guidelines for Road Safety and Active Modes Topic Guide and experiences in a range of EU cities. This way we aim to convince policy makers and technicians on the way forward to achieve the EU and their own local safety goals.

### METHODS

The findings and guidance are the result of both detailed analyses and intensive discussions on the future mobility trends and challenges and on the weaker points in the current safety approach in EU cities with safety research groups and representatives of main stakeholders and user groups of our multi-modal mobility systems focusing on active modes. (e.g. ECF, SWOV, ETSC, ...)

### RESULTS

Effective safety approaches prove to be the result of a strong safety management in the sustainable planning process and of a consistent and transparent implementation of safety measures which are monitored and optimised on a regular basis at a strategic and operational

level. Key elements will be illustrated with examples of fore-runner cities. Important aspects include:

- Involve stakeholders such as health organisations, Active Travel groups etc. to operationalise the safety measures
- Collect and understand safety data, e.g., where are which types of collisions, who are the target groups for any action and what type of specific measures should be put in place etc.
- Include Vision Zero and the Safe System Approach in the key SUMP vision.
- Set clear intermediate targets to reduce road deaths and seriously injured linking the targets to responsibilities of actors
- Identify effective and complementary measures in the domains of Engineering & Infrastructure, Education & Awareness, Enforcement & Legislation. Speed reduction and road hierarchy are quick wins.
- Create and maintain a wide public support and a political ownership
- Monitor the evolution in deaths and serious injuries and review strategies

### CONCLUSION

Our analysis shows that significant steps towards Vision Zero are feasible if specific aspects are explicitly included within mobility planning and implementation.



## ORAL PRESENTATIONS

# 08 Child Safety - Severe Threats (Drowning and Burns)



## O 8.1 Parents' risk perception of drowning among young children

FRIDAY 24 JUNE 2022 09:00

**Mieke Cotterink<sup>1</sup>**, Marjolein Versteeg<sup>1</sup>

<sup>1</sup>Consumer Safety Institute (VeiligheidNL), Amsterdam, Netherlands

### BIOGRAPHY

**Mieke Cotterink** is a Dutch child safety expert. She works as a senior researcher at the Dutch Consumer Safety Institute, where she, as a member of the child safety team, converts relevant knowledge and insights into high-quality behavioural interventions. Mieke connects scientific insights with daily practice, in particular on children's play, drowning prevention and safe sleeping.

### INTRODUCTION

Children under 5 years of age are at high risk of drowning. This mainly concerns drowning sites in or around the house, for example bathtubs, ponds and (inflatable) pools. During such domestic drowning accidents, parents often fail to supervise their child. Whether this unwanted behaviour is caused by aberrant risk assessment is unclear, as little is known about parents' risk perception of drowning. Importantly, understanding their risk perception may provide a basis for increasing awareness and developing preventive measures.

### OBJECTIVES

This research aims to gain insight into parents' risk perception of drowning in and around the house among children aged 0-4 years.

### METHODS

In August 2021, parents with children under 5 years of age were asked to fill out an online questionnaire. The questionnaire included questions on parental knowledge, supervisory behaviour and social norms. Most items were measured using a 4-point Likert scale. Some items included additional open-ended questions that were analysed using qualitative thematic analysis.

### RESULTS

In total, 414 parents participated in the study. Regarding parental knowledge, 83% wrongly believe their child will show a reaction when almost drowning. They expect their child to flounder (68%), scream (28%) or cry (24%). Additionally, 24% believe drowning is only possible when there is more than just a small layer of water present. Most parents (73%) reported they would never walk away for a second when their child is near water. Fewer respondents agree with the other desired behaviours, i.e. to check whether their child can get close to water when entering a new setting (49%) and to make agreements with other parents who will monitor the children (40%). Regarding social norms, 29% reported themselves as more observant than other parents.

### CONCLUSION

Parents show incorrect beliefs about what happens when their child is nearly drowning. Moreover, parents underestimate the risks of drowning and the importance of permanent supervision when their child is in or near water. These findings call for education to increase risk awareness among parents. Therefore, we developed a campaign called "Safe and fun water play".

## 0 8.2 Motor storytelling as a drowning prevention tool

FRIDAY 24 JUNE 2022 09:00

Ana María Domínguez Pachón<sup>1</sup>, **Francisco Cano Noguera<sup>1</sup>**, Irene Palazón Jiménez<sup>1</sup>

<sup>1</sup>Real Federación Española de Salvamento y Socorrismo, San Sebastián De Los Reyes, Spain

### BIOGRAPHY

**Francisco Cano Noguera** obtained a degree in Pedagogy from the University of Murcia. He received his doctorate in Psychology of Physical Education. His main areas of knowledge and research are focused on Sports Motivation, Safety and Prevention in the Aquatic Environment, Rescue and First Aid. Nowadays he continues his teaching work in the Faculty of Sports Sciences. He has experience in more than 5 years of university teaching, with more than 5 publications in international journals indexed.

### INTRODUCTION

In the last seven years there have been more than 2,700 deaths by drowning in Spain. Nowadays, that is a figure that we as an advanced society should not allow. Several recent studies have already shown that the introduction of swimming at school is positive, as it helps the education of children and makes it much more complete, both at a motor and cognitive level, as we can see in the article by Albarracín Pérez, A., & Moreno Murcia, J.A. (2019). The main problem is determined by national legislations, when they are homogeneous, or in the case of Spain by regional legislations, when they are autonomous. To this difficulty must be added the excuses that the authorities often use as a shield for not putting this proposal into practice, which is none other than the supposed inability to make use of aquatic spaces depending on the social strata. The examples to refute this approach are various practical proposals whose initial step is the one proposed in the last part of this work, which are the motor stories.

### OBJECTIVES

In this document we are going to make a bibliographic review, where we are going to analyse the introduction of swimming and aquatic activities at school, specifically in the Sports subject. We are also going to propose an intervention proposal with some motor stories that we are going to teach in schools, from 1st Infant to 1st Primary, in this way we will make an early intervention, so that children from 3 years old have their first contact with the aquatic environment in a safe and playful way.

### METHOD

Bibliographic research in the most common databases, review protocol and practical proposal through motor stories.

### RESULTS

The results obtained after this research show us the benefits and disadvantages of introducing this subject into the curriculum, as well as indicating possible solutions to the problems we may encounter when dealing with this content in the Sports subject.

### CONCLUSIONS

Therefore, we can conclude that activities in the aquatic environment are beneficial, as they enrich the subject and at the same time help the child to acquire skills in the aquatic environment, which can become a danger for them. By controlling this environment, we can reduce the number of accidents in it, and therefore the number of drownings.

## 0 8.3 Teaching water safety without water – a digitized solution for primary school children

FRIDAY 24 JUNE 2022 09:00

**Roger Sweeney<sup>1</sup>**

<sup>1</sup>Water Safety Ireland, Galway, Ireland

### BIOGRAPHY

Deputy CEO & Marketing Manager of Water Safety Ireland (WSI), established as a statutory body, a voluntary organisation and a registered charity to promote drowning prevention water safety initiatives in Ireland. With over 5,000 members nationwide, WSI partners with government agencies, corporate sponsors, NGOs, local authorities and community groups.

The author develops public awareness of drowning prevention initiatives that aim to change behaviours so that waterways are enjoyed safely.

### INTRODUCTION

A digital based water safety education programme for primary school children is part of a long-term strategy to reduce the number of drownings in Ireland. Water Safety Ireland's PAWS (Primary Aquatics Water Safety) programme provides essential life-saving guidelines that every child needs to know.

### OBJECTIVES

The aim was to provide an alternative solution to printed resources. Teachers had been encouraged to teach water safety using printed resources, but these were expensive to print and distribute, and were often lost, mislaid or damaged, making long term provision unsustainable. A digital solution was required if water safety was to be taught in classrooms nationwide.

### METHODS

Workshops brought primary school children together to help form the design and messaging. Written and designed for all age groups, with beautiful illustrations, a wealth of tips and advice, and all sorts of interactive games and puzzles to reinforce the lessons learned, PAWS offers simple common sense on how we can be safe around our waterways. English and Irish language digital lesson books are available with interactive puzzles to match. The lessons take just an hour or two and are completely digital based.

### RESULTS

An entire suite of knowledge can be imparted online in the remotest classrooms. Learning is standardised and does not rely on the knowledge of primary school children. Colourful lessons and games have increased engagement. Parents also use the resource for home schooling which was particularly useful during Covid-19 related restrictions.

### CONCLUSIONS

Providing digital resources has allowed teachers, children and parents to learn about water safety at times that suit both classroom and home-based learning. Tailoring the language and messaging of each learning point to appeal to four different age groups has resulted in greater engagement by children.

## O 8.4 Pediatric burn injuries in Georgia: a retrospective hospital-based study

FRIDAY 24 JUNE 2022 09:00

**Nino Chikhladze**<sup>1</sup>, Mariam Andriadze<sup>1</sup>, Maia Kereselidze<sup>2</sup>, Nato Pitskhelauri<sup>1</sup>, Diana Dulf<sup>3</sup>, Corinne Peek-Asa<sup>4</sup>

<sup>1</sup>Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia, <sup>2</sup>National Center for Disease Control and Public Health, Tbilisi, Georgia, <sup>3</sup>Babes-Bolyai University, Cluj-Napoca, Romania, <sup>4</sup>University of California, USA

### BIOGRAPHY

**Nino Chikhladze** is a Professor and Head of the Quality Assurance Department at Tbilisi State University, Faculty of Medicine (Georgia). After she graduated from Tbilisi State Medical Institute, she was involved in clinical activities (Internal Medicine) since 1988 and in academic activity since 1992, at TSU since 1996. In 1997 she was awarded PhD degree. In 2001 she was licensed as a specialist in Public Health and Health Care Management.

### INTRODUCTION

Pediatric burn injuries represent an important issue of Public Health in LMICs and as well in HICs. An injured child often experiences chronic pain, psychological impact, and long-lasting limitations. Pediatric burn injuries are characterized with high morbidity in Georgia, no epidemiological studies have yet described the health outcomes of burn injuries in Georgia.

### OBJECTIVES

The aim is to identify the main epidemiological characteristics for pediatric patients who were admitted to hospitals with diagnosis of burn injuries and their health outcomes.

### METHODS

All patients under 18 who were admitted to a hospital for an injury between 2015 and 2020 were identified from the Hospital Registry of the National Center for Disease Control and Public Health of Georgia. The prevalence of burn injuries among all patients was examined, as were those admitted to the national Burn Center. Patient characteristics included the patients' age, gender, region of residence, the types of burns, hospitalization dates and mortality.

### RESULTS

A total of 39,724 injury related pediatric patients were discharged from the hospitals of Georgia during the 6-year period. Every year, more than 900 children (0-18 years)

with burn injuries were admitted to the national Burn Center. One out of seven pediatric patients suffered from a burn injury which required medical care and treatment in hospital. In Georgia, the second major mechanism of injury in children was burns (n=6,177, 15.6%), after falls (n=17,766, 44.7%). 128 (0.3%) patients died due to injury during the study period. Burn was third leading cause of fatal injury 18 (14%), after road traffic (n=45, 41.7%) and falls (n=26, 24.1%).

In 2019, 1,069 cases of pediatric burn injuries were identified. 59.027% of the cases were male and 40.879% were female. Children aged 1-4 years (63.2%) were the most prevalent. The highest number of burn injuries (46%) occurred in Tbilisi (capital of Georgia). The most frequent causes of burns were hot liquid scalds (84.2% of cases) and therefore the largest number of cases accounted for thermal burns (88.2%). In 2019, 0.2% of total recorded burn injuries in children, resulted in death.

### CONCLUSION

This study indicates that prevention on burns should become a key priority area within injury prevention and control in Georgia. There is a need for future investigation about risk factors and elaborating relevant preventive measures of the pediatric burn injuries in Georgia.

## O 8.5 Implementing outcomes of aetiological research in an online programme to prevent burn accidents in children under 5 years of age

FRIDAY 24 JUNE 2022 09:00

👤 **Eva van Zoonen<sup>1</sup>**, Christel von Reeken<sup>1</sup>, Carine van Schie<sup>1</sup>

<sup>1</sup>Dutch Burns Foundation, Beverwijk, The Netherlands

### BIOGRAPHY

Researcher at the Dutch Burns Foundation, Beverwijk, The Netherlands

### INTRODUCTION

Children under 5 years of age are more frequently admitted in the Dutch burn centres than any other age group. For this reason, the Dutch Burns Foundation has been organising prevention campaigns aimed at parents/guardians of young children. To be effective, campaigns are based on known aetiology. A previous prospective cohort study into the aetiology of burn accidents in children under 5 years of age described safety hazards linked to the age of young children. The outcomes of this study have been used to improve an online prevention programme on preparing parents for these safety hazards.

### OBJECTIVES

The aim was to implement the outcomes of a previous aetiological prospective cohort study in an online programme to prevent burn accidents in children under 5 years of age.

### METHODS

The Dutch Development Instrument (van Wiechenonderzoek) was used to mark relevant development stages in children under 5 years of age and to link them to reference ages. From the previous cohort study, the percentage and aetiology of burn accidents per age group were abstracted. A milestone alert matrix was developed in which age (in months) was linked to the percentage of burn accidents, development stages and associated safety hazards in that age group.

### RESULTS

For each development stage that was associated with an increased accident risk, a digital newsletter was created. Information on the characteristics of a development stage together with information on how to prevent burn accidents in that particular stage were provided in a fun-to-read format. With targeted advertisements on Facebook and in hardcover media, parents were directed to the registration website and encouraged to enroll in the newsletter flow. Until now, a total of approximately 65,000 parents have enrolled. Effectiveness of the campaign on knowledge and behaviour will be measured by an online questionnaire, linked to the newsletters.

### CONCLUSION

Outcomes from a prospective cohort study into the aetiology of burn accidents in children under 5 years of age, were implemented in an online prevention programme. Therefore, a milestone alert matrix was developed. In this prevention programme, parents were enrolled in a newsletter flow to prepare them for safety hazards linked to the developmental stages of their child.

## ORAL PRESENTATIONS

# 09 Safety Promotion - The European View



## 0 9.1 Status of Home and Leisure Accident Prevention in Western Europe

FRIDAY 24 JUNE 2022 11:00

**Robert Bauer<sup>1</sup>**, Rupert Kisser<sup>2</sup>

<sup>1</sup>KFV (Austrian Road Safety Board), Vienna, Austria, <sup>2</sup>EuroSafe - European Association for Injury Prevention and Safety Promotion, Amsterdam, The Netherlands

### BIOGRAPHY

Senior researcher and project manager at KFV, working in the areas of epidemiology, injury data and accident statistics since 1993

### INTRODUCTION

Accidents are the fifth leading cause of death in the EU. While much attention has been paid to road and workplace safety, significantly less has been given to the prevention of domestic and leisure accidents (HLAs) – even though these account for more than three quarters of all fatal and non-fatal accidents.

### OBJECTIVES

In 2007, the Council of the EU urged Member States to develop representative injury surveillance systems and to take countermeasures to reduce the health burden of injuries, in particular of children and elderly people, sports persons and consumers, which means to put an additional focus on the prevention of HLAs, aside from road and workplace accidents. So far, an evaluation study on the implementation of this decision is not known. This study examines, among 33 Western European countries, the extent to which such countermeasures have been taken in the field of HLAs.

### METHODS

The study was based on a quick scan tool comprising 18 elements: six statistical indicators for the injury risk and 12 indicators for the national organisation of effective prevention efforts. Data were collected through a systematic online search and country reports reviewed by national experts.

### RESULTS

The study reveals that regarding HLA prevention only very modest progress has been made in the last 15 years, while the burden of HLAs is actually on the rise.

### CONCLUSION

Given these findings, it would seem timely to relaunch the recommendations of the Council of the EU and to stress more clearly the fact that – in addition to the prevention of road and workplace accidents – a more systematic approach and lasting infrastructure are required to prevent domestic and leisure accidents among children, senior citizens and other vulnerable groups, accidents related to consumer products and services as well as sport accidents.



## 0 9.2 Why the lack of EU-wide pool safety regulation?

FRIDAY 24 JUNE 2022 11:00

**Lloyd Owens<sup>1</sup>**

<sup>1</sup>Safe.T.First Pool Safety Ltd, Paphos, Cyprus

### BIOGRAPHY

Managing Director of Safe.T.First Pool Safety Ltd, a private enterprise in Cyprus whose primary function is the promotion of pool safety and the supply and installation of pool safety products in Cyprus and throughout the EU. In September 2021, the European Commission awarded the company a Product Safety Gold Award in the category 'Protecting the Safety of Vulnerable Consumer Groups', sub-category SME, in Brussels.

The European Union is an impressive institution with a remarkable record of caring for the safety and well-being of its citizens. But while individual member states sometimes stand accused of zealotry in the creation and implementation of petty rules and regulations, there appears to be a horrible, glaring omission: one relating to safety laws concerning residential swimming pools.

Safety is about the assessment of risk and proportionality of response to that risk. We surely all prefer to live in a libertarian society where we are free to use judgement to best mitigate the risks we face day by day. Few of us want to live in a nanny state where others govern the minutiae of our daily lives. But on important matters of safety, we recognise that states and institutions have a duty to intervene in those judgements and to legislate where necessary. Examples of this are the compulsory use of seat belts in cars, the setting of drink/drive limits and the regulation of electrical safety in and around the home.

With the foregoing in mind, how can it be right for the EU in general and for individual member states in particular to completely ignore the risk to small children posed by open, unprotected swimming pools? Small children are the most vulnerable and precious members of society, are naturally drawn to water, and don't recognise the risks posed by an open, unprotected swimming pool. We as parents and guardians do. Are we not duty-bound to keep children safe in and around water as far as we are able, especially when remedies are so readily available and so relatively inexpensive?

If individuals refuse to act on the risks presented by an unprotected swimming pool, then member states surely have a duty to legislate. Thus far, few European countries aside from France have done so. In France, the owner of an unsafe pool can be fined 45,000 euros for non-compliance of the Raffarin and AFNOR rules and regulations. Similar regulations with punitive fines for non-compliance were introduced in Australia and New Zealand decades ago. Most American states also have pool safety codes. And South Africa. Why not Europe?

Even if the EU itself is not empowered to make residential pools safe - including those attached to rental homes and holiday lets - why do individual member states sit idly by and do nothing? A bizarre, inexplicable conundrum.

## 0 9.3 Factfulness – a way to increase interest for safety promotion

FRIDAY 24 JUNE 2022 11:00

**Eva Vaagland<sup>1</sup>**

<sup>1</sup>Norwegian Safety Forum, Oslo, Norway

### BIOGRAPHY

**MPhil Eva Jakobson Vaagland** is the managing director of the Norwegian Safety Forum. With a background from education, communication, national and international projects, NGOs and private institutions she's interested in building bridges between different sectors and professional groups, and between national policies and local activities. She is eager to join forces with public sector, private businesses, and non-governmental organizations.

### INTRODUCTION

The Norwegian Safety Forum (NSF) is a national advocate for safety promotion and injury prevention, a hub for knowledge, information and activities, supported by the Norwegian Ministry of Health. It is a non-profit membership-based organization. The mission is to prevent home and leisure accidents by connecting key stakeholders from public sector, private businesses, and non-governmental organizations.

Home and leisure accidents seldom get the big headlines. Looking through media covering on injuries in Norway in 2021 we found many articles on injuries and death related to traffic and fires but very few concerning home and leisure. Media focuses on the more spectacular accidents and gives the public the understanding that these accidents are predominant. Research and studies also focus mainly on road safety and fire prevention. We need more focus on home and leisure accidents on all levels to gain interest for injury prevention within these sectors.

### OBJECTIVES

For the NSF it is a challenge and an important object to develop information that helps to create understanding for the scope of accidents, the costs involved and the possibilities to prevent them. We want municipalities, organizations, and the public to act for safety. A new digital solution is one of our tools to increase interest for home and leisure accidents and injuries.

### METHODS

We chose to start with hip fractures because this is a main health challenge in Norway. It is costly for society and reduces the quality of life for those affected. We have local data available and good knowledge on fall prevention. We joined forces with experts in service design and worked in close contact with municipalities to develop the "fall barometer". Just like other barometers it can predict the expected future based on facts.

### RESULTS AND CONCLUSION

The fall barometer makes it easy to share facts, spread information and get people engaged. It is used by municipalities when discussing safety and health issues, by politicians, by schools and universities and by the media. It contains facts, figures and costs for hip fractures on local and national level, providing reasons and arguments for prevention. When it comes to other types of injuries, we don't have local data. But the "injury barometer" that will be launched this year will provide local information based on national figures and statistics. "Factfulness" and fact promotion are essential for gaining interest for injury prevention.

## O 9.4 Pilot application of influencers in road safety communication in Germany: short term effects on knowledge, attitudes and behaviour of the target group

FRIDAY 24 JUNE 2022 11:00

Walter Funk<sup>1</sup>, Amelie Duckwitz<sup>2</sup>

<sup>1</sup>Institute for Empirical Sociology, Nuremberg, Germany, <sup>2</sup>University of Applied Science Cologne, Cologne, Germany

### BIOGRAPHY

Dr Walter Funk earned his diploma in social sciences in 1986 at the University of Erlangen-Nuremberg and was conferred a Ph.D. in Economics and Social Sciences there in 1992. Since 1999 he has been a researcher at the “Institute for Empirical Sociology”, working mainly in the field of road safety. His current research focusses on young drivers as well as children and youth as vulnerable road users.

### INTRODUCTION

Based on current media usage behaviour, it seems questionable to what extent conventional road safety communication still reaches its target groups accurately.

### OBJECTIVES

In our research project on behalf of the German Federal Highway Research Institute (BASt) we intended to identify success factors for road safety communication via influencers and quantify short term effects on knowledge, attitudes and behaviour of the target group.

### METHODS

For this purpose, an initial pilot of an influencer campaign was developed, implemented and comprehensively formatively evaluated in order to derive recommendations for action for future, strategic communication via influencers in the field of road safety. The topic area of “road safety of children” with the target group of parents was chosen for the pilot project. The topics of children as pedestrians, as cyclists and as car passengers were specified as specific content for the target group.

For each of the three thematic areas, eight behavioural tips were communicated by three influencers per topic in an Instagram Story and an additional Instagram post. Three influencers also produced a YouTube video on one of the topics, two of them were supported by traffic experts. In the final campaign phase, the influencers drew attention to the research project in their Instagram Sto-

ry and asked their followers to take part in a subsequent online survey.

### RESULTS

In this presentation we focus on the short-term effects of the #wirgeben8 campaign in the target group. In summary, the presented findings indicate that the intended campaign effects in terms of knowledge (obtaining new information) and attitudes (perception of the importance of road safety of children and arousing interest in road safety topics) can be clearly demonstrated in the short term. The behavioural relevance of the influencer posts immediately following the campaign can also be proven by the follower survey. According to the self-reports of the interviewees, due to the influencers’ contributions, most parents act more sensitively in everyday traffic situations with their children, consciously perceive their own role as a role model, teach their children safe behaviour in road traffic and seek further information on the topic of road safety for children.

### CONCLUSION

Social media can be used successfully for road safety communication and offer great potential for addressing different target groups in an up-to-date and tailored manner.

## O 9.5 The same fall, a different cause? - Comparing the accidents of consumers and workers

FRIDAY 24 JUNE 2022 11:00

**Jakko van Kampen<sup>1</sup>**, Evi van Moll<sup>1</sup>, Nathan Kuper<sup>2</sup>, Mariske Hajer<sup>2</sup>

<sup>1</sup>RIVM, Bilthoven, Netherlands, <sup>2</sup>NVWA, Utrecht, Netherlands

### BIOGRAPHY

**Jakko van Kampen** is a senior researcher at the Dutch institute for public health and the environment (RIVM), where he works at the department for research into occupational safety, perception and behaviour. At RIVM he studies safety, safety interventions and (occupational) accidents. Recently he completed a study that looked at similarities between occupational and consumers accidents when they use similar products such as ladders and circular saws.

For accidents that happen to consumers, information is primarily available in injury databases (e.g. Toet et al., 2019). These databases are normally filled by medical professionals that interview patients after an accident. Unfortunately, the level of detail in these sources is limited. Therefore, questions about the causes of consumer accidents can be difficult to answer, especially when compared to occupational accidents. Consumers and workers in the EU and elsewhere regularly use products such as ladders, stepladders, circular saws, drills and other hazardous (power) tools. The same natural laws apply: both groups are subject to comparable physical, electrical and mechanical hazards. Consumers and workers can both fall from height or be struck by a sawblade.

A project was started with the aim to gain more insight into the causes of consumer accidents and to compare these to occupational accidents with similar products. As a first step we systematically searched the literature for studies in which occupational accidents were compared to consumer accidents. As a second step we searched the literature for studies which were focused on the (underlying) causes of consumer accidents with ladders and power tools in particular. We then compared these causes to the information in the Dutch Storybuilder model and database. This model offers a taxonomy of the different types of accident that workers can have, and the database contains over 30,000 detailed analyses of occupational accidents (Sol et al., 2013).

From these analyses we found that the literature on consumer accidents is very limited when it comes to clari-

fying underlying causes. Differences were mainly found with respect to demographics and injuries. Most studies do not provide in-depth information regarding the accident scenario. Some authors do mention factors such as incorrect use, but generally do not analyse this further. For example the question, why is it that consumers use the products incorrectly?

Furthermore, in some studies the authors interpret the number of accidents to be 'many', however the exposure to the hazard was then not systematically taken into account.

Overall, it was concluded that further development is needed. In 2022 we will use thematic analysis to develop a conceptual model, this will help structure our understanding of the different underlying causes of consumer accidents in order to find opportunities for intervention and improvement.

Sol and colleagues (2013). De ontwikkeling van Storybuilder. Achtergrond en verantwoording. <https://www.rivm.nl/bibliotheek/rapporten/110010001.pdf>:

Toet and colleagues (2019). Letsel informatie systeem (LIS). Veiligheid NL, rapport 823. <https://www.veiligheid.nl/organisatie/publicaties/rapport-ltsel-informatie-systeem>

## ORAL PRESENTATIONS

# 10 Injury Surveillance - Injury Epidemiology



## O 10.1 Pattern of traumatic spinal cord injuries in the Piedmont Region (Italy): a 13-year retrospective cohort-based study

FRIDAY 24 JUNE 2022 11:00

**Alberto Borraccino**<sup>1</sup>, Roberta Onorati<sup>2</sup>, Carlo Mamo<sup>2</sup>, Maria Michela Gianino<sup>1</sup>, Beatrice Albanesi<sup>1</sup>, Sara Campagna<sup>1</sup>, Valerio Dimonte<sup>1</sup>

<sup>1</sup>University of Torino, Torino, Italy, <sup>2</sup>Local Health Unit T03, Grugliasco, Italy

### BIOGRAPHY

**Alberto Borraccino** is an Associate Professor at the Department of Public Health and Pediatrics of the University of Torino. His research topics relate to Epidemiology and Allied Health Science. He has recently focused his research topic on the epidemiological and educational aspects related to spinal cord injury. His research background encompasses both quantitative and qualitative methods.

### INTRODUCTION

Spinal cord injury (SCI) is one of the most complex and disabling health conditions a human being can suffer. More than 500,000 people worldwide suffer from SCI every year, with severe consequences for them and their families and with considerable direct and indirect costs. In recent decades, the aetiology of SCI has changed, road and workplace safety policies have led to a slow reduction in the number of traumatic injuries. However, they still remain the leading cause of SCI in many countries. By contrast, industrialised countries saw an increase in the proportion of household trauma, which is likely due to population ageing. Despite its social, economic and health impact, no study has yet investigated the pattern of traumatic SCI in Italy.

### OBJECTIVE

To describe the pattern of traumatic SCI in the Piedmont Region in Italy, from the year 2008 to 2020.

### METHODS

Several administrative information sources (medical records, emergency department admissions, and census sources) were used to identify individuals on their first admission to a rehabilitation centre for SCI from 1 January 2008 to 31 December 2020. Cases were stratified by age, sex, and cause of traumatic SCI.

### RESULTS

During the study period, a total of 503 cases of traumatic SCI were identified. Of these, 79% were male, and 55% with paraplegia. For two-sixths of the identified cases, information on the cause of injury was missing. Of the 300 cases with information, the SCI was due to road traffic accidents (19%), domestic accidents (9%), and in 24% of the cases, they were coded as other accidents (sports injuries or otherwise classifiable causes). During the period under review, the number of road traffic accidents causing traumatic SCIs remained stable (on average 7/year) and involved more (74%) younger people (< 60 years). In contrast, domestic accidents showed a slight upward trend and involved 60% of people of older age (> 60 years).

### CONCLUSION

Despite ongoing efforts to increase road and workplace safety, the number of traumatic SCIs due to these causes remained stable over the study period. Domestic accidents most commonly affect the elderly, requiring higher investment in preventive measures aimed at this population. Given the considerable number of causes of traumatic SCI that remained unreported or unspecified, it is essential that health systems adopt up-to-date accident classification systems to enable reliable monitoring and investigation of such events over time.

## O 10.2 Home accidents in Europe: a descriptive analysis from the IDB-FDS databank

FRIDAY 24 JUNE 2022 11:00

**Marco Giustini**<sup>1</sup>, Gianni Fondi<sup>1</sup>, Rupert Kisser<sup>2</sup>, Dritan Bejko<sup>3</sup>, Samantha Turner<sup>4</sup>, Alessio Pitidis<sup>5</sup>, FDS Reference Group<sup>2</sup>

<sup>1</sup>Italian National Institute of Health, Rome, Italy, <sup>2</sup>European Association for Injury Prevention and Safety Promotion (Eurosafe IDB-network), Amsterdam, The Netherlands, <sup>3</sup>Luxembourg Institute of Health, Luxembourg, Luxembourg, <sup>4</sup>Swansea College of Medicine, Health Data Research UK Wales and Northern Ireland, Swansea, United Kingdom, <sup>5</sup>B2C Innovation, Milan, Italy

### BIOGRAPHY

**Marco Giustini** graduated in Cultural Anthropology and works in the Environment and Health Department of the Italian National Institute of Health in Rome, Italy. Author of 34 scientific publications with H-Index 15 (source Scopus). Since 2005 he has been scientific responsible of the Italian National Institute of Health (ISS) for 2 European projects and 4 national projects. Currently responsible for the European epidemiological surveillance system European Injury Database (EU-IDB), hosted at the ISS following a Memorandum of Understanding between ISS and EuroSafe.

### INTRODUCTION

The Full Data Set (FDS) of the European Injury Database (EU-IDB) is a source of information covering many details on the external causes and circumstances of injury events.

### OBJECTIVES

To provide an overview of Home Accidents Emergency Department (ED) cases using the FDS databank.

### METHODS

The IDB-FDS databank contains more than 3,825,000 ED cases from 19 countries (years 2008-2019). It was queried for variables such as: TreatmentAndFollowUp, NumberOfDaysInHospital, ActivityWhenInjured, PlaceOfOccurrence, MechanismOfInjury, TypeOfInjury, BodyPartInjured and DirectObject/Product/Substance involved.

### RESULTS

Home Accidents ED cases represent about ¼ of all IDB-FDS cases (50.8% females), 15.6% were inpatients (7.4 days of hospitalization on average). As to the mechanism of injury, Falling/stumbling on same level accounts for 25.4% of cases, followed by Falling/jumping from a height (13.4%) and Falling/stumbling on stairs/steps (6.1%). Noteworthy are also: Cut, slice, slash (4.4%). Regarding the place of occurrence, the main settings are: Living room (22.3%), Garden (10.1%) and Kitchen (9.2%). Finally, the most frequent activities are: Leisure time (14.4%), Play (11.7%, but 39.5% in 0-14 yrs), Cooking, cleaning (6.4%) and Do-it-yourself

(5.4%). With concern to the nature of injury the main groups are: Fracture (27.8%, but 45.2% in 65+ yrs), Contusion, bruise (24.9%) and Open wound (22.0%). Superficial injuries account for ¾ of the Type of Injuries. Overall, Fingers (9.2%) Ankle (5.2%), Wrist (5.1%) and Skull (4.9%) are the most involved body part but in 65+ yrs Hip and Upperleg, thigh account for 18.0%. As to Object/Product/Substance Floor and Stair, steps are the most involved items (24.5% and 8.6% respectively), although in 65+ yrs Floor accounts for 43.9% of injuries. Noteworthy Knife is frequently involved in the 15-24 and 25-64 yrs (6.1% and 4.9% respectively). The main mechanism remains Fall that causes more than half of all home accidents (56.1%) and in 65+ yrs it accounts for 8 out of 10 accidents (79.2%).

### CONCLUSION

Home accidents are a major cause of morbidity, mostly affecting the elderly especially by falling on the floor and with fracture of Hip/Upperleg-thigh as a consequence. A hospitalization for these events lasts on average over two weeks with often permanent sequelae. Other risk groups highlighted by IDB-FDS data are children (due to play activity) and women in cooking or cleaning activity. Injury data are essential for making informed decisions about a country's priorities and in developing effective policies and actions. A clear pattern emerges from IDB-FDS data descriptive analysis of external causes of home injury for risk groups and circumstances related to injury.

## O 10.3 Changes in home and leisure accidents in children and young people during the COVID-19 pandemic in Portugal

FRIDAY 24 JUNE 2022 11:00

**Tatiana Alves**<sup>1</sup>, Susana Silva<sup>1</sup>, Maria Papadakaki<sup>2</sup>, Mariana Neto<sup>1</sup>, Ricardo Mexia<sup>1</sup>, Carlos Matias-Dias<sup>1</sup>

<sup>1</sup>INSA, Lisbon, Portugal, <sup>2</sup>Hellenic Mediterranean University, Greece

### BIOGRAPHY

**Tatiana Alves**, First Degree in Nursing; Master's Degree in Psychology of Human Resources; specialised in Community Nursing.

Field work: Epidemiology Department of the National Institute of Health Doutor Ricardo Jorge.

Contact person for National Injury Surveillance System.

### INTRODUCTION

The pandemic context came to focus efforts and resources in direct response to the health needs caused by this new disease (Covid-19). Injuries are the leading cause of morbidity and mortality in the pediatric population. It is important to study the impact of this pandemic on injuries as relevant public health.

### OBJECTIVE

The aim of this study is to describe the temporal changes of the Home and Leisure Accidents (HLA) among children aged up to 19 years who needed attendance in the Emergency Department (ED) of the National Health Service Hospitals in Portugal. Hospital records were used through EVITA system, between 2019 and 2021 (until October).

### METHODS

A descriptive analysis of the data was performed to identify changes in HLA attendance in ED rate by sex, age group, place of occurrence, type of mechanism and follow-up. Rate ratios and 95% confidence intervals (CIs) were used to evaluate potential differences between these three years.

### RESULTS

Between 2019 and 2021 there were 170,042 HLA in the age group 0-19 years representing 31% of all home and leisure accidents during this period of three years.

As compared to the year 2019, HLA episodes rate registered in children and young people up to 19 years a decrease of 23.9% [RR=0.76; IC95 (0.75; 0.77)] during the year 2020 and a decrease of 16.1% [RR=0.84; IC95 (0.83; 0.85)] in 2021. The HLA episodes registered from March to December 2020 have always remained below the values of the previous year. However, the months of April to July 2021 registered the highest values of these three years.

During this three years period accidents occurred at school accounted for 34.4% of all HLA in the youngest till 19 years old. In 2020 a significant reduction (18.5%) was observed on HLA rate in this place of occurrence, as well as in 2021, a reduction of 11.8%. This pattern was reversed for HLA at home with the highest increase of 34.7% in the year 2020.

As for the type of injury mechanism, the decrease was most marked in the HLA rate caused by "blunt force": a decline of 22.8% in 2020 and a decrease of 11.5% in 2021.

### CONCLUSION

More discussion regarding the frequency and evolution of HLA during the pandemic in this group of greater vulnerability is needed, evaluating the safety at home.



## O 10.4 Emergency department treatments due to bicycle accidents in the Netherlands: effects of increasing e-bike popularity

FRIDAY 24 JUNE 2022 11:00

Huib Valkenberg<sup>1</sup>, **Susanne Nijman**<sup>1</sup>, Inge Krul<sup>1</sup>, Karin Klein Wolt<sup>1</sup>

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Susanne Nijman** has been working as a senior researcher/project leader at the Dutch Consumer Safety Institute since 2002. She works in the areas of road safety, product safety, fireworks related injuries and alcohol related injuries. Susanne is project leader of the registration on road traffic accidents data, obtained by Dutch Emergency Departments and ambulance services.

### INTRODUCTION

Increasing sales of e-bikes in recent years have led to a change in patterns of bicycle use in the Netherlands. Possible effects on bicycle accidents must be studied in order to facilitate policy making in road accident prevention. In the Netherlands, the Consumer Safety Institute studies bicycle accidents through periodic follow-up research commissioned by the Dutch Ministry of Health. Patients treated at an Emergency Department after a bicycle accident receive a questionnaire for collecting more information on the specific circumstances of the accident, for instance type of bicycle, other traffic, helmet use, and distracting factors like smartphone usage. The data can provide valuable insight into specific risk factors for bicycle accidents. Comparison to earlier studies (2012, 2016) potentially reveals trends in prevalence rates and risk factors.

### OBJECTIVES

Providing policy makers with recent insights on bicycle accidents and prevention.

### METHODS

All cyclists treated for injuries at 14 Emergency Departments in the Netherlands are registered in the Dutch Injury Surveillance System (DISS). Selected patients with injuries from bicycle accidents in a one-year period (July 2020 – June 2021) were requested to fill out a 60-item questionnaire to specify circumstances of their accident. In addition, a control group of non-accident cyclists was

questioned on their cycling behavior (e.g. distance covered, use of helmet, e-bike) in order to specifically calculate high risk factors for ED-treated injuries, by comparing injury patients with non-injury cyclists.

### RESULTS

Results of an earlier similar study on bicycle accidents in 2016 showed no increased risk for bicycle accidents when riding an e-bike. Higher risk of sustaining severe (MAIS2+) injuries with e-bikes - as compared to other bicycles - was merely a result of the relatively old age of the group of e-bike cyclists and cycling distance covered. Data from the 2020-2021 study are analyzed from December 2021 to February 2022. The results will be presented and reveal whether recent developments in e-bike use changed the impact on prevalence, circumstances and risk factors of such bicycle accidents, and severity of injuries, compared to earlier studies.

### CONCLUSION

Increasing popularity of e-bikes in the Netherlands may change prevalence and risk factors of bicycle accidents. The current study aims at gaining new insights into the occurrence of bicycle accidents, especially e-bikes, and the possible consequences for necessary preventive activities in the near future.

## O 10.5 UK injury data: The feasibility of collecting accident data relating to consumer products from the NHS (National Health Service)

FRIDAY 24 JUNE 2022 11:00

**Geraldine Cosh<sup>1</sup>, Ashley Martin<sup>1</sup>**

<sup>1</sup>RoSPA, Birmingham, United Kingdom

### BIOGRAPHY

**Geraldine Cosh** has over 18 years of experience in product safety, injury prevention and risk assessment. Geraldine currently works as the Project Manager for the RoSPA injury data collection project in addition to other key activities such as a Technical Author for BSI; as an expert for the EU CASP 2020 and SPEAC projects and as a coordinator for BSI CPIN.

### INTRODUCTION

Between 1978 and 2002, details of home and leisure accidents in the UK were collected via hospitals in the Home and Leisure Accident Surveillance Systems (HASS and LASS). This provided an in-depth understanding of how, where and why home and leisure accidents happened, enabling injury surveillance, research and evaluation. The closure of HASS and LASS ended consistent collection of home and product related accident injury data in the UK.

In March 2019, RoSPA was commissioned by the Office for Product Safety and Standards (OPSS) to review the feasibility of collecting accident data relating specifically to consumer products. This work concluded that data already collected in hospital systems via the Emergency Care Data set (ECDS) could potentially provide vital information in relation to these injuries.

### OBJECTIVES

A pilot project was developed involving close collaboration with a small sample of hospitals in England which aimed to determine the level of product information available from the data collected, in particular from the free text records.

### METHODS

Five hospitals were asked to provide anonymised data on accidents due to unintentional injuries from their emergency departments. This data was further cleaned and analysed for product information.

### CONCLUSION

This Pilot is currently in its third phase focusing on collecting data from 2020 and 2021. Early data has already demonstrated that, although there are complexities in securing the participation of hospitals, utilising free text data provides valuable insights and can be used to support action to address product related injuries.

# PARALLEL SESSIONS

## EP1 Child Safety - Growing Up Safely



## EP 1.1 E-Learning with the Safety Bear

THURSDAY 23 JUNE 2022 12:05

**Elisabeth Fanninger<sup>1</sup>**, Peter Spitzer<sup>1</sup>, Isabella Kranacher<sup>1</sup>

<sup>1</sup>Verein GROSSE SCHÜTZEN KLEINE / Safe Kids Austria, Graz, Austria

### BIOGRAPHY

**Elisabeth Fanninger** is the project leader of “E-Learning with the Safety Bear”. At GROSSE SCHÜTZEN KLEINE / Safe Kids Austria she is responsible for numerous child safety projects, public relations as well as for the first Austrian Child Safety House BAARENBURG.

### INTRODUCTION

The child safety and accident prevention work of GROSSE SCHÜTZEN KLEINE / Safe Kids Austria with the mascot “Safety Bear” includes direct work with people in many areas: with the children themselves or with parents and all adults who are responsible for a safe environment for (their) children. The Covid-19 pandemic has significantly limited the possibility to conduct our on-site workshops at primary and secondary schools. Via our e-learning platform and especially with the GROSSE SCHÜTZEN KLEINE online classroom, we are now bringing valuable information to pupils and parents in a safe way. We wanted to “defy” Corona and greatly expand our range of information for pupils and parents on this “corona-compliant” online channel.

### OBJECTIVES

- Giving access to content on child safety and accident prevention under “corona-compliant” conditions in a playful way with the help of short videos, games, puzzles, webinars and interactive presentations
- Linking classroom teaching and e-learning in the sense of the blended learning concept
- Contribution to reducing the number of child accidents

### METHODS AND RESULTS

Developing an e-learning platform ([www.grosse-schuetzen-kleine.at/e-learning](http://www.grosse-schuetzen-kleine.at/e-learning)) about child safety and accident prevention for (school) children and parents with associated programs / software

E-learning tools:

- GROSSE SCHÜTZEN KLEINE / Safe Kids Austria online classrooms for primary and secondary schools
- Virtual BÄRENBURG - show apartment for child safety to browse for parents from the comfort of their own home
- Seasonally changing focuses, e.g. “Safe on the move on wheels”, “Keep your eyes on the road! - Distraction in traffic “,”Drowning Prevention”, ...
- Webinars for parents
- Weekly child safety quiz for families including a competition

### CONCLUSION

Accident prevention information, worksheets and active exercises have been transformed into the e-learning format. The safety bear, the mascot of GROSSE SCHÜTZEN KLEINE, is now visiting the children’s room, study or living room of the population with its playfully prepared tasks. The situation-related online focus should not replace our activities, which we previously implemented analogously in schools on site with teachers and with partner organizations but enrich and complement them even after the time of crisis in the sense of the blended learning concept.

## EP 1.2 Educating Children on Health & Safety

THURSDAY 23 JUNE 2022 12:05

**Grigorios Gkogkas<sup>1</sup>, Anastasia Mparmpouni<sup>2</sup>**

<sup>1</sup>Health Visitor, Private Entity, Athens, Greece, <sup>2</sup>University of West Attica - Dept of Community Health

### BIOGRAPHY

BSc, Public and Community Health, Community Health orientation, 2013-2017

MSc Public Health, Health Promotion of Children & Adolescents / 2018 - 2021

Head of the Health & Safety Department – Administrative Officer / Social Cooperative of Limited Liability (S.C.O.L.L.)

“Athena - Elpis” / April 2017 – September 2020

Health Visitor – Health Department / Geniki EXYPP Prostasia / March 2021 – today

### INTRODUCTION

In Greece, it is very common for a school-based intervention to raise awareness on common topics such as obesity or smoking cessation rather than topics regarding the safety of students.

### OBJECTIVES

The aim of this study was to educate and raise awareness on health and safety, to the students of the 2nd Primary School of Vari in Attica, where the program was conducted, using the educational tool of EU OSHA and NAPO. Moreover, it is also the evaluation of the health education program of the European Organization for Health and Safety at Work.

### METHODS

The health education program was conducted in four classes of the 2nd Primary School of Vari (3rd to 6th grade). The thematic units were Recognition of Signs for Safety, Be body wise with Napo, Napo's Hazard Hunter (Identifying risks and hazards, intervention and prevention). In order to evaluate the objectives set, special multiple-choice questionnaires were given out to the children before and after the program. The results emerged as qualitative data and the related one sample method of statistical analysis was chosen.

### RESULTS

After the program, the results showed that the students' level of knowledge improved. More specifically, in 4th grade there was a percentage increase of right answers by 50%. In terms of comparison between the two age groups (7 – 9 and 10 – 12 years old), the second group had the most correct answers both before and after the intervention. At the same time, the null hypothesis was rejected in two sections of 4th, 5th and 6th grade, so in total, 6 sections.

### CONCLUSIONS

The education program for health and safety that took place seems to have raised awareness and provided knowledge to the children of those four grades of Primary School. Moreover, the children seemed to be able to grasp most aspects of Health and Safety and were keen to learn more. However, a health education program is not enough to sustain that knowledge and needs to be further supported by other programs or by the school's current curriculum.

## EP 1.3 Promoting fun and safe play on inflatable playgrounds

THURSDAY 23 JUNE 2022 12:05

**Mieke Cotterink<sup>1</sup>**, Sanne Frazer<sup>1</sup>

<sup>1</sup>Consumer Safety Institute (VeiligheidNL), Amsterdam, Netherlands

### BIOGRAPHY

**Mieke Cotterink** is a Dutch child safety expert. She works as a senior researcher at the Dutch Consumer Safety Institute, where she, as a member of the child safety team, converts relevant knowledge and insights into high-quality behavioural interventions. Mieke connects scientific insights with daily practice, in particular on children's play, drowning prevention and safe sleeping.

### INTRODUCTION

Over the last few years, the number of injuries associated with inflatable playgrounds has increased due to the growing popularity of such playgrounds. Emergency departments in the Netherlands reported approximately 2,200 visits involving accidents related to inflatable playgrounds in 2017. Half of these cases include severe injuries, such as severe sprains, fractures and brain injuries. The prevalence is highest among children 5 to 14 years old.

### OBJECTIVES

The purpose of this study is twofold. The first aim is to provide insight into the safety awareness and risk perception of parents regarding children playing on inflatable playgrounds. The second aim is to develop an intervention for parents in order to decrease the number of severe injuries involving inflatable playgrounds.

### METHODS

In 2019, an online questionnaire was conducted in the Netherlands among 500 parents of children (0-14 yrs) who played on inflatable playgrounds in the past year. The outcomes were analysed using quantitative methods to assess safety awareness and risk perception. Furthermore, results served as a starting point for intervention development.

### RESULTS

More than half of the parents (63%) are unfamiliar with the safety rules and risks associated with inflatable playgrounds. Lack of supervision and failure to anchor inflatable playgrounds were reported by parents as the most important risks. Results also showed that parents accept the risk of minor injuries associated with playing. Based on these outcomes, an intervention was developed called "Keep it fun, keep it safe!", which consists of an animation video about playing, fun and safety, a poster with safety rules and instruction material on how to anchor inflatable playgrounds.

### CONCLUSIONS

Parents' awareness on safety rules regarding inflatable playgrounds is insufficient and should be raised. Parents need to realize that monitoring their child(ren) is of great importance to prevent severe injuries. Additionally, parents should know that an inflatable playground must be anchored correctly, this is relevant for rentals in particular. The intervention developed based on this research informs parents about the necessary safety measures. Moreover, the intervention encourages risky play in children, taking into account the development of children's risk perception and competency to deal with risks.

## EP 1.4 Hold Hands - encouraging Early Childhood Education and Care Practitioners to teach water safety

THURSDAY 23 JUNE 2022 12:05

**Roger Sweeney<sup>1</sup>**

<sup>1</sup>Water Safety Ireland, Galway, Ireland

### BIOGRAPHY

Deputy CEO & Marketing Manager of Water Safety Ireland (WSI), established as a statutory body, a voluntary organisation and a registered charity to promote drowning prevention water safety initiatives in Ireland. With over 5,000 members nationwide, WSI partners with government agencies, corporate sponsors, NGOs, local authorities and community groups.

The author develops public awareness of drowning prevention initiatives that aim to change behaviours so that waterways are enjoyed safely.

### INTRODUCTION

Early childhood education and care (ECEC) – the phase before primary education – is increasingly acknowledged as providing the foundations for lifelong, yet in Ireland, there has been no water safety education programme for Providers to teach in ECEC centres. The author details a new intervention that was developed to promote water safety to children aged under six.

### OBJECTIVES

The earlier children begin to understand water's potential danger, the more it fosters a healthy respect for water safety as they grow. The aim was to design a water safety education resource that would be easy for the child to understand and easy for the practitioner to deliver, while being fun and engaging. The author outlines the methods that were used to progress the project from concept to distribution and associated campaigns, planned in partnership with the mother of a drowned child, that communicated the need for children to hold an adult's hand when near water and never to go near water without an adult.

### METHODS

The programme centred around instilling a basic awareness of water safety. At this young age, Water Safety begins by holding hands. The programme, named Hold

Hands, teaches a child that they must have an adult with them when close to water, and that they must hold an adult's hand. Cardboard pointers and a series of six storyboards focus on water safety in different areas with learning points on the reverse. These points are used by practitioners to discuss in groups how to stay safe in each aquatic environment. Then the pointers come into play. Each child takes turns holding one while pointing out safe and unsafe behaviours. Each pointer is designed in the shape of a hand, so whenever a child engages, it reinforces our key message to always Hold Hands near water.

### RESULTS

Nationwide distribution of the resource received significant media coverage due to support from the mother of a drowned child. Feedback from Early Learning Centres is positive as practitioners find the resource engaging and popular.

### CONCLUSION

For all children in Ireland, it has been nearly two years without swimming lessons, due to Covid-19 pandemic restrictions. It is therefore important that we encourage young children to think and talk about water safety. This resource prepares children for the transition out of Covid-19 restrictions and helps them to build a new relationship with water safety, instilling a healthy respect for our aquatic environments.

## EP 1.5 Child injury mortality and morbidity in Croatia

THURSDAY 23 JUNE 2022 12:05

**Ivana Brkić Biloš<sup>1</sup>**, Petra Čukelj<sup>1</sup>, Sandra Mihel<sup>1</sup>, Marinka Šimunović Gašpar<sup>1</sup>, Maja Silobrčić Radić<sup>1</sup>, Verica Kralj<sup>1</sup>

<sup>1</sup>Croatian Institute of Public Health, Zagreb, Croatia

### BIOGRAPHY

**Ivana Brkić Biloš M.D.**, specialist in epidemiology

Main field of work and interest: monitoring, analysis and prevention of noncommunicable diseases with special focus on injuries

National focal point for injury and violence prevention (WHO)

National Data Coordinator for the Global Status Report on Road Safety, Global Status Report on Violence Prevention, Global Status Report on Preventing Violence against Children and European Status Report on Preventing Child Maltreatment.

### INTRODUCTION

Injuries are the leading cause of mortality and morbidity in children in Croatia, especially transport accidents related injuries.

### OBJECTIVES

The aim of this research is to analyze trends in injury mortality during the last 20 years (2001-2020), and also analyze the injury morbidity related data in the last decade (2011-2020).

### METHODS

Data was obtained from routine mortality and morbidity statistics collected by the Croatian Institute of Public Health. Standardized mortality rates were further analyzed using Joinpoint regression analysis. Comparison with other European countries was made using the WHO data on injury related mortality in children.

### RESULTS

Leading causes of injury related death in children aged 0-19 in the 2001-2020 period were transport accidents (ICD 10 codes V01-V99), suicide (X60-X84), drowning (W65-W74), poisoning (X40-X49) and suffocation (W75-W84). Joinpoint analysis of mortality from all injuries in children aged 0-19 for the whole 2001-2020 period showed a significant average annual decrease of 3.8% (CI=-6.4, -1). There is a significant annual decrease of 10%

for the 2007-2014 period (CI=-14.6; -5.2), and a stable trend in the 2014-2020 period.

When analyzing specific causes of injuries, the biggest decrease was found in traffic accidents mortality (AAPC=-6.4; CI=-8.1; -4.7), and a significant reduction was also found in suicide rates (AAPC=-2.4; CI=-4.0, -0.8) and drowning (AAPC=-4.9; CI=-8.3, -1.4), with no changes in trend. When compared to 31 other European countries, Croatia has 13th highest ASMR of injuries in children aged 1-19 (latest available data for 2017), and consistently higher rates than EU average, but lower when compared to the WHO European region. As for transport accidents in children aged 1-19, Croatia has 10th highest ASMR compared to 31 other European countries. Leading causes of injury related hospital admission in children during the 2011-2020 period were transport accidents (35.2%) and falls (34.7%).

### CONCLUSION

Mortality rates from injuries in children in Croatia are declining, mainly due to declining rates of road traffic accidents mortality as a result of improved monitoring, a long-term National Road safety program since 1994, public health campaigns and improved treatment. However, there is still room for progress, as Croatia has higher injury mortality rates than average when compared to EU countries.



## EP 1.6 Self-reported knowledge on suicidal risk and suicidal behavior in schoolchildren aged 16 to 19 years in Lithuania

THURSDAY 23 JUNE 2022 12:05

### Birute Strukcinskiene<sup>1</sup>

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#### BIOGRAPHY

##### **Birute Strukcinskiene, MD, PhD**

Professor, Doctor of Biomedicine (Public Health) at the Department of Public Health, Faculty of Health Sciences, Klaipeda University, Lithuania.

Head of the Department of Public Health, Faculty of Health Sciences, Klaipeda University.

Chief Researcher at the Health Research and Innovation Science Center, Faculty of Health Sciences, Klaipeda University, Lithuania

Vice-President of the Injury Prevention and Safety Promotion section at the European Public Health Association (EU-PHA).

#### INTRODUCTION

Suicide rates data in Lithuania already were among the worst in the European Union. Pandemic situation and strict lockdowns increased insecurity of the population, and risk for self-harm and suicides. Self-inflicted mortality risk exposure is the most dramatic for teenagers and young people. Suicides in the age group 15 to 29 years take the second place in the structure of deaths (after road traffic injuries) globally.

#### OBJECTIVES

The aim of the study was to explore the self-reported knowledge on suicidal risk and suicidal behavior in schoolchildren aged 16 to 19 years in Lithuania.

#### METHODS

The survey was conducted at the school settings in Lithuania. 342 urban and rural schoolchildren aged 16 to 19 years participated in the study. SPSS Program was used, the Chi-Square test and the Spearman's correlation coefficient were applied for statistical analysis. The significance level  $p < 0.05$  was considered statistically significant.

#### RESULTS

The minority of schoolchildren know about verbal or behavioral warning signs before the suicide attempt, and that a person with suicidal intents is talking about the plans to commit suicide. Most teenagers do not know about the ambivalence of suicidal persons, and that communication and timely conversation could save life. Nearly half of the teenagers know peers with suicidal thoughts in their environment. 19% of investigated schoolchildren had suicidal thoughts. 7% of respondents had tried to attempt suicide. Only 10.4% schoolchildren stated that they had enough knowledge about suicide prevention; rural inhabitants and boys had less information and knowledge on suicide prevention. The study revealed that 20% of young people have been involved in the activities on suicide prevention.

#### CONCLUSION

Schoolchildren aged 16 to 19 years have insufficient knowledge about the suicidal behavior, suicide phenomenon, and suicide prevention. Therefore, awareness rising, preventive activities, and educational events need more efforts and attention for schoolchildren, teenagers and young people.

## PARALLEL SESSIONS

# EP2 Injury Surveillance - Data Collection



## EP 2.1 Methodological issues for recording occupational accidents and evaluation of aftereffects

THURSDAY 23 JUNE 2022 12:05

**Battaivan Byamba<sup>1</sup>**

<sup>1</sup>Erdenet Mining Corporation, Erdenet, Mongolia

### BIOGRAPHY

Dr. (Ph.D.), Deputy chief of Occupational Safety and Health Department, Erdenet Mining Corporation, State owned Enterprise, Erdenet city, Mongolia

### INTRODUCTION

It is important to study the causes and factors of industrial accidents in Mongolia and to take measures to prevent industrial accidents based on their analysis. However, the economic and social impact of the damage and losses is not well studied.

### OBJECTIVES

Therefore, I believe that there is a need to establish a system for assessing the economic damage caused by industrial accidents to enterprises and organizations in our country, and to establish a system for assessing the actual damage caused to individuals and organizations.

### METHODS

The research was aimed at analyzing and evaluating the organization's industrial accident registration process, the assessment of the economic damage caused by the accident, developing a methodological option for accident registration and damage assessment, and determining the methods to introduce it to the organization. In line with this, within the scope of the research to determine the organization's industrial accident registration activities and methods for assessing the economic damage of accidents, the following works will be done: study and analysis of theories, concepts, development trends, experiences related to occupational safety and health,

the theory and method of occupational accident registration and damage assessment, to conduct research and analysis of the current state of industrial accident registration, to conduct comparative research and analysis of the current state of industrial accidents of Mongolian enterprises and organizations, to analyze and evaluate the economic damage caused to organizations by industrial accidents, and based on the results of the analysis, to develop a methodology for recording industrial accidents and assessing economic losses, to identify ways to introduce them to the organization, make recommendations, and register the organization's industrial accidents and accident management.

Within the framework of the dissertation, the organization's OHS activities will be analyzed by scientifically analyzing the process of recording industrial accidents and assessing the economic damage caused by accidents, it will be able to identify ways to improve performance.

## EP 2.2 National data on drownings in Italy

THURSDAY 23 JUNE 2022 12:05

**Giuseppe Balducci<sup>1</sup>, Sabina Cedri<sup>1</sup>**

<sup>1</sup>Italian National Institute of Health, Rome, Italy

### BIOGRAPHY

Medical Doctor, for years an expert in domestic, road and leisure accidents at the Italian National Institute of Health. Currently national manager of the National Information System for Accidents in residential environments (SINIACA), as well as a member of the Observatory on monitoring and prevention of drowning, promoted by the Ministry of Health.

### INTRODUCTION

Drownings are a dramatic problem around the world, so the WHO, in the Global Report of 2014, asks all countries to make the necessary effort to reduce their extent, by defining national strategies.

### OBJECTIVES

Collect data on the mortality and morbidity of drownings in Italy for preventive purposes. Although in Italy the analysis of mortality data and the number of accesses to E.R. and hospital admissions allow the exact quantification of these accidents, there is a complete lack of information on the place of occurrence and the dynamics of the drowning, essential information for the purposes of an effective prevention of the phenomenon.

### METHODS

To find valuable data on the dynamics and other information about drownings, as carried out in other national areas (e.g. Australia), a methodology has been developed using news from main national and local online newspapers and dedicated websites. The sources were monitored relating to drowning accidents from 2015 to 2019.

### RESULTS

2,097 cases of submersion and semi-submersion were reported and analyzed. Most of them involved men (rate M:F - 3:1; 74.2%) of middle age (45-64 years; 19.3%), elderly (65-79 years; 17.2%) or children (0-10 years; 14.8%). The Italian region with the highest number of cases was Lombardy, (272 submersions/semi-submersions, 13.0%),

mainly with drownings in inland waters (lakes, rivers etc.) and in swimming pools, followed by Emilia-Romagna (9.9%) and Veneto (9.3%). Accidental drownings occurred mainly in June-September (80%) and on weekends (37%). In 57.7% of the cases the outcome was fatal, in 43.2% the subjects survived and 14% of the latter were sent to the E.R. or hospitalized. Accidents occurred in coastal bathing areas (47.1%), and 31.1% in inland waters, with the latter showing a significantly higher level of danger ( $p < 0.0005$ ) (80% of deaths vs. 52%), with respects of the former ones. In 28% of the cases the onset of sudden illness was the cause of the accident, in 15% due to rough seas and strong currents, in 14% due to falls in water or from rocks.

### CONCLUSION

Despite the low number of drowning accidents recorded annually in Italy (about 420), which are mostly avoidable, especially at a young age, the increase in cases resulting from drowning in areas not intended for bathing (e.g. inland waters) is worrying, given the considerable danger of the water body. Conclusions: the implementation of a strategic national drowning prevention plan is certainly necessary, as well as the improvement of data sources.

## EP 2.3 A registry-based pilot study of traumatic brain injury in two middle-income countries

THURSDAY 23 JUNE 2022 12:05

👤 Svetlana Cociu<sup>1</sup>, **Angela Cazacu-Stratu**<sup>1</sup>, Nato Pitskhelauri<sup>2</sup>, Nino Chikhladze<sup>2</sup>, Madalina A. Coman<sup>3</sup>, Corinne Peek-Asa<sup>4</sup>

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### BIOGRAPHY

Young researcher, Ph.D. (c), Assistant Professor. Research interest: health promotion, injury prevention, TBI. Since 2017, involved in scientific research within 2 international projects funded by NIH-iCREATE (Increasing Capacity in Research in Eastern Europe) and INITlatE (International Collaboration to increase Traumatic Brain Injury Surveillance in Europe). For the last 5 years, co-author in 11 articles, 18 abstracts, and 24 oral communications at national and international events.

### INTRODUCTION

TBI is a major cause of death and disability worldwide. Each year, in Europe, around 2.5 million people suffer a TBI, and 1 million require appropriate medical care. Injury prevention for the Republic of Moldova and Georgia, two middle-income countries, is one of the priority areas for public health surveillance; however, there are few data reported concerning TBI.

### OBJECTIVES

This study aimed to identify the frequency and characteristics of TBI among patients treated in the largest trauma hospitals in both capital cities, Chisinau and Tbilisi.

### METHODS

A prospective study was conducted among TBI patients within 4 large hospitals (2 in each country) offering care for injured patients. Data were collected between March 1 – August 31, 2019, using a TBI Registry modeled after WHO and US trauma system registries. The Registry contained information from existing patient medical records and additional information from medical providers that is not routinely included in medical documentation. Red-Cap was used for electronic data collection and SPSS software for data analysis. Ethics Committee approval was obtained from all institutions.

### RESULTS

In total, 910 TBI patients were hospitalized: 542 cases in Georgia and 368 in the Republic of Moldova. Patients' ages ranged from 1 month to 94 years; the average age was 32.1 for MD and 17.7 for GE. In both countries, prevail males (69.3% MD, 63% GE). The ambulance was the principal source of hospital arrival (97% MD, 60% GE), mostly patients arrived with stable vital signs. Most of TBI cases (90%) in both countries happened in urban areas, and within home environment (32% GE, 28% MD). Most of TBI hospitalizations (95% GE, 88.9% MD) were unintentional injuries, and 9.8% MD and 2% GE - work-related injuries. The main causes of TBI were falls (58% GE, 53.5% MD) mainly among males. Follows, road traffic crashes in MD (30.7%) mainly in transport areas and struck by or against an object in GE (22%) with most cases in 15–24 age group. Almost half of the injured in road traffic were passengers in a vehicle (45% GE, 36.3% MD), pedestrians (43.4% MD, 30% GE), cyclists (15% GE, 11.5%MD), and motorcyclists (11% GE, 7.1% MD).

### CONCLUSION

This study offers valuable TBI information in both countries to develop appropriate preventive measures. Results provide argumentations of an injury registry for comparable data among countries and highlight areas of research.

## EP 2.4 Injury ED and inpatient admission rates in Europe

THURSDAY 23 JUNE 2022 12:05

**Marco Giustini**<sup>1</sup>, Gianni Fondi<sup>1</sup>, Rupert Kisser<sup>2</sup>, Dritan Bejko<sup>3</sup>, Samantha Turner<sup>4</sup>, Alessio Pitidis<sup>5</sup>, MDS Reference Group<sup>2</sup>

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### BIOGRAPHY

Graduated in Cultural Anthropology and works in the Environment and Health Department of the Italian National Institute of Health in Rome, Italy. Author of 34 scientific publications with H-Index 15 (source Scopus). Since 2005 he has been scientific responsible of the Italian National Institute of Health (ISS) for 2 European projects and 4 national projects. Currently responsible for the European epidemiological surveillance system European Injury Database (EU-IDB), hosted at the ISS following a Memorandum of Understanding between ISS and EuroSafe.

### INTRODUCTION

The EU IDB (European Injury Database) hosted by the Italian National Institute of Health (ISS) is a valuable complementary source, providing standardized data on the external causes of injuries treated in Emergency Departments (EDs) of hospitals. The IDB surveillance system uses two data sets of different analytical detail: Full Data Set (IDB-FDS) and Minimum Dataset (IDB-MDS).

### OBJECTIVES

To provide an overview of the injury morbidity and assess the added value of rates in Europe using the MDS data-bank.

### METHODS

The MDS includes about 12 million of attendances recorded in a sample of EDs in 25 European countries between 2009 and 2019. For each country IDB Rates were estimated by dividing the number of cases with the reference population provided by each National Database Administrator (NDA). Average rates were calculated by averaging the yearly national rates. Rates are shown per 100,000 inhabitants. Outliers' rates were excluded.

### RESULTS

The estimated injury rate is 7,948 (average years 2009-2019) for all IDB countries, which leads to an estimate of about 35,200,000 injury patients in Europe (55.6% males)

that are treated in EDs. Within these IDB-cases 13.2% were hospitalized as inpatients and 86.8% were ED admissions, which leads to estimate about 4,646,000 inpatients and 30,554,000 pure ED-cases in Europe. The average IDB-rates by country ranged from 4,007 (Finland) to 12,696 (Italy). Overall, there seems to be an upward-trend of the rates over the period (+8.6%), however differences among years are more likely owed to the varying configuration of the sample of reporting countries over the period. People aged 15-24 years bear the highest injury rates (11,212), and middle-aged adults (25-64 years) the lowest (6,747). Home, leisure, and school accidents, hold by far the highest rate (5,485), followed by workplace (834), road transport (799), assault (254) and intentional self-harm (100). The inpatient admission rate ranges from 432 in Iceland to 2,374 in Austria. IDB-MDS data show great differences by country which are not only due to different injury morbidity. An important factor is the organisation of the national health care system, which results in different accessibility of secondary health care facilities. The ED based rates will be lower, if more injury patients are treated in primary health care facilities (e.g. in Finland and the Netherlands).

### CONCLUSION

Injury data from EDs can provide information on the main domains of the burden of injury and risk groups, which is indispensable for targeted prevention actions.

## EP 2.5 Alcohol related emergency department treatments in the Netherlands: trends in alcohol intoxications and alcohol related injuries during the Covid-19 pandemic

THURSDAY 23 JUNE 2022 12:05

Huib Valkenberg<sup>1</sup>, Susanne Nijman<sup>1</sup>

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Susanne Nijman** has been working as a senior researcher/project leader at the Dutch Consumer Safety Institute since 2002. She works in the areas of road safety, product safety, fireworks related injuries and alcohol related injuries. Susanne is project leader of the registration on road traffic accidents data, obtained by Dutch Emergency Departments and ambulance services.

### INTRODUCTION

In the Netherlands, the Dutch Injury Surveillance System (DISS) monitors Emergency Department (ED) treatments for accidents and injuries. Since 2007, DISS is analyzed for ED-treatments on alcohol intoxications and accidents/injuries involving alcohol, resulting in annual reports for the Dutch Ministry of Health. During the Covid-19 pandemic, lockdown measures like the closing of bars and restaurants and evening curfew had obvious effects on behaviour. Data analyses of ED-treatments over the year 2020 established significant differences in prevalence rates of alcohol intoxications and accidents/injuries involving alcohol compared to 2019, especially in times of lockdown.

### OBJECTIVES

Establishing trends in alcohol-related ED-treatments and the effects of Covid-19 lockdowns.

### METHODS

All patients treated for injuries at 14 Emergency Departments in the Netherlands are registered. From this representative sample of Dutch EDs, extrapolation to national estimates of ED-treatments is possible. Alcohol intoxications are defined as “alcohol use being the only cause of the ED visit”. Alcohol-related injuries are included when alcohol was registered as a product related to the occurrence of the accident. In order to interpret differences in prevalence rates in ED-treatments between 2019 and

2020, two periods of lockdown were defined: March 16th to May 31st (period 1) and October 14th to December 31st (period 2). Logistic regression analyses were performed to compare these two periods to similar periods in 2019.

### RESULTS

According to DISS, in 2020 an estimated 4,200 patients (95% CI: 3,200 – 5,300) were treated at an ED for an alcohol intoxication, a significant decrease (-36%,  $p=0.008$ ) from the 6,500 ED-treatments in 2019. The 15,400 ED-treatments (95% CI: 13,300 – 17,500) for injuries involving alcohol use also showed a significant decrease (-19%,  $p=0.023$ ) compared to 2019. In comparison, prevalence rates during the previous period 2010-2019 had shown significant increases of ED-treatments: 31 percent for alcohol intoxications and 89 percent in (severe) alcohol-related injuries. Specific differences in prevalence rates during periods of lockdown will be presented and discussed, alongside trends and rates for different age groups.

### CONCLUSION

The prevalence rates of ED-treatments for alcohol intoxications and injuries involving alcohol consumption showed a strong decrease in the Netherlands during the Covid-19 pandemic, especially during times of lockdown.

## EP 2.6 Taking severity seriously: looking beyond the maximum abbreviated injury score

THURSDAY 23 JUNE 2022 12:05

**Marjolein Versteeg<sup>1</sup>**, Susanne Asscheman<sup>1</sup>, Ellen Kemler<sup>1</sup>

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Marjolein Versteeg, PhD**, is a researcher at the Consumer Safety Institute in Amsterdam, Netherlands. Her areas of expertise include business intelligence using Power BI, behaviour change, and various quantitative and qualitative research methods.

### INTRODUCTION

Injury severity is often determined by anatomical measures such as the Maximum Abbreviated Injury Score (MAIS). Decision-makers and scientists often use MAIS as the most accessible severity measure. Yet, MAIS provides a limited view on severity as the overall burden of trauma is multidimensional, including psychological problems and health care costs for example. It is unclear if MAIS as a single criterion can serve as a proper indicator for overall injury severity since it has not been compared with other severity measures for different types of injuries. Consequently, scientists and decision-makers using MAIS as primary measure for injury severity may have insufficient information for prioritizing prevention policy and research.

### OBJECTIVES

This study explores the relation between MAIS and other injury severity measures for ten different injury types to determine if MAIS is indicative for the overall burden of trauma.

### METHODS

Trauma patients filled out a questionnaire six months after they visited an emergency department in the Netherlands. In total, 3,954 patients registered in the Dutch Injury Surveillance System responded. The following injury types are included: injuries to the head-brain, face, spinal cord, internal organs, upper and lower extremities, and hip

fractures. The questionnaire consisted of questions about the impact of patients' injury regarding quality of life (EQ-5D+), subjective distress (IES-R), anxiety and depression (HADS), cognitive complaints (RPQ) and healthcare use.

### RESULTS

Preliminary analysis showed that hip fractures, injuries to internal organs, head-brain injuries and spinal cord injuries scored high on all severity measures. In contrast, facial injuries scored relatively low on anatomical severity (MAIS) and healthcare costs, whereas these patients reported relatively high levels of psychological burden. MAIS was not indicative of patients' perceived severity as most patients (90%) reported no reduced health status six months after the trauma compared to their health status prior to the accident.

### CONCLUSION

MAIS is a discriminative measure for injury severity that shows strong overlap with several other severity measures including hospital stay and healthcare costs. However, MAIS is not always a proper indicator for severity when severity involves the patient's psychological burden or perceived health status. In sum, the accuracy of MAIS as an indicator for injury severity depends on the definition of severity and the injury type. Therefore, caution is needed when using and interpreting MAIS as an indicator for injury severity in research or policymaking.



## PARALLEL SESSIONS

# EP3 Digital Solutions - Home and Leisure Safety



## EP 3.1 Potentials and Challenges of Artificial Intelligence and Robotics for the Safety in Home and Leisure

THURSDAY 23 JUNE 2022 12:05

**Michael Nader<sup>1</sup>**, Johanna Trauner-Karner<sup>1</sup>

<sup>1</sup>KFV (Austrian Road Safety Board), Vienna, Austria

### BIOGRAPHY

**Michael Nader** is a sports scientist with special interest in safety in sports. After four years as a research associate at the University of Vienna, he is currently working in the Department of Sports and Leisure Safety of the Austrian Road Safety Board (KFV).

### INTRODUCTION

Artificial intelligence (AI) and robotics offer new possibilities for the prevention of accidents. Intelligent technologies, as we see them in autonomous driving, are already impressive today. However, around three quarters of accidents in Austria occur in the home and leisure sector. Increased use of AI and robotics in these areas could help to reduce the number of accidents in the coming years.

### OBJECTIVES

The aim of the study is to use expert knowledge to estimate future potentials and challenges of AI and robotics for the prevention of injuries in the areas of home and leisure.

### METHODS

42 international experts from the fields of AI, robotics and accident prevention were interviewed by using a two-stage real-time Delphi survey. In the first round, open questions were stated to provide a wide range of information. The results of the first round were then used to create a standardized questionnaire. Posted answers were available to all participants in real time, so that participants had the opportunity to change their minds. In this way an iterative process was created.

### RESULTS

The majority of the experts surveyed expect that with the help of AI and robotics, 20 to 25 percent of home and leisure accidents could be reduced over the next ten years. Especially for increasing the safety in senior citizens' households these smart technologies seem to have great potential. Inhibiting factors for the effective use of AI and robotics are restrictive legal framework conditions, a lack of know-how in institutions and little acceptance among the population. To avoid negative consequences from the use of AI and robotics (e.g. data theft and manipulation), ethical standards and strict approval conditions should be enforced. Homogenisation and linking of existing data sources are prerequisites for greater use of AI in accident research.

### CONCLUSION

The experts surveyed see great potential in AI and robotics in terms of preventing home and leisure accidents, although there are still major challenges to be overcome. For institutions in the field of accident prevention, it is important to experiment with these new technologies in order to develop specific skills and promote successful digital injury prevention.

## EP 3.2 Benchmarking Natural Language Processing tools for automatic classification of Trauma mechanism in French emergency free-text clinical notes

THURSDAY 23 JUNE 2022 12:05

**Gabrielle Chenais**<sup>1</sup>, Emmanuel Lagarde<sup>1</sup>, Cédric Gil-Jardiné<sup>1,2</sup>, Hélène Touchais<sup>1</sup>, Marta Avalos-Fernandez<sup>1</sup>, Benjamin Contrand<sup>1</sup>, Eric Tellier<sup>2</sup>, Xavier Combes<sup>2</sup>, Loick Bourdois<sup>1</sup>, Philippe Revel<sup>2</sup>

<sup>1</sup>Inserm Bordeaux Public Health, Bordeaux, France, <sup>2</sup>Bordeaux University Hospital, Emergency department, Bordeaux, France

### BIOGRAPHY

**Gabrielle Chenais** is a public health data scientist with a major interest in Natural Language Processing and Artificial Intelligence. Working as a PhD graduate student and researcher in the IETO team, she develops new NLP techniques in order to create a French national-scale observatory of trauma and injuries.

### INTRODUCTION

In order to study the feasibility of setting up a national trauma observatory in France, we compared the performance of several automatic language processing methods on a multi-class classification task of unstructured clinical notes.

### METHODS

A total of 69,110 free-text clinical notes related to visits to the emergency departments of the University Hospital of Bordeaux, France, between 2012 and 2019 were manually annotated. Among those clinical notes 22,481 were traumas.

We run 16 models of machine learning and trained 8 French pre-trained transformers to perform a multi-class classification task. The French version of GPT2 was pre-trained with an additional auto-supervised learning step on 306,368 unlabeled clinical notes (called GPTanam). Bagging algorithms and Light Gradient Boosting had similar results to Transformers except for GPTanam. Linear SVC (Support Vector Machine) had better performance than 4/8 Transformers. The pre-training corpus for transformers has an influence on results. A larger transformer doesn't imply better f1-scores. Fine-tuning with a specific corpus greatly improves performance since GPTanam had the best micro f1-score with 0.969.

### RESULTS

The transformers proved efficient multi-class classification task on narrative and medical data. Further steps for improvement should focus on abbreviations expansion, spelling corrections and multiple outputs multi-class classification.

## EP 3.3 Virtual Reality - an opportunity for safe and realistic power wheelchair training

THURSDAY 23 JUNE 2022 12:05

👤 **Eva Aigner-Breuss**<sup>1</sup>, Viktoria Frank<sup>2</sup>, Michael Gstöttenbauer<sup>2</sup>

<sup>1</sup>KFV (Austrian Road Safety Board), Vienna, Austria, <sup>2</sup>LIFETool gemeinnützige GmbH, Linz, Austria

### BIOGRAPHY

**Eva Aigner-Breuss** holds a Master's degree in Psychology from the University of Vienna. Since 2008 she has been working for the KFV (Austrian Road Safety Board), being specialized in traffic and transport psychology. Her activities include the management of international and national empirical research projects and evaluation studies in the field of road safety and mobility.

### INTRODUCTION

For people who are dependent on a power wheelchair, its correct handling is crucial for safety at home, in traffic and in leisure activities. This requires effective training at the outset. The new WheelSim app uses virtual reality technology to provide realistic training in power wheelchair control and specific lessons on safe mobility during therapy and at home. One advantage of virtual reality programmes is the fact that the field of vision can be changed by head movements, which makes this power wheelchair training much easier for people with physical disabilities.

### OBJECTIVES

The aim of the project was to allow people with disabilities to train safely in a protected simulation environment. Special attention was paid to making the app usable for children and people with learning disabilities. As part of the project, a prototype of the WheelSim app was developed and tested.

### METHODS

The app offers various training options with different levels of difficulty as well as accompanying educational videos. There are four different training areas: practice park, time trials, tasks and free exploration. The practice park and the time trials are surroundings without other road users, where basic skills can be trained. The "tasks" consist of four exercises training real-life situations, e.g. crossing the road without a pedestrian crossing or safe behaviour

on the street. All rides are recorded and can be replayed to gain an objective assessment. The educational videos are dedicated to younger users and people with learning disabilities and teach them the correct behaviour in traffic.

Different user groups - children, people with learning disabilities, experienced users, therapists, wheelchair providers - tested the prototype in a standardised procedure (including behavioural observations) and gave feedback on its usability and acceptance.

### RESULTS

The results of the evaluation show that the app trains precisely those skills required in real life. Therapists and wheelchair providers rated the new app as a practical and useful tool for training various skills, including fine motor skills, and supporting therapy. The playful approach motivates beginners to train difficult or stressful situations repeatedly. All groups stated that the app was easy to use. The educational videos are found to be supportive.

### CONCLUSIONS

The WheelSim app has been well received. Difficult and stressful road traffic and daily life situations can be practised effectively in a simulated environment. Insights from the evaluation were used to fine-tune the app. The prototype was subsequently developed into WheelSim Home for private individuals and WheelSim Pro for professionals, both versions are available for purchase.

## EP 3.4 Development and Implementation of a Digital Falls Prevention Program for Community-dwelling Older Adults

THURSDAY 23 JUNE 2022 12:05

**Emma Stanmore<sup>1</sup>**

<sup>1</sup>University Of Manchester, Manchester, United Kingdom

### BIOGRAPHY

**Emma Stanmore** is a Reader and Lead for the Healthy Ageing Research Group at The University of Manchester. Emma has extensive experience as Principal Investigator and has a track record of developing successful healthcare innovations with software developers and engineers and also implementing change in the National Health Service. Her innovative research has been recognised in a number of scientific awards including the EULAR AHP prize and BGS Jed Rowe prize.

### INTRODUCTION

Falls are the largest cause of accidental death in older people across Europe and affect over 30% of community dwelling ≥65-year-olds annually. During the pandemic there has been a disproportionate number of older adults affected and needing support to recover from falls and functional decline due to shielding. We developed a digital strength and balance, gamified, falls prevention program to improve access, uptake and adherence to proven exercises to reduce falls.

### OBJECTIVES

To conduct an implementation evaluation of a digital falls prevention programme known as 'KOKU' for community-dwelling older adults aged ≥55 in receipt of home care.

### METHODS

Qualitative semi-structured telephone interviews were undertaken with older users, Care Managers and Carers to explore multiple perspectives of implementation. Prior to implementation, online training was given to Care Managers on how to screen potential users and how to safely use KOKU. Older participants were identified and screened for eligibility by the Care Managers. Care Managers cascaded the training to carers who then trained the older participants in their own home. Older participants were requested to use KOKU for 30 minutes, 3 times per week, for 12 weeks. During the intervention, weekly phone calls were offered to each user to provide support, if required.

### RESULTS

A total of 35 older participants (from 6 Care Providers) aged between 56 and 99 (Mean age 76) took part in the 12 week 'KOKU' Digital falls prevention program. Interviews with 11 older users, 7 Care Managers and 2 Carers were undertaken. Implementation processes differed between Care Providers with some arranging group meetings to support users to continue the KOKU program at home and others supporting users in their own home during carer visits. Positive outcomes (confidence, physical and psychological improvements, usability, acceptability, self-pacing and self-management) were reported by majority of users with no adverse events reported during the study period. Care Managers reported that staff shortages during the pandemic was the main implementation challenge. Post study implementation has continued indicating the high demand for falls prevention support for older adults.

### CONCLUSION

An evidence-based digital falls prevention program may be a suitable and safe option for community-dwelling older adults in receipt of home care.

## EP 3.5 Experiences and Perceptions of Community Safety

THURSDAY 23 JUNE 2022 12:05

**Lorraine Gillies<sup>1</sup>**

<sup>1</sup>Scottish Community Safety Network, Glasgow, United Kingdom

### INTRODUCTION

In late 2020, the Scottish Community Safety Network (SCSN) published 'Experiences and Perceptions of Community Safety in Scotland' using research produced by Robyn Bailey, Social Researcher for the Scottish Government. The research was commissioned by SCSN as part of the Scottish Government's analytical exchange programme. The findings were shared at a webinar, hosted by SCSN, on 1 December 2020. Practitioners from across the community safety sector in Scotland attended.

### OBJECTIVES

SCSN have had a long-standing interest in what makes people safe. We have a curiosity about the roles that various factors - people and organisations - play in creating safe communities. This research is a culmination of collaborative work, designed to better our understanding of people's experiences of safety, throughout life stages as well as understanding different communities' experiences of safety. The project unpicks high-level data about, and illustrates personal experiences of, community safety. It has helped SCSN and our network to improve understanding, of how to support safer communities in Scotland and raise awareness of an increasingly relevant issue.

### METHODS

The research has helped partners to further their work on prevention, as well as influence their policy and practice to match the diversity of experiences in community safety. SCSN now use this work to influence conversations about what makes a safe community, and highlight understanding of how these things interact with one another, to create inclusive, resilient and safe communities.

### RESULTS

Key findings from the research include:

- Fear of crime is more apparent in particular groups, such as minority ethnic people, LGBTQ communities, and for women and girls. Fear of crime has an impact on wellbeing, the choices they make, and it can affect people's experiences of life.
- There are major data gaps, especially around young children; trans and gender non-conforming people; lesbian, gay and bisexual people; specific minority ethnic groups in Scotland; and people with specific disabilities - as well as the need to understand experiences where there are intersections of these identities

You can find the animation here:

[https://www.youtube.com/watch?v=rbK865PQN-L8&ab\\_channel=SCSNSCSN](https://www.youtube.com/watch?v=rbK865PQN-L8&ab_channel=SCSNSCSN)

We have published a recording of the webinar launch which you can view here:

[https://www.youtube.com/watch?v=gMeWaxrw-CeQ&ab\\_channel=SCSNSCSN](https://www.youtube.com/watch?v=gMeWaxrw-CeQ&ab_channel=SCSNSCSN)

Download the research in full here:

<https://www.safercommunitiesScotland.org/wp-content/uploads/Experiences-of-community-safety-in-Scotland-published-version-Dec2020.pdf>

## EP 3.6 Machine Learning techniques for the prediction of hospital Length Of Stay from injuries

THURSDAY 23 JUNE 2022 12:05

**Alessio Pitidis**<sup>1</sup>, Gianni Fondi<sup>2</sup>, Carlo Mamo<sup>3</sup>, Marco Giustini<sup>2</sup>, IDB-FDS Reference Group<sup>4</sup>

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### BIOGRAPHY

**Alessio Pitidis** is a Data Scientist and Senior Researcher at the Italian National Institute of Health (ISS). He worked in the laboratory of Epidemiology & Biostatistics of the ISS, in particular in the field of injury prevention and control. Former Director of the Environment & Trauma unit of the ISS. At present, Head of Research & Development of B2C Innovation Inc. for the development of digital services and artificial intelligence methods in the insurtech sector.

### INTRODUCTION

Unlike statistical inference, the purpose of Machine Learning (ML) is to obtain a model that can make repeatable predictions without prior assumptions about the underlying relationships among variables.

### METHODS

ML techniques were applied to the Full Data Set (FDS) of the European Injury DataBase (EU-IDB) which provides detailed information on the external causes and diagnoses of injury observed at the Emergency Departments (ED). The IDB-FDS provides more than 3.800.000 ED records, for the period 2008-19 in 19 countries. LASSO (Least Absolute Shrinkage and Selection Operator) cross-validated linear regression technique was used for variable selection and parameter regularization. Non-hospitalized ED patients were considered at LOS=0, while for inpatients days of hospitalization were used. Cross validation was performed randomly assigning the records on 5 folds. On the selected variables a cross-validated linear model was performed on 5 folds which were randomly sampled assigning 80% of records to the training sample and 20% to the testing one.

### RESULTS

The strongest predictors of LOS selected by the model were in order of importance: EUROCOST-39 categories, AgeGroup, ActivityWhenInjured, MechanismOfInjury, TransportInjuryEvent, PlaceOfOccurrence, SexOfPatient, Intent. EUROCOST-39 categories represent 86,2% of explained variability and AgeGroup 8,6%.

In applying a cross-validated linear regression model with these independent variables we obtain an overall

root mean square error of 3.875 that ranges from 3,856 in fold 5 up to 3,894 in fold 3. The regression coefficients for instance in the median sample (fold 4) are: EURO-COST-39=0,920 (95%CI: 0,918-0,922); AgeGroup=0,070 (95%CI: 0,068-0,070); ActivityWhenInjured=0,219 (95%CI: 0,210-0,228); MechanismOfInjury=0,287 (95%CI: 0,280-0,295); TransportInjuryEvent=0,971 (95%CI: 0,940-10,001); PlaceOfOccurrence=0,135 (95%CI: 0,126-0,144); SexOfPatient=-0,694 (95%CI: -0,729--0,660); Intent=0,607 (95%CI: 0,590-0,624); constant -20,098 (95%CI: -20,153--20,042).

The ML model explains a significant part of the LOS variability and this measure is stable in the different training and testing samples used to cross validate the estimates. The main part of variability is explained by the diagnoses reclassified according to the disability standardization method. For instance, in the training sample of median fold the LOS ranges from 0,45 days for strain of hand/fingers up to 11,65 days for multi-trauma. The respective figures in the testing sample are 0,46 and 12,00 days.

### CONCLUSION

The LASSO technique has proven useful to enhance the prediction accuracy of the LOS. A combination of more disabling injury and older age increase substantially the length of hospitalization for injuries. The EU-IDB database can provide estimate of predictors of LOS for guiding targeted preventive measures and organizing health care services.

## PARALLEL SESSIONS

# EP4 Child Safety - Injury Patterns





## EP 4.1 Assessment of pediatric TBI patterns using the Glasgow Scale at all levels of medical care

THURSDAY 23 JUNE 2022 14:35

**Eugeniu Mindrigan**<sup>1,2</sup>, Cornelia Calciu<sup>3</sup>, Vasile Galearschi<sup>1,2</sup>, Angela Cazacu-Stratu<sup>1</sup>

<sup>1</sup>State University Of Medicine And Pharmacy „Nicolae Testemitanu“, Chişinău, Republic of Moldova, <sup>2</sup>Institute of Neurology and Neurosurgery „Diomid Gherman“, Chişinău, Republic of Moldova, <sup>3</sup>Mother and Child Center in Chisinau, Chişinău, Republic of Moldova

### BIOGRAPHY

Since 2016, **Mindrigan Eugeniu** is a Neurosurgeon at the Institute of Neurology and Neurosurgery of the Republic of Moldova. Specialist in Adult and Child Neurosurgery. Member of the Society of Neurosurgeons of the Republic of Moldova. Member of the European Association of Societies of Neurosurgeons. Scientific researcher within the ICreate International Project. Studying the peculiarities of providing medical assistance to patients with craniocerebral trauma in the Republic of Moldova to adults and children. To elucidate problems at all levels of the system and propose necessary solutions.

### INTRODUCTION

Traumatic brain injury (TBI) is one of the major public health problems and the leading cause of death and disability worldwide among children and adolescents. The data reveals that 1 of every 20 emergency department presentations at pediatric hospitals is caused by a TBI, more common than burns or poisonings. The epidemiologic characteristics and outcomes of pediatric TBI have not been adequately registered in the Republic of Moldova. The Glasgow Coma Scale (GCS) is one of the tools used in the assessing the TBI severity and optimal medical care.

### OBJECTIVES

The aim of the research was to evaluate the state of consciousness among children with TBI at all levels of medical care.

### METHODS

A prospective study was piloted among children with TBI in a large Municipal Pediatric Hospital, “Valentin Ignatenco”, Chisinau, for a period of 6 months (March 1 - August 31, 2019). A questionnaire was applied for data collecting from the medical records. The Red Cap electronic data collection tool was used to upload the data, Epi Info 7 was used for the data analysis.

### RESULTS

The total number of pediatric TBI patients was 167. The majority were male patients - 109 (65,3%) - and 58 female patients (34,7%). The mean age among injured children is  $9,0 \pm 5,04$  years old. At the pre-hospital period, in the consciousness (GCS 15p) were 57 children (34,1%), in the state of moderate obnubilation (13-14p) were 103 children (61,7%), state of profound obnubilation with (11-12p) were 4 children (2,4%), sopor state (8-10p) - 3 children (1,8%).

The state of the majority of TBI children worsened during their transportation to the ED. At the moment of coming to ED, in the conscious state were 30 children (18%), state of moderate obnubilation - 102 children (61,1%), state of profound obnubilation - 25 children (15%), in the sopor state - 2 children (1,2%), in moderate Coma I state (6-7p) were 5 children (3%) and in profound Coma II state - 2 children (1,2%). During the treatment, the state of the patients has been changed: with GCS 15p were 155 children (92,8%), 13-14p - 3 children (1,8%). In coma III exceeded state (3p) 9 children have died (5,4%).

### CONCLUSION

The results have shown some gaps in the provision of medical care of TBI that impose us to reevaluate and adopt some new politics of health and guidelines of TBI patients' prevention and treatment.

## EP 4.2 Prevalence of road traffic accidents among children 0-16 years old: a retrospective study in Yerevan

THURSDAY 23 JUNE 2022 14:35

**Artashes Tadevosyan<sup>1</sup>**, Kelli Kulikova<sup>1</sup>, Hasmik Avetisyan<sup>2</sup>

<sup>1</sup>Yerevan State Medical University, Yerevan, Armenia, <sup>2</sup>Service of Police of the Republic of Armenia, Yerevan, Armenia

### BIOGRAPHY

Professional experience in the field of preventive medicine, public health, environmental health, epidemiology. Dr. Professor at Yerevan State Medical University, more than 140 scientific publications.

### INTRODUCTION

Every year, approximately 1.35 million people die as a result of road traffic crashes. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury. Road traffic injuries are the leading cause of death for children and young adults aged 5-29 years. More than 90% of road traffic deaths occur in low- and middle-income countries. In 2017 and 2018, 7,646 traffic accidents were registered in Armenia, as a result of which 622 people died and 11,129 people were injured. 3,376 or 44.2% of the total number of accidents took place in Yerevan, as a result of which 155 people were killed and 4,499 were injured.

### OBJECTIVES

The aim of this study is to find out the prevalence of road traffic accidents among children in Yerevan.

### METHODS

This was a retrospective study of road traffic crashes involving children aged 0-16 years. Data were obtained from the Police of Armenia. The study period was from January 2017 to December 2018. Statistical analysis was performed with Excel.

### RESULTS

The number of accidents involving children under 16 years old in Yerevan was 346, from which 343 children were injured (153 children under 7 years old, 178 children aged 7-14 years, 62 children aged 14-16 years), 3 children were killed (1 child up to 7 years old, 1 child from 7 to 14 years old).

241 cases were registered on weekdays, 75 cases on weekends. 17 cases were registered from 00:00 to 06:00, 26 cases from 06:00 to 09:00, 34 cases from 09:00 to 12:00, 75 cases from 12:00 to 15:00, 78 cases from 15:00 to 18:00, 74 cases from 18:00 to 21:00, 42 cases from 21:00 to 24:00.

### CONCLUSION

The prevalence of road traffic accidents is high among children between the ages of 7-14 (45.29%). The highest number of cases were registered from 15:00 to 18:00 – the time when children go home from schools. Contributing factors for this prevalence could be road conditions in Yerevan, a lack of knowledge, negligence in following traffic rules, carrying children in the front seats of vehicles, and not using child seats.

## EP 4.3 Trampoline related injuries in children aged up to 18 years – a multinational study based on EU-IDB (2008 and 2018)

THURSDAY 23 JUNE 2022 14:35

**Dritan Bejko**<sup>1</sup>, Rupert Kisser<sup>1</sup>, Tatiana Alves<sup>1</sup>, Wim Rogmans<sup>1</sup>

<sup>1</sup>Luxembourg Institute of Health, Strassen, Luxembourg

### BIOGRAPHY

**Dritan Bejko**, Epidemiologist, Department of Population Health at the Luxembourg Institute of Health. Project Leader IDB-Luxembourg, member of Advisory Board IDB and of Executive Board of EuroSafe

### INTRODUCTION

Trampolines enjoy a high popularity among children at home, on playgrounds and in other recreational areas. In addition, the growing popularity of indoor trampoline parks are causing an increase in serious trampoline-related injury.

### OBJECTIVE

Investigate and compare the extent and patterns of trampoline related injuries in different European countries and to draw conclusions for targeted prevention.

### METHODS

Home, leisure, school and sport injuries registered among children under 18 years old in the European Injury Data Base (IDB) between 2008 and 2018 were used. The Netherlands, Luxembourg, Austria, Sweden/Skaraborg District, Denmark, Latvia and Slovenia have systematically collected data on product related injuries in the Hospitals' Emergency Departments (ED) for at least four consecutive years during this period. For 2014-2018, validated national estimates could be calculated for Austria, the Netherlands and Luxembourg. For Sweden, the estimate was valid at regional level.

### RESULTS

The incidence of trampoline injuries among < 18-year-olds ranges between 1.5–2.8 per/1,000. About 9% of those injuries are serious enough to require hospital admission. At the European level that represents about 16,200 hospital admissions and 163,800 ED treated out-patients every year.

The great majority of trampoline accidents happen between March and September (87%) with a peak in

April-July. The 5-14-year-olds are the most affected age group cumulating 80% of all injuries. About 75.2% of the accidents happen at home or in the surrounding areas with 58.0% in the own garden.

The most frequent mechanisms were falls (70.5%), over-exertion (10.5%) and collision with an object (8.5%) or a person (6.1%). Fractures of the upper extremities (25.0%), mainly lower arm and wrist, or the lower extremities (15%) were the most common types of injuries. Sprains of the lower extremities (18%), mainly ankle sprains, were also very common. The same patterns were detected in all countries.

### CONCLUSION

Trampoline related injuries among < 18-year-old children and adolescents in Europe are frequent. The safest option for parents to avoid trampoline injuries to their children is not to have a trampoline at home. However, if they decide to take the risk and have a trampoline, safety measures should be respected. Somersaults and flips should be discouraged, only one child on the trampoline at a time, always under supervision of an adult. Trampolines have to be inspected regularly, ladders should be kept away so that small children cannot climb and jump on the trampoline unsupervised.

## EP 4.4 How our safety policy changed from “as safe as possible” to “as safe as necessary”

THURSDAY 23 JUNE 2022 14:35

**Veerle De Vlieghe<sup>1</sup>**, Yasmine De Mesel<sup>1</sup>

<sup>1</sup>Opgroeien, Brussels, Belgium

### BIOGRAPHY

Growing up is a governmental agency creating as many opportunities as possible for all children and young people, including their families, who grow up in Flanders and Brussels.

One of their objectives is high quality childcare for every child in Flanders and Brussels.

As an interior architect **Veerle De Vlieghe** started working for Growing up 17 years ago. She is mainly working on themes related to infrastructure, safety and play.

### INTRODUCTION

In the past, we went quite far in determining what was or was not allowed in a childcare centre: no pets allowed, no sharp corners, fencing off stairs, no pebbles, ...

All of this with the intention of ensuring that childcare is as safe as possible.

### OBJECTIVES

Childcare has to offer a rich and challenging play environment to give children plenty of opportunities for development. Therefore, a new approach on safety is necessary.

### METHODS

In 2016, we ran a campaign to get childcare on the right track and conducted a specific risk analysis. The question “what do you think about it” becomes more important than the question “is it allowed”.

We used Virtual Reality (<https://vimeo.com/201286532>) as a way to let the viewer experience a day in childcare as a child. Goal of the movie is to talk about risks in day care. Through the eyes of a toddler, you see things you didn't notice as an adult.

In 2017 we launched a campaign on outdoor play. The aim of the campaign was to remove barriers and highlight the importance of playing outside. And we realised that striving to be as safe as possible is also a barrier. Trying to prevent every possible accident limits the enormous amount of possibilities and opportunities to explore.

In 2017 we also participated in the steering group of the Replay Toddler research project on risky play of Artevelde University of Applied Sciences. We learned that risky play offers children many opportunities to learn and develop. But also that the misunderstanding ‘this is not allowed by Growing Up’ was still very much alive.

### RESULTS

The sum of all these things convinced us that it was necessary to incorporate the principles of risky play in our approach on safety and health. We no longer see safety as an objective in itself but as a pre-condition for giving children as many opportunities for development and play as possible. We now talk about as safe as necessary instead of as safe as possible.

### CONCLUSION

This is our new vision on safety:

We aim for an environment that is as safe as necessary so that every child has as many opportunities as possible to develop. We mean an environment in which we cleverly deal with risks so that children can push their limits and have plenty of opportunities to play.

## EP 4.5 Dutch child injury prevention model

THURSDAY 23 JUNE 2022 14:35

**Hedy Goossens<sup>1</sup>, Mieke Cotterink<sup>1</sup>**

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Hedy Goossens** is an expert in risky play and child safety. She works as a senior project leader and consultant at the Dutch Consumer Safety Institute and is member of the child safety team. She converts relevant knowledge and insights into high-quality behavioral interventions and developed various interventions concerning risky play, fall skills in children and safety in childcare.

### INTRODUCTION

Research shows that, next to child protection, child development plays an important role in child injury prevention. Exposing children to certain risks makes an important contribution to their physical, cognitive and social-emotional development as they learn how to cope with risky situations. These insights have led to the development of a strategic model for the prevention of injuries in children, in order to use prevention more effectively.

### OBJECTIVES

The objective was to develop a renewed theoretical model that helps researchers and policymakers in balancing protection of children on the one hand and skill reinforcement on the other hand. This child injury prevention model can serve as a basis for current and future child injury prevention activities.

### METHODS

A literature search was conducted to establish an overview of developmental milestones related to the physical, cognitive and social-emotional development of children from 0 to 18 years of age. Based on this review, four consecutive stages of development were defined. For each developmental stage, the need for protection versus the importance of reinforcing skills was determined in relation to injury prevention.

### RESULTS

The child injury prevention model reflects the relationship between the two forms of injury prevention – balancing protection and skill reinforcement – in perspective of the four developmental stages of a child. The model shows that in young children (0-2 years) protection plays a key role. They are not yet capable of performing accurate risk assessment. Therefore, parents should protect their children at this stage through supervision, using resources, and making environmental adaptations. As a child develops, the emphasis gradually shifts from protection to skill reinforcement (2-6 years, 6-12 years). Importantly, parents should, increasingly with age/developmental stage, stimulate children in developing physical, cognitive and social-emotional skills, e.g. through risky play. In this way, children gradually improve their skills: how to assess risks and cope with them. In puberty (12-18 years), children mainly need support in their social-emotional development, which can help them assess and cope with age-related risks (e.g. peer pressure).

### CONCLUSION

For young children, injury prevention should focus on the protection of the child. As the child ages, however, the emphasis shifts to encouraging and supporting the development of their (risk assessment) skills.

## EP 4.6 “Safe & Healthy”: A Safe School short film project on youth injury prevention and safety promotion

■ THURSDAY 23 JUNE 2022    ⌚ 14:35

👤 **Isabella Kranacher<sup>1</sup>**, Sabine Jahn<sup>1</sup>, Ivonne Mayr<sup>1</sup>

<sup>1</sup>GROSSE SCHUETZEN KLEINE/Safe Kids Austria, Graz, Austria

### BIOGRAPHY

Studies in Health Promotion and Health Management,  
Project Coordinator for Safe School Communities and Safe Children Communities

### INTRODUCTION

Teens (aged between 11 and 18) are increasingly difficult to reach concerning safety issues. With the help of the peer approach, it should be possible to create awareness for risky situations and to convey tips for injury prevention.

### OBJECTIVES

At the International Safe School BG Rein (certified 2017, a secondary and post-secondary school & high school) the promotion of safety, health and well-being of students is supported by the REVOST association. The Health & Safety Student Representatives, known as “Xundis” (2 elected students from each class), are an important part of the Safe School Community structure. They are role models and contact persons for their classmates in terms of peer education.

### METHODS

The young people know the potential dangers and safety precautions in the areas of school, leisure time (water safety, safe skateboarding), public transport and traffic. The Xundis are intensively concerned with topics of injury prevention and safety promotion. Therefore, they consider safety tips and use protective equipment. In their role as peers, they serve as role models for their classmates. The designed short films display the topics in an age-appropriate and creative way and can be shared via social media by the young people themselves.

As part of a workshop day, the Xundis in grades 4 to 7 receive an impulse lecture on the topic of injury prevention from GROSSE SCHUETZEN KLEINE/Safe Kids Austria. Afterwards, the students work in groups to choose a topic. On the basis of the information material and their own experiences, they develop a script for a short film with the support of Ivonne Mayr (general secretary of REVOST & teacher) and Safe Kids Austria.

The scripts are handed over to Michael Wappl, a film expert, who does the shooting with the Xundis. Working with a professional provides added value for the students and helps to ensure that the content is remembered better.

The films are presented on annual Peer Group Days and published by the pupils via social media, on school homepages and the Safe Kids Austria-Network.

### RESULTS

The introduction to the topic through the impulse lecture enabled the Xundis to focus on the creative implementation of the themes.

If the project were to be extended, the further use and distribution of the films could be worked out with the students in order to increase their identification.

## PARALLEL SESSIONS

# EP5 Home Safety - Behaviours and Circumstances



## EP 5.1 Causation factors of unintentional injury in the home

THURSDAY 23 JUNE 2022 14:35

**Dawn Exley<sup>1</sup>**

<sup>1</sup>Scottish Community Safety Network, Glasgow, United Kingdom

### BIOGRAPHIE

National Development Officer for the Scottish Community Safety Network. MSc in Public Policy and MA in Community Music

### INTRODUCTION

Every year there are 6,000 deaths in the UK as a result of accidents in or around the home, as well as 2.7 million people a year requiring a hospital visit. A UK government report published in 2018 stated that accidents at home are a leading cause of preventable death for children under five years, and they are a major cause of ill-health and serious disability. Children living in the most deprived areas are most at risk with a 38% greater risk of hospital admission for a preventable injury. Older people are also at an increased risk of injury and death, with falls being the major reason for hospitalisation.

### OBJECTIVES & METHODS

Despite these figures, there is not a great deal of information known about what factors influence unintentional injuries and how these can be mitigated. In response to this lack of information, in June 2021, the Scottish Community Safety Network (SCSN) published 'A literature review of factors which cause and mitigate against injury in the home'. The report - and accompanying data tables - is an extensive piece of research, commissioned by SCSN and undertaken by Dr Margaret Callaghan (Independent Research and Writer). The final report is publicly available and can be found on the SCSN website (<https://www.safercommunitiesscotland.org/wp-content/uploads/Causation-Factors-Unintentional-Injury-Home.pdf>). In addition, a webinar was delivered in July 2021 to community safety professionals and practitioners, from across the UK. The report and its findings were presented and discussed with stakeholders.

### RESULTS

The research outlines the need for, and importance of, robust monitoring and evaluation systems within the field of unintentional harm and injury prevention. Wider understanding and appreciation of same will better enable community safety practitioners to demonstrate the impact of home safety initiatives, and help improve and direct on future efforts. The findings are applicable to a wide range of community safety activities, such as home safety visits, assistive technology and educational programmes, all of which are discussed in the report.

### CONCLUSION

The final research report is an instructive, useful document that provides an overview of the most pressing issues within the field of unintentional harm in the home. We believe it is unique. It can be used (and already is being used) by practitioners and organisations, when pursuing activities such as funding applications, report writing and facilitating discussion.



## EP 5.2 Home falls among people 65 years and older: circumstances and patterns of falls. Results from the ChuPaDom survey – 2018

THURSDAY 23 JUNE 2022 14:35

**Marion Torres<sup>1</sup>**, Laure Carcaillon-Bentata<sup>1</sup>, Annabel Rigou<sup>1</sup>, Gaëlle Pedrono<sup>1</sup>, Nathalie Beltzer<sup>1</sup>

<sup>1</sup>Santé publique France (French Public Health Agency), Saint-Maurice, France

### BIOGRAPHY

PhD Epidemiology, Public Health

### INTRODUCTION

Falls are responsible for high morbidity and mortality, representing a major public health issue in elderly people. In France, in 2010, falls accounted for 85% of emergencies for Home and Leisure Injuries (HLIs) among people aged 65 and over. Seven out of 10 falls occurred at home, but currently, few data exist to characterize the heterogeneity of the circumstances of falls which would be helpful to set up targeted prevention actions.

### OBJECTIVES

The aim of the study was to describe the characteristics and circumstances surrounding falls occurring at home among people aged 65 and over hospitalized, and to identify profiles of fallers.

### METHODS

ChuPaDom is a prospective multicenter survey conducted in 2018 in 7 volunteer French hospitals. For each, all persons aged 65 and over hospitalized within a 6-month period following a fall at home were interviewed. Data were collected during a face-to-face interview at the hospital by a referring hospital investigator. Following a description of the sample, patterns of falls were identified by Multiple Correspondence of Analysis (MCA) and Ascending Hierarchical Classification (CAH).

### RESULTS

The sample comprised 1,467 patients: 69% were female. The mean age was 84.5 years. About 80% of the patients fell during the day. The most frequent activities during the fall were hygiene/toilet (15%) and walking (14%); 20% of falls occurred in the bedroom. In 43% of the cases, the falls were low-height falls. More than half had already fallen in the previous 12 months. Almost 45% of fallers had a fracture. Around 16% had a head trauma, 14% presented a rhabdomyolysis, and 4% presented a post-fall syndrome.

Five profiles of fallers were identified: youngest seniors who took risks and fell from a raised height, youngest seniors with specific health problems who fell down stairs, autonomous seniors who fell because they lost their balance or fell from their own height, dependent seniors who fell during low-intensity activities, very old seniors for whom missing data were frequent.

### CONCLUSION

These results highlight the heterogeneity of the circumstances in which elderly people fall. These profiles have been used for the anti-fall plan to be launched in 2022 by the French government to implement prevention actions. The results of this study will be enriched by the analysis of the second part of this survey, which examines the consequences of the fall one year after.

## EP 5.3 Gas hazards at home – an invisible threat

THURSDAY 23 JUNE 2022 14:35

**Stefan Georgiev<sup>1</sup>**

<sup>1</sup>KFV, (Austrian Road Safety Board), Vienna, Austria

### BIOGRAPHY

Project manager at the department of property protection. Research in the field of fire safety & prevention. Technology expert with experience in research and science communication.

Every year, approximately 250 people in Austria suffer poisoning from the odorless, non-irritant toxic gas carbon monoxide (CO). Accidental CO poisoning increasingly occurs during summer, especially when temperatures are high. Air-conditioners or range-hoods used in combination with gas appliances and gas boilers in closed spaces pose a threat by releasing CO. Many people are unaware of the dangers of CO due to its properties – being odorless, tasteless, and non-irritant makes it difficult to detect this toxic gas without technical equipment. CO poisoning leads to headache, dizziness, and nausea as well as unconsciousness, and in extreme cases death.

The latest survey conducted by the KFV demonstrates how uninformed people are to the risks of carbon monoxide poisoning. Respondents from more than half of the households surveyed stated that they have not taken any precautions, or, if so, only minimal amounts. In addition, around 67 percent of those surveyed said that they are not concerned about a gas accident.

Missing out on regular inspections and maintenance significantly increases the risk. Defects that remain undetected due to improper device maintenance can pose a great threat, especially under hot weather conditions. More than a third of those interviewed believed they could identify a faulty gas appliance on their own. 57 per-

cent of them also believed that they could detect a faulty appliance by its smell. Regular maintenance of gas boilers significantly lowers the potential risk they pose. Nevertheless, only 2 out of 3 boilers and convection heaters are regularly serviced. This number even drops to one out of four with gas stoves. Not regularly servicing devices can lead to dirt build-up and defects, which increase the risk of carbon monoxide poisoning.

New devices (e.g. condensing boilers) come with high safety standards, but the survey shows that one in ten gas boilers is outdated, and half of the gas boilers are more than ten years old. Even though condensing boilers have become more commonly used in recent years because of EU regulation, it will take some time before outdated devices are replaced by newer, safer models. Of all gas appliances, gas boilers pose the greatest danger. They are most susceptible to dirt build-up, which affects their safety. Furthermore, modifications can lead to unsafe ratios of combustion air, so it is always important to consult a specialist. Yet still, in only about half of the cases CO levels are properly checked after modification.

## EP 5.4 Fireworks – Behaviour of Dutch households

THURSDAY 23 JUNE 2022 14:35

**Branko Olij<sup>1</sup>**, Susanne Nijman<sup>1</sup>, Huib Valkenberg<sup>1</sup>

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Branko Olij** obtained his Master's degree on Nutrition & Health at Wageningen University. After University, he started his PhD at the Erasmus Medical Centre, which resulted in his thesis 'The impact and prevention of fall-related injuries among older adults'.

In 2019, Branko started working as a research/data analyst for the Consumer Safety Institute. He currently works in the areas of road safety, product safety, sports injury prevention, and falls prevention.

### INTRODUCTION

New Year's Eve 2020 in the Netherlands was different from other years. Due to the Covid-19 pandemic, it was not allowed to buy and use category F2 consumer fireworks. The national number of firework-related injuries treated at an Emergency Department or by a general practitioner dropped by 70 percent, from 1,300 in 2019 to 385 in 2020. The majority of the remaining injuries were caused by category F1 consumer fireworks and illegal fireworks. In order to give context to the annual developments in firework-related injuries, the behaviour of Dutch households regarding fireworks was investigated.

### OBJECTIVES

The objective was to give context to the annual developments in firework-related injuries, by describing the behaviour of Dutch households regarding fireworks during New Year's Eve 2020.

### METHODS

From 6 to 24 January 2021, a survey was conducted among a representative sample of Dutch households (n=1,537; aged 20-75 years). The households were asked questions about buying and using fireworks, protective measures that were taken, and the quality of the fireworks.

### RESULTS

Of the households, significantly fewer households had bought fireworks for New Year's Eve in 2020 compared to 2019 (20% vs. 32%,  $p=0.000$ ). Forty-one percent of the households adjusted their purchasing behaviour due to the Covid-19 pandemic. Twenty-seven percent of the households that used fireworks in 2020 did not take any protective measures, whereas in 2019 this was 11 percent ( $p=0.000$ ). In general, parents had taken fewer protective measures for themselves than for their children. The majority of the households rated the quality of the fireworks, in relation to safety, as good or excellent.

### CONCLUSION

Due to the ban on category F2 consumer fireworks during New Year's Eve 2020, the number of firework-related injuries dropped significantly. Our study has shown that the ban also resulted in fewer households buying and using fireworks, and fewer households taking protective measures. As category F2 fireworks were also banned during New Year's Eve 2021, it is important to determine whether the number of injuries and the behaviour of Dutch households have changed.

## EP 5.5 Collaboration on fire safety for socially vulnerable groups

THURSDAY 23 JUNE 2022 14:35

**Anja Kristin Kleiven<sup>1</sup>, Ava Sadeghi<sup>1</sup>**

<sup>1</sup>The Norwegian Safety Forum, Oslo, Norway

### BIOGRAPHY

**Anja Kristin Kleiven** is an authorized nurse, **Ava Sadeghi** has a background from societal safety. We both have work experience from large fire departments in Norway, working specially with preventing fire in the homes of socially vulnerable groups.

### INTRODUCTION

In Norway about 45 persons die in fires every year. Most of them in their own homes. According to the Norwegian Directorate for Civil Protection (DSB) many of the fatal fires occur in homes of citizens with social services. A review of all fatal fires in Norway over a ten-year period shows that specific and identified risk factors give a higher risk for dying in fires and that fatal fires are a social problem. Official guidelines state that local fire departments and social services should collaborate to find the best way to prevent fires for socially vulnerable groups.

### OBJECTIVES AND METHODS

DSB and the Norwegian Health Directorate work together to reduce the number of fatal fires and to promote cooperation between fire departments and health and social services. As a part of this work, they have assigned a special project to the Norwegian Safety Forum (NSF). A team of two dedicated advocates for strengthening the collaboration between fire preventors and health services will try to identify good models for collaboration and spread these, in line with the methodology for Safe Communities. They will also motivate new municipalities to find suitable forms of cooperation. This is a three-year project, starting in the autumn of 2019 with the NSF.

### RESULTS

As collaboration-advocates for fire safety we have been in touch with more than 100 municipalities. We have gathered results from contacts, webinars, and meetings. Due to Covid-19 many planned activities have been re-designed to digital meetings. Many municipalities already have a well-established collaboration in different ways. It can be challenging to get employees in the primary health service to understand why fire prevention should be part of their responsibility. The fire department is often the part that takes the initial contact and invites health services to a first meeting.

### CONCLUSION

It is emphasized by several members of the health services that it is easier to take responsibility for fire safety when they know who to contact in the fire service to get help and guidance in cases they are unable to solve on their own. Personal relations are important and sharing of knowledge gives a good framework for developing individual fire safety. Defined roles and expectations are important when you work with a cross-sector approach. Workplace routines and regular meetings help to build relations and a good climate for collaboration.

## EP 5.6 Results from 5 consecutive years of natural hazard awareness in Austrian population

THURSDAY 23 JUNE 2022 14:35

**Timo Lücksmann<sup>1</sup>**

<sup>1</sup>KFV, (Austrian Road Safety Board), Vienna, Austria

### BIOGRAPHY

Geographer, Member of the EGU, working as a Project Manager at the KFV, responsible for research in natural hazards since 2020.

### INTRODUCTION

The economic losses from natural hazards account to the 3-digit million range with an upward trend. Climate change, longer lasting and more extreme weather conditions are to be expected in the future.

### OBJECTIVES

Understanding the complex mechanisms responsible for the individual perception of natural hazards and their effects is extremely important for efficient prevention work. The aim of the surveys conducted by the KFV is to identify particularly vulnerable groups with a high information deficit as well as identification of changes and trends in the perception of natural hazards in the Austrian population in relation to socio-economic characteristics and the underlying factors.

### METHODS

Several research institutes have been commissioned to conduct quantitative, representative surveys for each federal state. The raw data material from 2013-2021 was pooled resulting in an entire data set that comprises 8,192 fully completed questionnaires.

### RESULTS

- 71% assume that natural hazards will cause greater damage in the future.
- People fear the occurrence of storms, followed by heat waves and lightning strikes at their place of residence.
- Information on natural hazards is most likely to be obtained on the Internet, classic media are already in second place. Very small groups obtain information

from insurance companies, in the social environment and from the respective community.

- Insurance protection mostly covers storm damage and lightning, followed by floods.
- About half of the population has suffered damage from extreme weather events or natural hazards in the last 10 years.
- For one in six, the damage resulted in the loss of irreplaceable things.
- The responsibility to inform and protect is largely attributed to the respective community.
- The level of information regarding the correct behaviour in the event of a disaster is to be regarded as rather modest within the Austrian population.
- Only 50% know about the different civil alarm signals.
- In general, the degree of preventive measures taken is at a very modest level.

### CONCLUSIONS

Although knowledge about natural hazards is relatively widespread, little is being done at the private level to be better prepared. To increase resilience in the society, it is essential to continue to appeal to the highest possible degree of personal responsibility and self-provision in the future. In addition, the public needs to understand what kind of help they cannot expect from first responders.

# PARALLEL SESSIONS

# EP6 Safety Promotion and Communication



## EP 6.1 Don't shoot the messenger: Up-to-date reporting of consumer product injuries using an interactive dashboard

THURSDAY 23 JUNE 2022 14:35

**Marjolein Versteeg<sup>1</sup>, Ilse van Wijk<sup>1</sup>, Susanne Nijman<sup>1</sup>**

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Marjolein Versteeg**, PhD is a researcher at the Consumer Safety Institute in the Netherlands. Her areas of expertise include business intelligence using Power BI, behaviour change, and various quantitative and qualitative research methods.

### INTRODUCTION

Worldwide, there is an increasing need for real-time data in addressing consumer product injuries. This need derives from injury prevention experts who advocate a shift from passive to active surveillance. Active surveillance is essential for consumer product safety in particular as it involves a highly dynamic environment, including consumer trends and fast growing e-commerce markets. Thus far, no reporting tool exists that facilitates active surveillance of consumer product injuries. Consequently, it remains challenging to provide up-to-date information on the prevalence and trends in consumer product injuries.

### OBJECTIVES

The objective of this research project was to develop an interactive reporting tool that enables up-to-date monitoring and reporting of consumer product injuries.

### METHODS

We used Microsoft Power BI software to develop a dashboard that monitors consumer product injuries and flags significant pattern changes. For data input, we used the Dutch Injury Surveillance System (DISS). DISS registers Emergency Department treatments in a representative sample of Dutch hospitals, which enables extrapolation of the registered numbers to national estimates. In DISS all consumer products related to an accident are registered, including the injury mechanism, e.g. fall or burn injuries. On average, data in DISS will be available in the dashboard two months after the accident has happened.

### RESULTS

Our interactive Power BI dashboard monitors trends in consumer product injuries using time intelligence measures. A distinction is made between injuries related to individual products (e.g. dryer, trampoline), product categories (e.g. household appliances, do-it-yourself equipment) and injury mechanisms (e.g. burns, chemical interaction). Pre-determined thresholds are used to effectively flag significant pattern changes. Power BI allows for data alerts linked to specific thresholds in order to notify stakeholders.

### CONCLUSION

An interactive reporting tool using Power BI enables up-to-date monitoring and reporting of consumer product injuries. By using Power BI technology, the tool is scalable to other disciplines that aim for active injury surveillance, for example child safety, falls in older people and road safety. More research is needed to optimize the user interface for stakeholders and to implement dynamic thresholds based on predictive modeling.

## EP 6.2 How to engage people in safety with Incidents & Observations

■ THURSDAY 23 JUNE 2022    ⌚ 14:35

👤 **Timo Kronlöf**<sup>1</sup>, Julia Tanzbett<sup>1</sup>

<sup>1</sup>Quentic GmbH, Berlin, Germany

### BIOGRAPHY

**Timo Kronlöf** is a founder of the EHS mobile startup behind Quentic App that became part of Quentic family in 2017 through an acquisition. He acts as the Managing Director of Quentic Finland Oy and as a Product Manager in Quentic GmbH. He holds a Master's degree in Safety Management and Engineering from the University of Tampere with years of experience in EHS and technology.

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As OHS (Occupational Health and Safety) professionals, we need more data and information to support our decision making. Unfortunately, studies show that it is difficult to engage people in OHS to collect the desired data. We have learned from our annual Safety Management Trend Report and many other sources that the line-management is not always as committed to OHS as we'd like them to be.

In this presentation, Timo Kronlöf will guide you through the recent evolution of OHS software and the key findings from the OHS industry to understand how motivation towards OHS is built, and how software solutions could support organizations to solve this challenge.

- Why technology became a necessity in OHS
- How software evolved into what it is today
- Why today mobile is crucial to get people involved
- Why feedback, productivity, and ease of use are key to being successful
- How OHS processes are digitized today
- What are the most educated guesses about the future of OHS technology



## EP 6.3 Analysis of economic sectors and professions in Slovak Republic from the point of view of accidents and assessing tools in assessment occupational risks

THURSDAY 23 JUNE 2022 14:35

**Alena Ďaďová<sup>1</sup>**, Katarína Hollá<sup>1</sup>, Samuel Kočkár<sup>1</sup>

<sup>1</sup>University of Žilina, Žilina, Slovakia

### BIOGRAPHY

Alena Ďaďová, PhD, is a student at the University of Žilina. In her work she focuses on occupational safety and health.

ĎAĎOVÁ, Alena, KOČKÁR, Samuel. University of Zilina. Faculty of Security Engineering. Department of Crisis Management. Supervisor: doc. Ing. Katarína Hollá, PhD. Qualification degree: PhD, student of Security Science. Study programme: Crisis Management. Zilina: Faculty of Security Engineering University of Zilina, 2022.

Title of an article: Analysis of economic sectors and professions in Slovak Republic from the point of view of accidents and assessing tools in assessment occupational risks.

Occupational safety and health (OSH) is an important part of the corporate culture both in the European Union (EU) and in the Slovak Republic (SR). Compliance with its basic principles is required not only by legislation of each member state, but also by technical standards in increasing the competitiveness of every entrepreneur. The justification of its solutions and development is required mainly by the non-decreasing number of work accidents and the repetition of the same mistakes due to which accidents happen. The article will present statistical overviews focused on accidents in the EU and subsequently in Slovak Republic.

One of the tools for accident prevention is a thorough risk assessment. In the Slovak Republic there are no proper modules/tools for domestic economic sectors/professions, available in Slovak language and for free. An exam-

ple of good practice is the Czech Republic, which, despite its common history with the Slovak Republic until 1993, currently has several free tools for assessing occupational risks and continues this research activity (for example in the web interface OiRA, BeSmart). For small and medium-sized companies, the main prerequisite for using the given resource is a user-friendly environment with simple operation of the software tool/online application.

In the APVV project “Development of risk assessment tools for use in selected companies and professions in Slovak Republic in accordance with EU requirements” we have been dealing with these challenges for several months, we would like to present primary results and where we are heading with the next project activities.

## EP 6.4 Bow-tie analysis for patient safety risk management in Bulgarian hospitals

THURSDAY 23 JUNE 2022 14:35

**Rositsa Dimova<sup>1</sup>**, Romyana Stoyanova<sup>1</sup>, Vessela Blagoeva<sup>2</sup>, Mladen Doykov<sup>3</sup>, Miglena Tarnovska<sup>4</sup>

<sup>1</sup>Medical University of Plovdiv, Faculty of Public Health, Dept. Health Management and Health Economics, Plovdiv, Bulgaria, <sup>2</sup>Medical University of Plovdiv, Faculty of Medicine, First Department of Internal Diseases, Section of Pneumology and Phthi-siatrics, Plovdiv, Bulgaria, <sup>3</sup>Medical University of Plovdiv, Faculty of Medicine, Dept. of Urology and General Medicine, Plovdiv, Bulgaria, <sup>4</sup>Medical University of Plovdiv, Faculty of Public Health, Dept. Healthcare Management, Section Medical Ethics and Law, Plovdiv, Bulgaria

### BIOGRAPHY

Topic of interest are quality medical care and patient safety. The author, **Rositsa Dimova**, is a member of the Union of Scientists in Bulgaria and the Bulgarian Scientific Society of Public Health.

### INTRODUCTION

The Bow-tie method has been used for risk identification and management in different areas: aviation, nuclear power, and chemical industries as well as in healthcare. Patient safety culture is a key component of the organisational culture and a critical measure of the quality of health services. Research in organisational culture in Bulgarian hospitals and how it is related to patient safety is scarce.

### OBJECTIVES

The purpose of this paper is to promote the Bow-tie methodology for prospective analysis of patient safety risk management in hospitals.

### METHODS

Hospital specialists (n=620) took part in a cross-sectional online study using a web-platform ([www.rsp.bg](http://www.rsp.bg)) and the Bulgarian Version of Hospital Survey on Patient Safety Culture questionnaire. Health experts were given the opportunity to examine and evaluate each potential adverse event, employing the Bow-tie analysis.

### RESULTS

From all respondents, 394 (63.5%) were healthcare specialists, 210 (33.10%) were physicians. Only 23.0% report-

ed at least one or more adverse events or errors related to patient safety. The mean frequency of errors reported is 3.67 (SD±0.85) over the preceding year. In total, 38 potential adverse events were reported by the respondents in the form of open-ended question in the B-HSOPSC. The causal factors were identified and classified into several relevant categories. The adverse events were evaluated according to protocols, and a set of recommendations was proposed, aimed at improving the existing barriers to patient safety. The number of existing preventive strategies were also examined for possible future adverse events. As a result, the most commonly reported patient safety cases were edited, finalised and made available on the web-platform.

### CONCLUSION

The application of the Bow-tie method will contribute to the better understanding of avoiding hazards and the prevention required for safe medical care in hospital settings. Most of the physicians and the other healthcare specialists have rated the level of patient safety in Bulgarian hospitals as “very good” or “excellent” despite the lack of error reporting systems, some specific cultural characteristics, organisational distinctions and the shortage of staff.

## EP 6.5 Standardization of lifeguarding job regulations as a form of drowning prevention

THURSDAY 23 JUNE 2022 14:35

**Olga Marques<sup>1</sup>**, Nelson Reis<sup>1</sup>, Catarina Queiroga<sup>1</sup>

<sup>1</sup>International Drowning Research Alliance (IDRA), Kuna, USA

### BIOGRAPHY

**Olga Marques**, PhD in Sport Sciences, University of Coimbra. She carried out her first doctoral thesis in Water Rescue in Portugal.

Olga worked at the Instituto de Socorros a Náufragos, as deputy and later as head of the Assistance Service for Bath-ers. She was secretary of the Technical Commission for Water Safety. She currently works at the Ministry of Defense.

### INTRODUCTION

The United Nations recognised drowning as a preventable cause of death. It is estimated that in 2019, in Europe, 17,597 people died from drowning. The Lifeguard is a person who completed a professional training and is competent to prevent injuries, rescue those at risk and provide first aid to those in aquatic environments and surroundings. In recognition of the important role of lifeguards, some countries in Europe have their activity regulated as a profession by a set of policies. Some regulations have or should be passed into law, namely, the recognition of the qualifications, to promote the free movement of people and goods, allowing the access to the profession by any individual within the European territory. The aim of this work is to analyse the current requirements and qualifications of professional lifeguards in Europe.

### METHODS

A survey was developed using Google Forms. The survey was sent by email to the members of International Life-saving Federation (ILS) - Europe. The data was analysed using Excel through descriptive analysis of the open and closed answers.

### RESULTS

The survey was sent to 37 members, corresponding to 37 countries. Nineteen answered the survey (51.4% response rate). 56.5% of the participants reported that their country has lifeguarding job regulations that have passed

into law. In 52.2% of the countries, lifeguards are essentially professional workers, while 47.5% of the countries possess both professional and volunteer lifeguards. Most countries (69.6%) have a periodic exam to confirm the maintenance of the skills needed to exercise the profession and of these 38.1% have to pass it annually. Most of the revalidation exams include the same tests: theoretical, physical, theoretical-practical test, making it easier for countries to adapt and comply with the ILS recommendations. This allows and facilitates the movement of people and goods, as well as access to the profession at European level. Of the participants, 78.3% of countries hold separate qualification courses for lifeguarding beaches, pools and open water, these courses vary in length.

### CONCLUSION

Having separate qualification courses for beach, pool and open water lifeguarding will improve the specific skills and knowledge of the professional lifeguards to prevent drowning and protect lives overall at those different aquatic venues. The standardization of the professional requirements and more solid laws in accordance with the European Union directives, allow for more and higher qualified professionals in preventing drowning.

## EP 6.6 Internationalization of a professional drowning prevention and water safety and rescue course – lessons from Portugal and application in Europe and Africa in 2022

THURSDAY 23 JUNE 2022 14:35

**Fernando Martinho<sup>1</sup>**, Ana Catarina Queiroga<sup>1,2,3</sup>

<sup>1</sup>AsNaSA - Associação de Nadadores Salvadores, Matosinhos, Portugal, <sup>2</sup>ILS Drowning Prevention Commission, Belgium,

<sup>3</sup>IDRA - International Drowning Researchers' Alliance

### BIOGRAPHY

**Fernando Martinho** has a large experience in water safety and lifesaving activities. He was a fisherman and rescue boat crew member. Lifeguard since 1974, lifesaving instructor and Pedagogic Director of Professional Courses in Lifesaving. He has designed the vocational courses of water safety and lifesaving in Portugal that are recognised under the European Qualification Framework. Promotor and main organiser of the World Water Safety Conference in 2007 in Portugal.

### INTRODUCTION

The first professional course for drowning prevention and water safety and rescue was created in 1993 in Porto, Portugal. Following the success and experience of the development team, present lessons learned from the field and plans for the first step of internationalization to Europe and Africa will be presented.

### OBJECTIVES

This internationalization exercise aims to promote the recognition of the relevance of having highly qualified safety and rescue professionals in aquatic environments that should operate in the diversity of the institutional structures related to aquatic environments.

### METHODS

The internationalization strategy will follow three approaches: add-on; curricular infusion and transformation. The coordinating team will gather international stakeholders and key spoke persons in each country to study the extent and expected outcomes of a context-adjusted internationalization. This steering committee will work on all aspects of the course design including student learning outcomes, internationalized content, teaching and learning activities, and assessment methods - which can be achieved by simply adding international content or doing a fundamental course re-design for internationalization.

### RESULTS

The template course that has been running in Portugal for 30 years now, has a duration of 3,100 hours, split across 3 main learning approaches: social and cultural education (1,000 h), scientific education and training (1,000 h) and training in work-environment (1,600 h). The course spreads over 3 years and is recognized by the European Qualifications Framework (EQF), level IV. Based on this model, the steering committee is currently identifying the skills and legal requirements needed to be locally recognized in the field and from then on apply the agreed strategy of course internationalization. The first step is currently taking place in both regions and will be presented at the conference.

### CONCLUSION

A successful experience from one country can and should be used as guide for better practice in other countries as long as some internationalization strategies are followed to ensure that courses include global perspectives and are context-adjusted. This is the right time to share and upgrade our experience and contribute to the #drowningprevention movement through the improvement of lifeguarding professional competences following the success of the Portuguese Water Safety & Water Rescue Professional Courses, recognised by the EQF and run with support from the ESF European Social Fund and Portuguese Ministries – Labour and Education, since 1993.

## PARALLEL SESSIONS

# EP7 Road Safety - Active Mobility



## EP 7.1 How to reduce the e-scooter parking problem in European cities

FRIDAY 24 JUNE 2022 10:05

### Ernestine Mayer<sup>1</sup>

<sup>1</sup>KFV (Austrian Road Safety Board), Vienna, Austria

#### BIOGRAPHY

Master's degree in logistics and transport management (University of Applied Sciences BFI Vienna, 2006), lecturer for road safety at the University of Applied Sciences Technikum Wien (2007 to 2011), researcher at KFV since 2004, management of national research projects and evaluation studies, focus on vulnerable road users and new mobility trends like e-scooters or sharing mobility offers

#### INTRODUCTION

The popularity of e-scooters is still on the rise and e-scooters are now being increasingly used as mode of transport, above all in urban areas. They are widely available for hire in many European cities, but international media reports show that many European cities have similar problems with disorderly parked e-scooters on public places as they are at the same time an obstacle for vulnerable road users. This was the reason for the implementation of an Austria-wide study concerning the parking situation of e-scooters.

#### OBJECTIVES

The objectives of the study were:

- Quantifying the parking situation of e-scooters in Austria
- Showing the problems of disorderly parked e-scooters for vulnerable road users
- Analysing the influence of defined e-scooter parking places to reduce disorderly parked e-scooters in public areas (pilot project Vienna)
- Comparing different digital solutions to influence the parking behaviour of e-scooter riders

#### METHODS

- On-site surveys in different Austrian cities using a standardised survey form (report on more than 2,200 parked e-scooters in 2021)
- Survey among more than 430 vulnerable road users (e-scooter riders and pedestrians) in 2021
- Desktop search and expert interviews concerning parking regulations in European cities and best practice for digital solutions

#### RESULTS

The on-site surveys in spring 2021 in different cities in Austria confirm road safety problems with disorderly parked e-scooters in public areas. Both groups, e-scooter riders and pedestrians, reported negative experiences with parked e-scooters. Special e-scooter parking places are seen as a (very) good measure to improve the e-scooter parking situation, but they are only used if they are situated near the destination of the e-scooter riders. Research results indicate that there already exist a lot of different digital solutions in European cities to cope with the problem of disorderly parked e-scooters. They can be used to inform e-scooter riders (e.g., about e-scooter parking areas) or/and to directly influence the behaviour of e-scooter riders (e.g., the return of an e-scooter is only accepted in defined areas, incentives for using e-scooter parking places). A mix of different measures is recommended to ensure addressing different user groups.

#### CONCLUSION

Different digital solutions for rental e-scooters combined with defined e-scooter parking places can positively influence the parking behaviour of e-scooter riders and therefore contribute to reduce road safety problems with disorderly parked e-scooters in European cities.

## EP 7.2 Stand up for your ride! Introducing a foreign road safety program

FRIDAY 24 JUNE 2022 10:05

Djorike Palma<sup>1</sup>, **Branko Olij**<sup>1</sup>

<sup>1</sup>Consumer Safety Institute, Amsterdam, Netherlands

### BIOGRAPHY

**Branko Olij** obtained his Master's degree on Nutrition & Health at Wageningen University. After University, he started his PhD at the Erasmus Medical Centre, which resulted in his thesis 'The impact and prevention of fall-related injuries among older adults'.

In 2019, Branko started working as a research/data analyst for the Consumer Safety Institute. He currently works in the areas of road safety, product safety, sports injury prevention, and falls prevention.

### INTRODUCTION

Bjørn Smith-Hald and his team have been offering the road safety program 'Si ifra!' (Stand up for your ride) in Norway since 2011. It aims to prevent reckless driving among 18- to 24-year-olds, as they are at high risk of having a serious traffic accident. A Norwegian program evaluation showed that the number of road traffic-related injuries had decreased. Additionally, road safety behaviour had improved, as individuals were less often falling asleep, were less often intoxicated, and were more often wearing a seat belt while driving. In the Dutch province Friesland, the Regional Board of Traffic Safety (ROF) has asked the Consumer Safety Institute to explore whether 'Si ifra!' can be successfully introduced in the Netherlands.

### OBJECTIVES

The objective was to explore if the conditions to introduce 'Si ifra' in the Netherlands were favorable regarding comparability of the Dutch and Norwegian traffic and injury situation, existence of programs and confidence in the program.

### METHODS

The exploration consisted of a comparison between Norway and the Netherlands on the following topics: road traffic-related injuries among young drivers, demographics, and school systems. The research also included an inventory of existing Dutch programs for young drivers in the Netherlands, and the organisation of a focus group among students.

### RESULTS

The situation in the Netherlands is partly comparable to that in Norway. The current amount of road traffic-related injuries in the Netherlands was similar to the amount of road traffic-related injuries among young drivers in Norway before 'Si ifra!' was offered. The population density in Norway is more than 30 times lower than in the Netherlands. There are similarities between the two countries regarding the population composition. However, the Norwegian and Dutch school systems are not similar. We found out that many programs for young drivers are already being offered in the Netherlands. Additional research of these programs is needed to determine whether they could be combined. Finally, there was confidence in the program among young drivers: almost 80 percent of the participants of the focus group (n=42) were convinced that 'Si ifra!' could lead to fewer road traffic-related injuries.

### CONCLUSION

Based on the exploration, the ROF has decided to introduce 'Si ifra!' in the Netherlands. A pilot study is currently running, in order to determine to which extent the program has improved road safety behaviour among young drivers.

## EP 7.3 The burden of road traffic injuries among patients treated in the largest trauma hospitals in the Republic of Moldova

FRIDAY 24 JUNE 2022 10:05

**Svetlana Cociu<sup>1</sup>**, Serghei Cebanu<sup>1</sup>, Razvan Chereches<sup>2</sup>

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### BIOGRAPHY

Young researcher, Ph.D. (c), Assistant professor, research interest: health promotion, injury prevention. Since 2017, involved in scientific research within 2 international projects funded by NIH-iCREATE (Increasing Capacity in Research in Eastern Europe) and INITlatE (International Collaboration to increase Traumatic Brain Injury Surveillance in Europe). For the last 5 years, co-author in 11 articles, 18 abstracts, and 24 oral communications at national and international events.

### INTRODUCTION

Every year, 1.35 million people die in road accidents, with a high mortality rate among young people aged 15-29 years. The problem of road safety is getting worse every year, causing enormous financial damage to healthcare systems and other forms of human suffering, in special in low-middle income countries. Systems for routinely collecting injury data in the Republic of Moldova are limited.

### OBJECTIVES

This study aimed to identify specific characteristics of road traffic injuries among patients treated in the largest trauma hospitals in the country.

### METHODS

It was tested a pilot iCREATE Injury Registry within 2 Emergency Departments in Chisinau municipality. A total number of 7,946 patients with different types of injuries were collected during one year from the existing patient medical records. RedCap was used to upload the data and analyze it through SPSS.

### RESULTS

There have been identified 2,251 road traffic-related cases (28.3% from total), road traffic-specific questions like helmet and child seat in 391 observations (17.4%). Injury cases prevail among men. The most specific age affected by road injury was 19-39 years; the age group >60 years

by falls, the age group 8-18 years by school environment injuries. Most cases happened in urban areas (85%). Road traffic victims used proportionally private/public transport in 49% and ground ambulance in 47%. Most cases happened within the road environment and unintentionally (94%), from them due to falls in 63% and 17% due to road traffic event. Among the main purposes in which the persons were mentioned in one of the risk situations of injury were: travel for certain purposes in certain places of personal interest, vital daily activities, unspecified activities, leisure and play, unpaid work, including domestic activities within the home environment. There have been registered 87% cases having a single distinct injury, 2 distinct injuries in 9%. The main types of injury were fracture, contusion, sprain, and concussion/brain injury. Immediate treatment with follow-up was needed in 60% of the cases, a quarter of the injured persons were treated and admitted to the hospital, 8% were treated and released without follow-up. Referring to the road injury event, the seat belt was used in only 34,5% of cases, child safety restraint in 15,1%, and helmet in 15,4%.

### CONCLUSION

The obtained data underline the importance of an injury register, the need to develop health promotion and health education campaigns among the vulnerable groups, and the involvement of all actors in maintaining road safety.



## EP 7.4 Road Safety: Wrong-way driving on highways

FRIDAY 24 JUNE 2022 10:05

**Martijn Kiers**<sup>1</sup>, Katharina Volker-Kren<sup>2</sup>, Tina Sovec<sup>1</sup>

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### BIOGRAPHY

Born 1971 in the Netherlands.

Study of “Built Environment”, specialisation: urban planning; University of Applied Science, Utrecht

Study of “Spatial Planning”, specialisation: Traffic management; University of Amsterdam

Project manager, Ministry of Transport, Water Management and Public Works, Regional Directorate Utrecht (1997-2006)

Since 2006 Senior Lecturer / Senior Researcher in transportation, mobility and regional planning; FH JOANNEUM GmbH, Institute of Energy, Transport and Environmental Management, Kapfenberg. Research in mobility behaviour, urban planning

### INTRODUCTION

Up to 400 wrong-way drivers are reported in Austria every year and the number of unreported cases is probably much higher. Compared to other accidents, the effects of wrong-way driving accidents are much severer as head-on accidents occur at high speeds and due to the broken principle of trust. A crucial question which needs to be raised in this context is: Does alcohol play a role or cause wrong-way driving?

### OBJECTIVES

The aim of the research work was:

Assessment of the extent of the problem of wrong-way drivers

Finding a correlation between “being under the influence of alcohol” and the frequency of wrong-way driving accidents

### METHODS

The online survey “Wrong-way drivers in Austria” in cooperation with “sicher unterwegs”, “ASFINAG” and “Ö3” was carried out. A total of 1,124 participants completed the survey to provide information on experiences with wrong-way drivers. A study in the cockpit driving simulator to determine the influence of alcohol on road safety and to assess one’s own driving behaviour supplemented these data. By determining driving experience and drinking behaviour (AUDIT test), test drives in the cockpit driving simulator and an ATVAT test (visual overview, orientation, and speed perception) in cooperation with

Schuhfried GmbH were carried out and evaluated before and after alcohol consumption.

### RESULTS

Of the 1,124 participants, 181 have already seen wrong-way drivers, and 7 participants were wrong-way drivers themselves. According to the participants, awareness creation, additional driver trainings, as well as a uniform reporting system would be necessary to make technical measures as efficient as possible to mitigate dangerous road sections.

The study on the driving simulator showed high risk-taking and overestimation of oneself under the influence of alcohol among people with high driving experience, which led to more accidents. People with a probationary driving licence were more reserved about drinking and driving.

There was a clear correlation between the ATVAT test, actual drinking behaviour and alcohol tolerance. People with a higher test score drink more alcohol and believe they can still drive compared to people with a lower test score.

### CONCLUSION

This study showed that people with more driving experience and a high ATVAT test score overestimate themselves, and exactly this group would be more likely to drive a vehicle under the influence of alcohol as wrong-way drivers, since they have a high degree of overconfidence.

## EP 7.5 Implementation of a model of awareness-raising for taxi motorcyclists in Benin in relation to helmet use: a quasi-experimental study

FRIDAY 24 JUNE 2022 10:05

**Yolaine Glele Ahanhanzo**<sup>1</sup>, Aphonse Kpozehouen<sup>1</sup>, Donatien Daddah<sup>1</sup>, Edgard-Marius Ouendo<sup>1</sup>, Alain Leveque<sup>2</sup>, Yves Coppieters<sup>2</sup>

<sup>1</sup>IRSP/UAC, Cotonou, Benin, <sup>2</sup>ESP/ULB, Brussels, Belgium

### BIOGRAPHY

**Yolaine GLELE AHANHANZO** is a professor of public health at IRSP and is the southern coordinator of an ARES-funded multidisciplinary project on traffic injury prevention.

### INTRODUCTION

In Benin, motorcycles are used as motorcycle taxis for trips within cities. Motorcycle taxi drivers are particularly exposed to accidents due to their profession and lack of risk perception. To ensure behavioural change in this population, it is necessary to implement educational interventions based on proven theories or models as the theory of planned behaviour (TPB).

### OBJECTIVES

This study aims to test the effectiveness of an awareness-raising model designed based on the theory of planned behaviour regarding helmet use for motorcycle taxi drivers.

### METHODS

This quasi-experimental study took place in the cities of Parakou (intervention group) and Porto Novo (control group). Over a three-month period, a package of awareness-raising activities has been implemented in the intervention area, targeting a group of motorcycle taxi drivers. Data related to knowledge, attitudes and practices regarding helmet use was collected prospectively before the intervention, at the end, and 6 months later. Stata 15 was used for data analysis. Chi-square or Fisher, Student's or Kruskal-Wallis tests were carried out. The difference-in-difference method was used to determine the specific effect of the awareness activities.

### RESULTS

Prior to the implementation of the intervention, subjects in the experimental group had a higher total score for knowledge, attitudes and practices related to helmet use [68.1(5.7)] than those in the control group [64.3(4.6)]. Immediately after implementation of the intervention and six months later, there was an improvement in total score in both groups compared to baseline but this gain was higher in the experimental group.

In the experimental group, the overall level of helmet-wearing behaviour among motorcycle taxi drivers improved with the number of interactive sessions attended by 0.2 (0.06 - 0.3) when the number of sessions attended increased by one ( $p=0.005$ ).

The difference-in-difference estimator measured among subjects in the experimental group who participated in awareness sessions, taking into account socio-demographic variables, showed the effectiveness of the intervention both after the interactive sessions (diff-in-diff T0-T1=3.4;  $p=0.011$ ) and six months later (diff-in-diff T0-T2=5.4;  $p=0.000$ ).

### CONCLUSION

In addition to the effect induced by the road safety activities in general, the implementation of the package of awareness-raising activities, targeting specific groups according to the TPB, improved the helmet-wearing behaviour of motorbike taxi drivers in the experimental zone.

This model could be adapted and applied to other socio-professional groups of two-wheelers or even other types of users.

## EP 7.6 Demographic variation in traffic injury conflicts – implications for vehicle driving simulators

FRIDAY 24 JUNE 2022 10:05

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<sup>1</sup>Odense University Hospital, Odense, Denmark

### BIOGRAPHY

MD, Ph.D. Currently working at The Department of Orthopaedic Surgery & Traumatology, Odense University Hospital, Denmark.

### INTRODUCTION

Fitness to drive can be assessed using a driving simulator. However, most studies assessing fitness to drive using driving simulators have used all-round simulations (diverse traffic, road types, locations, and environment) rather than exposing the driver to situations where incidents have been shown to occur. The risk of certain types of traffic incidents may depend on driver demographics, and an all-round simulation does not necessarily expose a driver to targeted risks of traffic incidents.

If certain driver demographics are associated with certain incident demographics, this must be taken into account for this in simulations used to assess ability to drive.

### OBJECTIVES

To ascertain whether sex and age are associated with presence, type, and direction of counterpart.

### METHODS

All patients at the emergency room at Odense University Hospital in Denmark were asked a series of questions regarding their injury, such as injury mechanism, location, means of transportation of injured and counterpart, and direction of counterpart. We included all injuries from 2014 to 2019 where the injured was driving a passenger car.

Reported statistics were relative risk with 95% confidence intervals and Pearson's  $\chi^2$  tests. Reference group was males aged 25-49 years (most frequent group).

### RESULTS

We analysed 4,017 incidents with 2,074 male drivers and 1,943 female drivers. Age of the driver was 18-24 (n=1,138), 25-49 (n=2,009), 50-64 (n=550), 65-74 (n=167), or 75+ years (n=153).

Incidents involving another passenger car were more frequent for females (RR 1.23 [1.18, 1.29],  $p < 0.001$ ) but less frequent for ages 18-24 (RR 0.84 [0.80, 0.89]  $p < 0.001$ ) and 75+ years (RR 0.82 [0.72, 0.93]  $p < 0.001$ ). Solo incidents were less frequent for females (RR 0.56, [0.50, 0.63],  $p < 0.001$ ) but more frequent for ages 18-24 (RR 1.65 [1.47, 1.86],  $p < 0.001$ ) and 75+ (RR 1.50 [1.16, 1.93],  $p = 0.003$ ).

Incidents with a counterpart going in the same direction were more frequent for females (RR 1.25, [1.18, 1.33],  $p < 0.001$ ), but less frequent for drivers aged 18-24 (RR 0.80, [0.74, 0.86]  $p < 0.001$ ), 65-74 (RR 0.76 [0.64, 0.91]  $p < 0.001$ ), or 75+ years (RR 0.51 [0.39, 0.65],  $p < 0.001$ ). Incidents with an oncoming or crossing counterpart were more frequent for drivers aged 50-64 (RR 1.29 [1.094, 1.52],  $p = 0.003$ ), 65-74 (RR 1.67 [1.34, 2.09],  $p < 0.001$ ), or 75+ (RR 1.98 [1.61, 2.44],  $p < 0.001$ ).

### CONCLUSION

Driver demographics were associated with certain incident demographics, and these associations should be considered when designing driving simulations.

## EP 7.7 Risk estimation including risk compensation with cyclists

FRIDAY 24 JUNE 2022 10:05

### Wolf Dietrich Zuzan<sup>1</sup>

<sup>1</sup>Freelance Psychologist, Salzburg, Austria

#### BIOGRAPHY

**Dr. Wolf Dietrich Zuzan** was born in Salzburg, Austria. He studied Psychology and Ethnology at Vienna University and received his Doctoral degree in 1969. After 4 years of work in social research, he was employed for 30 years as a traffic psychologist at the Austrian Road Safety Board and headed the KFV department in Salzburg. He is a court expert and has been a freelance psychologist for 18 years now.

Vulnerable traffic participants are rarely the topic of scientific research, and when they are, the focus is on cyclists rather than on pedestrians. There are some studies on the thinking and behaviour of cyclists. In a recent study by the Austrian Road Safety Board (KFV), conducted by ZUS-ER Veronika, AIGNER-BREUSS Eva et al. (2021), accident reports are dealt with by interviewing injured cyclists in hospital, showing that cyclists often have accidents without any other person being involved and not reported in an official accident report due to the fact that only the cyclist was injured. The cyclist alone is regarded as responsible.

It is the interaction with the environment cyclists often fail to achieve, they are going too fast for the given conditions and they are leaving the road. In many cases, cyclists fail to correctly judge the road conditions, they are too optimistic and overestimate their own abilities. That is the content of risk compensation.

Some years ago, there was a study conducted by Küh-berger Anton, Keul Alexander et al. (1999) from the University of Salzburg in cooperation with the KFV to explore the influence of learning and risk experience on the behaviour of cyclists. There is indeed a connection between the perceived risk and the behaviour of cyclists. There are sporty riders driving at high risk, which they also perceive, with this perceived risk being part of their pleasure. But they more frequently use protective equipment. The other group consists of conventional cyclists complaining about risks but not preparing themselves for risky situations. The learning environment of a cyclist provides only few possibilities to recognise the connection between one's own behaviour and dangerous traffic situations.

## PARALLEL SESSIONS

# EP8 Injury Surveillance - Injury Epidemiology



## EP 8.1 Epidemiology of falls-related traumatic brain injury in Georgia: Evidence from observational study

FRIDAY 24 JUNE 2022 10:05

**Nato Pitskhelauri<sup>1</sup>**, Freda Halliday<sup>1</sup>, Nino Chikhladze<sup>1</sup>, Alexander Tsiskaridze<sup>1</sup>, Diana Dulf<sup>2</sup>

<sup>1</sup>Department of Public Health, Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia, <sup>2</sup>Department of Public Health, College of Political, Administrative and Communication Sciences, Babes-Bolyai University, Cluj-Napoca, Romania

### BIOGRAPHY

In 2009 **Dr. Pitskhelauri** graduated from TSU, the Faculty of Medicine with honors. In 2012 she successfully defended her PhD thesis. In 2016 Dr. Pitskhelauri graduated from the Advance Master Program in Bioethics from the University of Leuven, University of Nijmegen and University of Padua. Currently, she is an Associate Professor at the Department of Public Health, TSU. Dr. Pitskhelauri is an author of several publications and books.

### INTRODUCTION

Traumatic Brain Injury (TBI) is one of the significant issues throughout the world. Falls are the most common cause of TBI in Low and Middle Income Countries (LMICs) and as well in High Income Countries (HICs). According to the data from Global Burden of Disease (GBD) Study in Georgia DALYs related to fall per 100,000 population exceed the average in LMICs.

### OBJECTIVES

The aim of this observational study was to explore epidemiological characteristics of fall-related TBI in an adult population.

### METHODS

The retrospective (single adults' hospital, study period 3 months) research was designed in the framework of the project INITiatE: International Collaboration to Increase TBI Surveillance in Europe, funded by the United States National Institutes of Health (NIH/NINDS R21NS098850). SPSS 20 was used for the descriptive statistical analyses.

### RESULTS

During August, 1 to October, 31, 2018 a total of 96 TBI patients were admitted in Hospital. The number of TBI as a consequence of falls was 54 (56.2%), this being the major mechanism of injury, followed by RTI (n=36; 37.5%). Falls were the main (100%, 64% and 83.3%) mechanisms of TBI for children (0-14y), adults (45-64y) and elderly (65 and above) and second major (47.4% and 44.7%) mechanism of TBI after RTI in two age groups (15-24y) and (25-44y). The majority (46.3%) of all fall-related injuries occurred at home, followed by other unspecified locations at 22.2%, 13% at residential institutions, and were mostly not work-related injuries (92.6%). All TBI cases resulting from assaults fall within this age group with half of assault-related injuries occurring among females. The longest length of stay in hospital was attributed to TBIs resulting from falls (72 days).

### CONCLUSION

In light of high fall-related TBI incidence among population, there is a need to adopt prevention strategies which focus on reducing population exposure to environmental hazards and other activities that expose them to risk.

## EP 8.2 The prevalence and characteristics of physical activity-related injuries among university students in Yerevan

FRIDAY 24 JUNE 2022 10:05

**Artashes Tadevosyan<sup>1</sup>**, Knarik Mkhitarian<sup>1</sup>, Karen Aleksanyan<sup>1</sup>

<sup>1</sup>Yerevan State Medical University, Yerevan, Armenia

### BIOGRAPHY

**Artashes Tadevosyan** is a professor from the Yerevan State Medical University, his main research field is epidemiology, public health, and environmental health. He is the author of many scientific articles.

### INTRODUCTION

Physical activity-related injuries (PARIs) are common in young adults and children. According to 2016 United States estimates, 8.6 million people, ages 5 to 24, sustain a PARI every year. Such events serve as negative motivation, commonly leading to abstinence from exercise, refusal of continuation, immobilization, and abandonment of physical activities. We aimed to evaluate the rates, structure, characteristics, and health-related consequences of PARIs among university students of Yerevan, Armenia.

### METHODS

We conducted a cross-sectional survey among students from four universities in Yerevan: Yerevan State Medical University (YSMU), Armenian National Agrarian University (ANAU), National Polytechnic University of Armenia (NPUA), and the Armenian State Institute of Physical Culture and Sport (ASIPCS). The data were analyzed using SPSS Statistics.

### RESULTS

A total number of 391 students were surveyed: 103, 98, 97, and 93 from Engineering, Medical, IPCS, and Agricultural universities, respectively. The mean age was  $21.7 \pm 2.4$ , 61.9% were male, and 50.5%, 62.2%, 95.9%, and 61.3% of students from respective universities regularly participated in physical activities. Participation rates were not significantly different between students of NPUA, YSMU, and ANAU. Most commonly practiced activities included soccer (29.4%), basketball (21.6%), wrestling (17.6%),

swimming (13.7%), boxing (11.8%), and tennis (5.9%) being practiced less commonly. Overall, 32.7% of students sustained an injury within the previous year, with no significant differences in rates between NPUA, YSMU, and ANAU, albeit significantly lower rates in ASIPCS compared to the three others taken together (22.6% vs 36.1%,  $p = .032$ ). The sites of injury included the lower (65.6%) and upper (25.7%) extremities, head and neck (1.9%), and spine (7%). Furthermore, 71.4% of injuries required medical attention. PARI rates were significantly lower in students regularly performing routine warm-up exercises (22% vs 45%,  $p = .008$ ), using protective gear (12% vs 42%,  $p < .001$ ), and being regularly supervised by a coach (16% vs 46%,  $p = .003$ ). In addition to lower PARI rates, students from ASIPCS also reported higher rates of regular supervision by a coach (79.4% vs 42%,  $p < .001$ ).

### CONCLUSION

Our data add to the importance of regularly practicing injury-preventive measures such as regular performance of warm-up exercises, use of designated protective gear, being supervised by trained personnel. Therefore, the provision of appropriate resources and personnel by the authorities is warranted toward the establishment of a physical activity-friendly environment in universities and the uneventful participation of students in sports.

## EP 8.3 Annual rate of falls in Portugal (2010-2018): Different methodological estimation approaches using hospital admission data

FRIDAY 24 JUNE 2022 10:05

Paulo Nogueira<sup>1</sup>, Filipa Sampaio<sup>2</sup>, Raquel Ascensão<sup>3</sup>, Adriana Henriques, **Andreia Costa**<sup>4</sup>

<sup>1</sup>Instituto de Saúde Ambiental (ISAMB), Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal; Instituto de Medicina Preventiva e Saúde Pública, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal, <sup>2</sup>Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden, <sup>3</sup>Centro de Estudos de Medicina Baseada na Evidência, Faculdade de Medicina, Universidade de Lisboa; Escola Superior de Tecnologia da Saúde, Instituto Politécnico de Lisboa, Lisboa, Portugal, <sup>4</sup>Nursing Research, Innovation and Development Centre of Lisbon (CIDNUR). Nursing School of Lisbon, Portugal; Instituto de Medicina Preventiva e Saúde Pública, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal, Lisboa, Portugal

### BIOGRAPHY

**Prof Andreia Costa**, Coordinator of the Nursing Research, Innovation and Development Centre of Lisbon (CIDNUR) at Nursing School of Lisbon, Researcher at Environment Health Institute Faculty of Medicine of the University of Lisbon and a Research Group coordinator “Environment, Family and Society”, Directorate-General for Health consultant and World Health Organization focal point for Ageing and Social Inequalities. (2014-2018) Director of the Directorate of Disease Prevention and Health Promotion, in the Directorate General of Health.

### INTRODUCTION

Falls are a common cause of injury and pose an increased risk of morbidity, mortality and lifelong disability. Falls encompass a troublesome definition and can pose challenges in epidemiological studies. Data on fall-related hospital admissions in Portugal remain unpublished. This study aimed to examine the rate of fall-related hospital admissions in the Portuguese population from 2010 to 2018, using three methodological approaches.

### METHODS

The Portuguese Hospital Morbidity Database was used to identify all cases resulting in one or more inpatient admission in public hospitals related to falls from 2010 to 2018. Falls were defined following the ICD 9th Revision (ICD-9) codes E-880-888 and E829.3 and the 10th revision (ICD-10) codes W00-W19. Rates of fall-related hospital admissions were computed using three different approaches: i) based on the total number of episodes, ii) based on the total number of individuals, and iii) based on the total number of episodes with a principal diagnosis of injury. We report annual rate estimates for each approach and discuss possible implications.

### RESULTS

Between 2010 and 2018, 383,016 hospitalizations related to falls were registered which occurred in 344,728 indi-

viduals. It corresponds to 2.1% of the total number of hospitalizations during the same period. The estimated overall rate of falls, per 100,000 population, for the analysis period was 414 (based on the total number of episodes), 373 (based on the total number of individuals) and 353 (based on the total number of episodes with a principal diagnosis of injury).

### CONCLUSION

Different approaches to estimating fall-related hospital admissions rate resulted in a range of 353 to 414 per 100,000 population. Identifying fall-related admissions based on episodes provides an overall picture of the landscape of falls in a scarcely explored setting in Portugal. Such approach poses limitations as to the uncertainty surrounding the true number of falls. This is because one event of fall may generate several hospital admissions. The approach based on the number of individuals may underestimate the true number of falls because several events may be accrued to the same individual. Yet, identifying fall-related admissions based on episodes with a principal diagnosis of injury may increase the likelihood of selecting episodes of falls occurring outside the hospital setting and indicating that the injury was the chief reason for admission. The choice of which approach to take may depend on the aim of the analysis.



## EP 8.4 Assessment of Health-Related Quality of Life in Traumatic Brain Injury Patients from Eastern Europe

FRIDAY 24 JUNE 2022 10:05

**Madalina Coman**<sup>1</sup>, Diana Dulf<sup>1</sup>, Artashes Tadevosyan<sup>2</sup>, Nino Chikhladze<sup>3</sup>, Serghei Cebanu<sup>4</sup>, Corinne Peek-Asa<sup>5</sup>

<sup>1</sup>Babes-Bolyai University, Cluj-Napoca, Romania, <sup>2</sup>Yerevan State Medical University, Yerevan, Armenia, <sup>3</sup>Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia, <sup>4</sup>Nicolae Testemitanu State University of Medicine and Pharmacy, Chisinau, Republic of Moldova, <sup>5</sup>University of California, San Diego, La Jolla, United States of America

### BIOGRAPHY

**Dr. Madalina Coman** started working in the violence and injury prevention field, collaborating with the University of Iowa on two grants: ICREATE (Injury Capacity in Research in Eastern Europe) and INITIatE (International Collaboration to increase Traumatic Brain Injury Surveillance in Europe). Her main tasks involve supervising the data collection process in partner countries and working with semester students that come to Romania for violence and injury prevention training.

### INTRODUCTION

Traumatic brain injury (TBI) can affect health-related quality of life. Still, little research exists to assess predictors of TBI-related health and quality of life in low- and middle-income countries (LMICs) in Eastern Europe.

### OBJECTIVES

This research aims to assess the broad symptoms among TBI patients from Armenia, Georgia, Republic of Moldova using the EQ-5D-5L, a tool developed by EuroQol Research Foundation, to measure self-reported health-related quality of life.

### METHODS

Prospective TBI registries were established in the capital city of three countries: Armenia, Georgia, and Republic of Moldova, through the NIH INITIatE project (5R21NS098850). In each country, one adult and one pediatric hospital collected data between March and September 2019. Patient demographic and injury characteristics were collected, and discharge health status was measured through the EQ-5D-5L instrument, which includes five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, and a subjective component on how patients feel about their health overall (EQ-VAS). Data was collected in two phases: data was extracted from medical records, including all patients admitted to the hospital with a TBI diagnosis, and patients completed the EQ-5D-5L scale at discharge to document self-reported health outcomes. All data was included in the TBI registry.

### RESULTS

A total number of 350 patients completed the EQ-5D-5L form, consisting of 31% of the entire cases collected with the TBI registry; most of them were adults between 45-69 years (37%), followed by 25-44 years (25%) and children between 8-15 years (22%). The majority of patients were male (66%), suffering from unintentional injuries (90%), and the main mechanism of injury was falls (50%), followed by road traffic injuries (RTI) (26%). According to their GCS score, most patients (88%) had mild TBIs. Symptoms in the five domains were reported as follows: mobility (20%), self-care (24%), usual activities (32%), pain/discomfort (50%), and anxiety/depression (34%). The EQ-VAS ranged between 0 (worst health they can imagine) to 100 (best health they can imagine), mean = 80.40, median = 90 (SD = 20.69). A multiple linear regression model showed that GCS score, loss of consciousness, post-traumatic amnesia, and consciousness alteration predicted self-reported overall health ( $F(6,322) = 21.004, p < .001$ ), with an  $R^2$  of .281.

### CONCLUSION

Health and quality of life measures are essential to assess health outcomes from the patients' perspective. Further longitudinal studies are needed to determine long-term predictors of recovery in TBI patients, especially for moderate and severe cases.

## EP 8.5 Effect of the COVID-19 measures on the number of severe injuries after traffic accidents and one-sided pedestrian accidents in the Netherlands

FRIDAY 24 JUNE 2022 10:05

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### BIOGRAPHY

**Inge Krul** obtained her Master's degree in Public Health Sciences and Epidemiology at the VU Amsterdam. In 2017, she started working as a research/data analyst for the Dutch Consumer Safety Institute. Inge is involved in setting up and executing various research projects in the areas of road safety, child safety, and product safety.

### INTRODUCTION

Since 15 March 2020, the Dutch government has taken restrictive measures in order to reduce the number of COVID-19 infections. This has had a significant impact on society in general and has resulted in a (temporary) decline in traffic intensity and the number of passenger kilometres.

### OBJECTIVES

To gain insight into the effect of one year of COVID-19 measures on the number of severe injuries treated at emergency departments (EDs) after a traffic accident or a one-sided pedestrian accident. We focused on the effects on patient and accident characteristics (age, time of day, type of road user, injury mechanism).

### METHODS

We compared the number of ED visits registered in the Dutch Injury Surveillance System during one year of measures (COVID-19 year, 16 March 2020–14 March 2021) with a year earlier (18 March 2019–15 March 2020). Because the COVID-19 measures were relaxed and tightened over the course of the year, we focused on three individual time periods in which the COVID-19 measures were the strictest (lockdown). To eliminate a possible effect of avoiding emergency care, analyses only included ED-visits involving severe injuries. The participating hospitals are representative for all hospitals in the Netherlands.

### RESULTS

In the COVID-19 year, the number of severe injuries treated after a traffic accident was 8 percent lower than in the reference year. Analyses of the individual lockdown periods showed a sharp decrease in the three lockdown periods (range -14 to -25 percent). It is striking that in both the first and second lockdown period, the probability of an ED-visit was significantly higher than in the corresponding reference period (5.2 versus 3.0 and 4.3 versus 3.0 ED-visits due to a severe injury per 10 million passenger kilometres respectively). Relatively more patients aged  $\geq 70$  years were treated as well as more patients with an accident occurring in the afternoon (and fewer during the night). Furthermore, there were relatively more one-sided accidents and more severe injuries among patients who were riding a mountain bike at the time of the accident. The number of severe injuries due to a one-sided pedestrian accident in the COVID-19 year was 11 percent lower.

### CONCLUSION

The changes in activities following the COVID-19 measures have led to changes in the number of severe injuries after traffic and one-sided pedestrian accidents. Moreover, the patient and accident characteristics in the COVID-19 year differed significantly from the reference period.

## EP 8.6 15-year trends in injury related health care use and costs in the Netherlands

FRIDAY 24 JUNE 2022 10:05

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### BIOGRAPHY

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### INTRODUCTION

In the past 15 years, policies for health care utilization and reimbursement rules have changed, as well as population wide demographic characteristics i.e. ageing. It is unknown however, how these changes have affected utilization and costs of health care for injury patients treated at Emergency Departments (EDs) in the Netherlands.

### OBJECTIVES

We examined to what extent in- and post-hospital health care utilization and costs of patients treated for severe injuries between 2002 and 2017 have changed over the years, accounting for possible differences in injury types and patient characteristics.

### METHODS

We compared health care utilisation and costs between patients treated for severe injuries at an Emergency Department in the Netherlands in 2002, 2007, 2012 and 2017. Data were ascertained from national registries (Cause-of-Death Statistics Netherlands, Hospital Discharge Registry, Dutch Surveillance Injury System), and patient questionnaires. Total and average health care costs were estimated through the incidence-based Dutch Cost of Injury Model.

### RESULTS

The total costs of direct health care were 1.4 billion euros in 2017 compared to 0.8 billion euros in 2002. The strongest increase in health care costs were seen among the elderly population (60 years and older). The higher costs could partly be explained by the significant 10% increase in the number of severe injuries treated at an ED between 2002 and 2017 (adjusted for demographic changes). However, the average health care costs per patient were also increased. Analyses on health care utilisation showed large differences by age group, type of injury and type of health care. These differences will be further investigated.

### CONCLUSION

Health care utilization and costs have increased in the past 15 years due to aging and differences in health care policies. We identified the highest increase in costs among the elderly population. Identifying high health care costs and utilization among risk groups are essential to assess additional priority areas for prevention and can provide guidance to structural implementation of interventions.

## PARALLEL SESSIONS

# EP9 Technology - Learning from Workplace Safety



## EP 9.1 IoT and AI based Structural Health Monitoring of safety critical assets

FRIDAY 24 JUNE 2022 10:05

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### BIOGRAPHY

**Christoph Schwald** has 25+ years of experience leading R&D initiatives and product development teams in a digital technology context for companies like AT&S, HARMAN, Apple, AKG etc.

In his actual position as Head of Group Research, Development and Innovations Services for the TÜV AUSTRIA Group, he is working with his multidisciplinary team on disruptive digital innovations for the Testing, Inspection and Certification industry.

### INTRODUCTION

Structural health inspection of safety critical infrastructure such as pressure vessels for industry applications, bridges etc. are carried out within periodic inspections using non destructive testing technologies by an inspector on site. In case of negative testing results, the device or infrastructure asset has to go offline immediately which means costly downtime of production processes or mobility infrastructure.

TÜV AUSTRIA is providing and developing solutions to increase safety and reduce downtime probability of critical infrastructure, by introducing continuous structural health monitoring approaches using IoT- and Machine Learning based AI technologies.

### OBJECTIVES

Goal is to develop and provide an affordable structural health monitoring system which can be mounted onto a critical infrastructure asset and provides continuously measurement data which is processed and visualized to the customer / operator with a web based dashboard / graphical interface able to predict future health status of the asset.

### METHODS

Development of new monitoring methods based on acoustic emission testing. Design, evaluation and validation of an optimized measurement system towards cost, size and low power consumption. Development of data analytics and machine learning algorithms to detect anomalies and predict future behavior. Providing web-

based dashboard solutions to inspectors, customers and operators.

### RESULTS

TÜV AUSTRIA is introducing

- a) an AI based expert system for assessing structural health of industrial pressure vessels which is trained with over 20,000 measurement results and provides a 40% efficiency gain for inspectors carrying out periodical inspections.
- b) a complete new system approach for continuous monitoring of safety critical industrial and infrastructure assets: cost and performance optimized sensor-, measurement- and IoT hardware to be put on the asset on site. New and semi-automated real-time assessment methods using Data Analytics based AI-technologies. Results are continuously visualized with customer-specific web based dashboards and predictions of future health status of the assets are provided.

### CONCLUSIONS

The introduced methods and digital technologies are increasing the safety level of critical infrastructures dramatically, as possible structural defects are detected continuously and their impact on the lifetime of the asset is visualized immediately in real-time.

## EP 9.2 The digital tool that saves lives

FRIDAY 24 JUNE 2022 10:05

**Ana María Domínguez Pachón<sup>1</sup>**, Francisco Cano Noguera<sup>1</sup>, Alvaro A Vega Cid<sup>1</sup>, Fátima Ramírez Cerrato<sup>1</sup>

<sup>1</sup>Real Federación Española de Salvamento y Socorrismo, San Sebastián De Los Reyes, Spain

### BIOGRAPHY

- PhD in Sport Science
- Chair of drowning prevention commission, member of Research Commission and chair of Sport Commission for Youth in Royal Spanish Lifesaving Federation
- Member of working group Natural Disaster and Civil Protection in European Lifesaving Federation (ILSE)
- Secretary of Drowning Prevention and Public Education Commission (ILS)
- Connected with lifesaving for more than 20 years as athlete, lifeguard, referee, coach, lifeguard instructor, ...

### INTRODUCTION

According to World Health Organisation estimates, every year 236,000 people die from drowning in the world, a figure that rises to 37,000 deaths in Europe and more than 400 in Spain, figures that highlight the major public health problem we are facing.

But how can we alleviate this situation? According to the WHO, prevention is the main tool we can use. However, it is very difficult to design prevention measures adapted to the population and the current situation if we do not know the circumstances in which these deaths occur or if the official data with this information is not made public until at least two years after the accidents occur.

At present, there are no reliable and current data available on the European continent that would allow the population to become aware of the dangers of the aquatic environment and the authorities to apply prevention measures and programmes adapted to the real and current situation in which they occur.

### OBJECTIVES

For this reason, the Royal Spanish Lifesaving Federation has created a digital tool with the following objectives:

- Provide real, truthful and immediate information regarding drownings in Spain, allowing the design of measures to help prevent drowning deaths at the time they are happening.

- To make use of technology to disseminate information that helps to raise social awareness about drowning.
- Optimise available resources through evidence-based programmes.

### METHOD

For this purpose, an interactive tool has been designed to collect daily information on drowning deaths that occur in our country, characterising each event on the basis of: Date, time, age, sex, nationality, place of the event, environment, activity and presence or absence of surveillance service.

### RESULTS

This tool allows the media, authorities and the general public to have up-to-date and accurate information on accidents that occur in the aquatic environment, information that is essential for designing effective prevention measures and for creating social awareness that changes the relationship of the population with the different aquatic environments.

### CONCLUSIONS

In order to reduce the number of drownings, it is needed to have tools available that provide immediate information on each event that allow prevention measures to be designed that are adapted to the current environment in which they occur.

## EP 9.3 An Open-Innovation Challenge for “out of bed detection”

FRIDAY 24 JUNE 2022 10:05

**Martin Morandell**<sup>1</sup>, Daniel Truber<sup>1</sup>, Louise Hartman<sup>1</sup>, Johannes Hilbe<sup>2</sup>

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### BIOGRAPHY

**Martin Morandell** is active in the field of smart and assistive technology for people with disabilities and older adults. His interests are in the domain of Active and Assisted Living, Assistive Technology as well as smart technology in the health-care domain.

At the fh gesundheit he is leading the section for smart care-, cure- and health technologies.

### INTRODUCTION

Fall prevention, fall detection and general safety issues are a common problem in the health & care domain, for a broad variety of patients. A broad range of solutions to detect when a person is about to leave a bed are already on the market. Examples are pressure sensors, floor mats, sensors in mattresses or placed underneath bed sheets. Nevertheless, there are still barriers in use and application of these systems such as high cost of products, fail (false?) alarms, and the accuracy depends on sensor location, sensor attachment (in wearable sensors) and type of assessment/technology chosen for the recording of sensor data (Bezold et al., 2021).

### OBJECTIVES

Open Innovation is defined as a business management model for innovation that promotes collaboration with people and organizations outside the company. This innovation model becomes viable when the company acknowledges that there are many bright professionals, greater knowledge and ideas outside of the own organization. Our objective is to bring new knowledge and ideas into the domain of bed-alarm systems.

### METHODS

We are currently running an Open-Innovation Challenge “Bed-Occupied-Sensoric” to ask for new approaches in this domain. We therefore use a platform that allows us

- to provide a State of the Art overview to interested people
- to ask “innovators” to hand in their solutions – from ideas up to products
- to enable commenting for everyone registered
- to have a jury to evaluate the solutions

We plan to create a prototype out of the solutions handed in, and test it within our setting of the interprofessional training and simulation-center of the Tirol-Kliniken in Innsbruck, Austria.

To share the outcomes and to create common visions for future developments and applications, we plan to organize a vision-workshop on future applications of bed-occupied sensors.

### RESULTS

At the EU Safety conference, we want to share experiences about using a digital open-innovation approach to identify new approaches for a typical safety problem.

### ACKNOWLEDGMENT

The project “Bett-Belegt-Sensorik” is funded by the Austrian Research Promotion Agency (FFG) under the funding scheme “Innovationsscheck”.

## EP 9.4 Experienced-based Safety Training - Impactful in-person training with long-lasting memory impact!

FRIDAY 24 JUNE 2022 10:05

**Matthias Krope<sup>1</sup>**

<sup>1</sup>Youngwoo Ind., Melaka, Malaysia

### BIOGRAPHY

**Matthias Krope** heads the global sales business for health and safety at Youngwoo Ind. from South Korea. Before, he worked as the executive managing director for HSE Asia in Siemens and was responsible for the global operational HSE aspects for worldwide projects. Additionally, he was the assigned Business Unit HSE Head for Siemens Energy Solutions. Since 2018, he works as an independent HSE consultant and supports companies with his expertise.

### INTRODUCTION

The construction industry poses unique health and safety challenges for its workers. In fact, about one out of every five workplace deaths in Calendar Year 2020 were construction-related, according to OSHA. How can we make occupational safety training more tangible, impactful and increase the rate at which employees remember what they've learned?

It feels that web training has been springing up like mushrooms during the Covid-19 pandemic. Employees being asked, they already feel tired by the sheer endless web training provided.

And it is a human characteristic that we switch to "energy-saving mode" during boring activities and retain only a fraction of what comes at us. In the area of occupational safety, it can have serious consequences. It is therefore a matter of choosing the most effective method possible to impart this knowledge as efficiently as possible and to anchor it in the memory.

### OBJECTIVES

It's all about "Learning by doing". Yet it offers an ideal basis for learning through trial and error in a safe test environment how accidents occur, what the consequences of unsafe work behavior are, where the hazards are to be expected, and what measures can be taken to prevent accidents in the workplace.

The safety training modules are similar to the machines and equipment used in the real workplace. The only difference is that these modules are equipped with special features to activate the sensory perception of the workers. This is not an exhibition, but something to try out and experience.

### METHODS

Individual learning stations for high-risk activities, that can simulate the tragedies of previous work accidents such as Working at Height with fall through opening experience and guardrail collapse scenario, Electrical Safety Exercises, a Confined Space Experience, or Excavation Works to feel the dangers of a real wall collapse. Experienced-based Safety Training is an impactful translation of theory into practice.

Results: Intensify workers' retention rate and memory effect to change the behavior and prevent accidents at the workplace.

Improved awareness by taking workplace hazards and dangers transparent and through active participation and exercise.

Enable learning through mistakes enables much higher motivation and concentration by the workers during the training.

### CONCLUSIONS

With modular mobile site safety parks in front of construction sites that recreate real-world scenarios, Youngwoo Ind. offers workers safety learning stations that turn hands-on exercises into an enjoyable – and memorable – experience.



## EP 9.5 Exposure Assessment of Electromagnetic Radiation in a Smart Factory

FRIDAY 24 JUNE 2022 10:05

**Klaus Schiessl**<sup>1</sup>, Rene Hirtl<sup>2</sup>, Gernot Schmid<sup>2</sup>

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### BIOGRAPHY

**Klaus Schiessl** works at the AUVA's Vienna based headquarters as an expert on safety & prevention in the field of electromagnetic radiation.

### INTRODUCTION

Growing automation and digitalization in production environments lead to increased application of automated vehicles and mobile broadband communication such as 5G. Among other risks, exposure of radio frequency (RF) electromagnetic radiation is of growing interest, particularly because of the higher limits for radiation that are applicable at the workplace as compared to setups for the general public. In addition, exposure scenarios in production environments involving campus networks considerably differ from situations in private or office environments.

### OBJECTIVES

An assessment of electromagnetic radiation in a Smart Factory, which employs 5G 'New Radio' in frequency range 1 (around 3.5 GHz) within a campus network, is to be performed. The investigated setup comprises a mobile robot, its mobile broadband communication links, as well as background WiFi networks on the shop floor.

### METHODS

Estimates of exposure based on parameters of RF devices are compared to, and complemented with, explicit in situ measurements of a pilot setup of a smart factory. The outcome of the exposure assessment of exemplary scenarios will be evaluated according to today's guidelines & workplace legislation. It will be related to simple estimates reflected both the average and the worst-case exposure.

### RESULTS

The results of the worst-case estimates may serve as a blue print assessment for a Smart Factory. The identification of setups with relatively high and low exposure will help to recommend adequate provisions for prevention of unnecessary exposure.

### CONCLUSION

Scenarios of RF exposure are undoubtedly necessary for a thorough assessment of a Smart Factory, thus the present work will contribute to safe application of new technologies.

## EP 9.6 Changing the driving behavior of forklift drivers by means of gaze analyses

FRIDAY 24 JUNE 2022 10:05

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<sup>1</sup>AUVA - Austrian Workers' Compensation Board, Vienna, Austria

### BIOGRAPHY

Degree in spatial planning and land use planning

Project manager at the Austrian Road Safety Board (KFV)

Project manager at the Austrian Workers' Compensation Board

### INTRODUCTION

In internal traffic in Austria, one accident per month ends fatally. Almost every 4th accident is caused by faulty perception. 90% of the things we perceive in our environment are perceived through the eye. Our statistics show that serious accidents are not uncommon in Austria's companies – and every single one of these accidents is one too many. For example, an employee may be hit by a forklift and seriously injured.

### OBJECTIVES

With "eye-tracking glasses" eye movements are recorded and a change of perspective is possible. Thus, dangers are made visible. Not the acting person, but the work process is in the focus. Our goal was to find backgrounds for distraction and near misses in internal traffic.

### METHODS

Employees wear "eye tracking" glasses during their work. Afterwards, data are evaluated together with representatives of the company, and training courses are carried out, in which measures to improve safety are jointly developed.

### RESULTS

The eye-tracking system makes it possible to detect critical situations even before accidents occur. Measures to increase road safety can be derived from the evaluation of the video material. The material can be used for in house safety trainings. But not only for forklift drivers. It is also suitable for raising the awareness of other participants in internal traffic, as the video material makes it possible to recognize the view of forklift drivers.

### CONCLUSION

Eyetracking can help to improve internal road safety. The eye-tracking system makes it possible to detect critical situations even before accidents occur.

Based on the processed video material, safety trainings can be carried out and concrete measures can be derived and implemented according to the STOP principle. STOP means Substitution, Technical, Organizational and Personal measures.

## EP 9.7 Security for Safety Risk Assessments for the production industry

FRIDAY 24 JUNE 2022 10:05

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### BIOGRAPHY

**Martin Steiner** studied Safety and Systems Engineering at the FH Campus Vienna. In his current position as an expert in the field of the Machinery Directive, he works on a wide variety of projects in this environment. Mobile robotics, implementation of digital assistance systems as well as modifications of machines and automation systems are the current focus of his work.

### INTRODUCTION

Digitalization thrives within the production industry and factories become more and more interconnected. Digital interfaces are built up to interconnect working systems and plants and make direct web-based access to control systems possible. That makes modern factories vulnerable to security attacks and incidents. Current standards are mainly focused on enhancing physical safety by implementing constructive or organisational measures. The only existing OT security standard series is the IEC 62443 that is for a major part still a draft and lacks practical guidance for a proper integration in respect to safety regulations.

### OBJECTIVES

Machines in which the control is realized via programmable components (usually PLC or microprocessor systems) can pose a potential risk for security attacks and thus the safety of the machine. Already during safety considerations at the design time of a machine (covered by EN ISO 13849) security aspects according to IEC 62443 should be considered. Therefore, the goal was to develop an integrated security for safety assessment scheme that already starts with the risk assessment for manufacturers to identify potential security risks regarding functional safety as early as possible.

### METHODS

Published and drafted security and safety legislation, standards, guidelines, publications, and internal best practices were analysed and overlaps and check points considering security regarding safety were derived. Appropriate technical safety and security procedures and tools for the inspection of those checkpoints were developed and validated.

### RESULTS

- TÜV AUSTRIA was the first accredited inspection and certification body for the IEC 62443 and now holds all necessary accreditations to perform safety and OT security assessments
- Technical Procedures and guidelines are in place to perform necessary security assessments additional to and together with safety assessments to protect the safety measures in place
- Customers can assess the overall safety and security of their products at one integrated approach and derive holistic measures

### CONCLUSION

By addressing security in an integrated approach together with machinery safety, a fully comprehensive safety and security concept can be ensured. Making OT security an essential part of every safety risk assessment is crucial to protect the physical safety of workers and the environment.

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