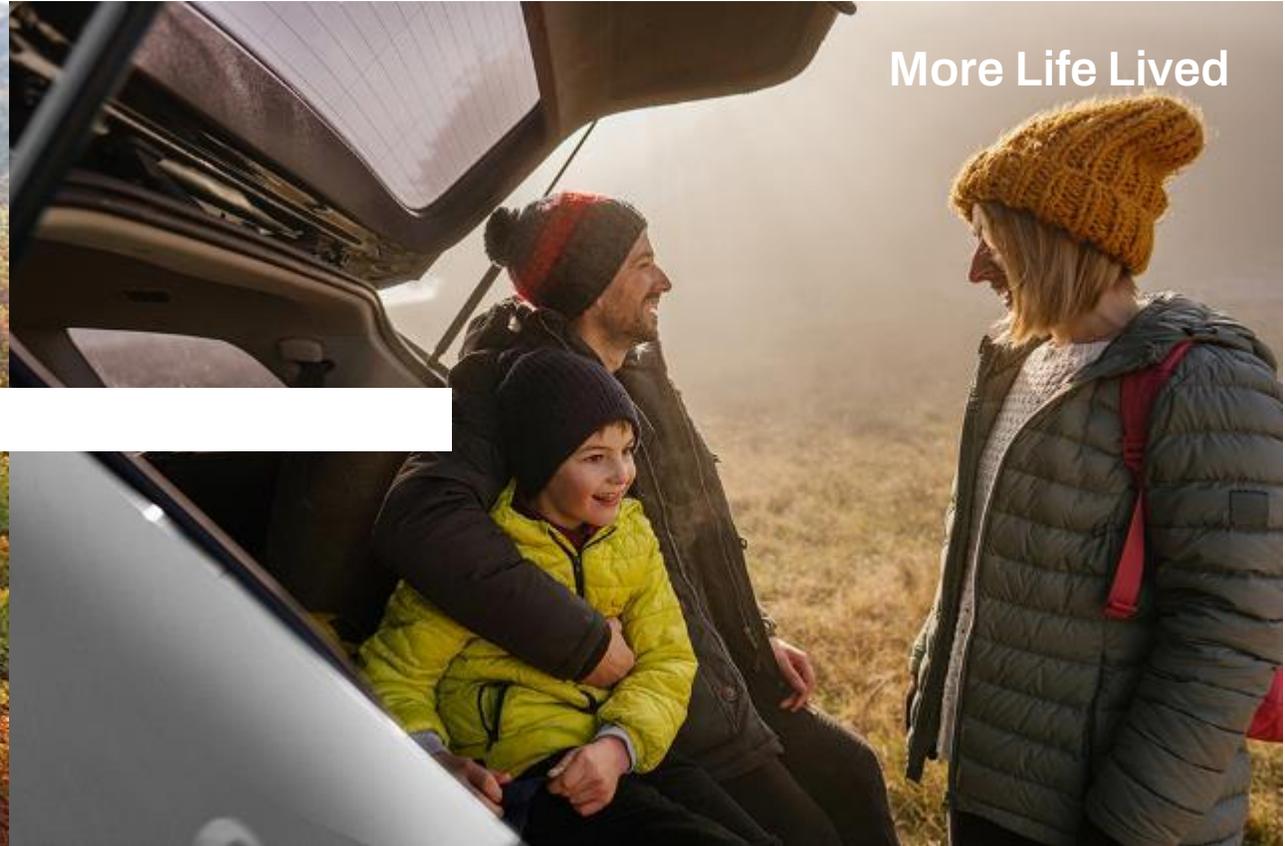


More Lives Saved



More Life Lived

Circle of Life: Autoliv's Safe System Approach to Safety

Dr Cecilia Sunnevang

Vice President Research

Our Vision

Saving More Lives

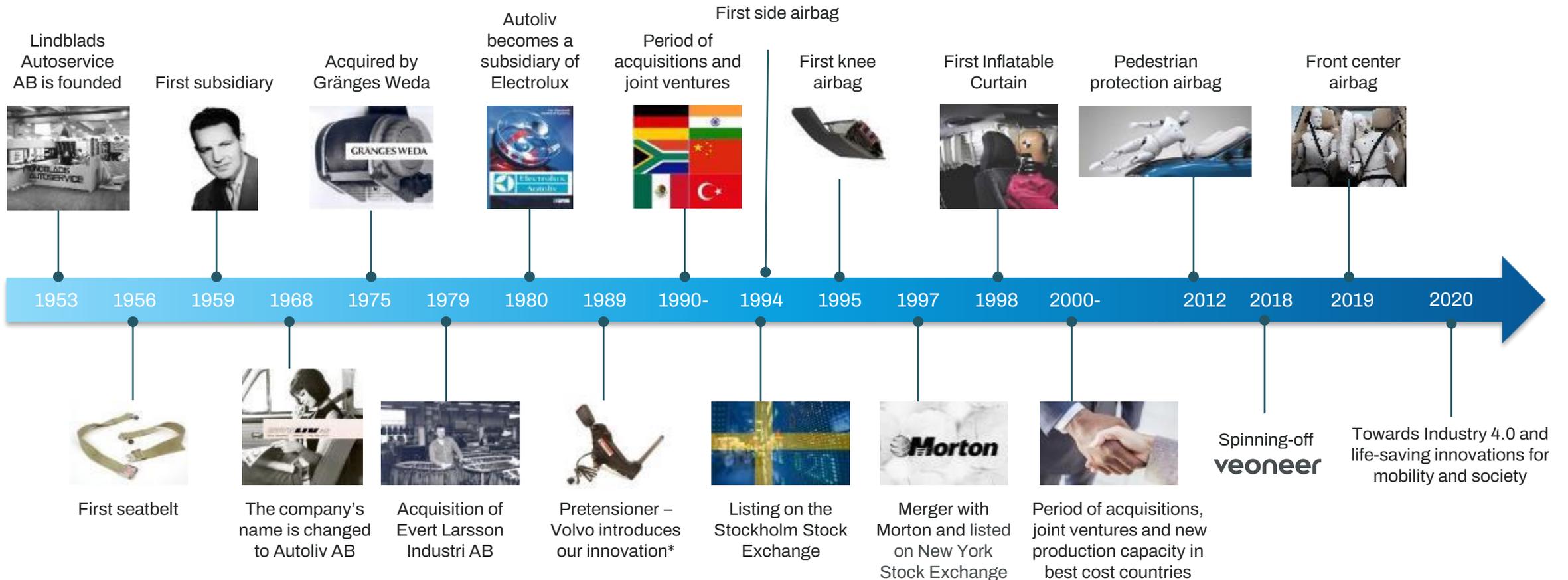
Our Mission

Providing World Class, Life-Saving Solutions for Mobility and Society



**In 2021, our products saved close to 35,000 lives
Every year our products prevent more than 300,000 severe injuries**

Autoliv – Close to 70 Years of Dedication to Saving Lives



Road Safety – A Global Challenge

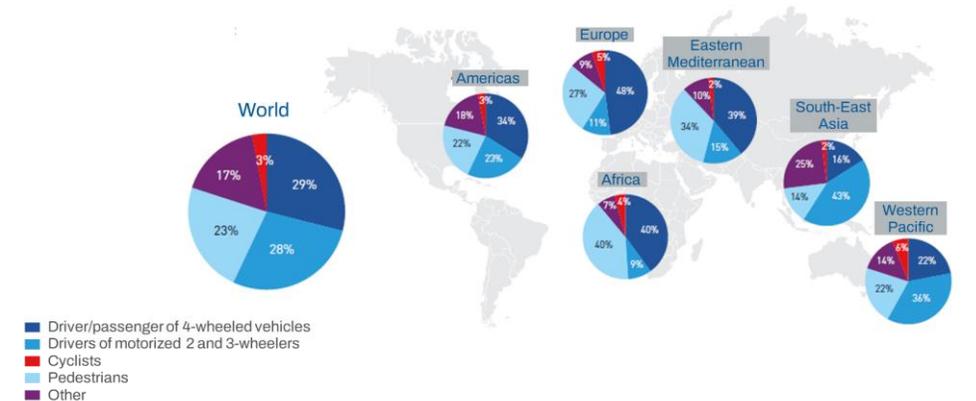
With the UN Sustainable Development Goals road safety was made a global priority. **For good reason**

- 1.35 million deaths occur in traffic each year with increasing tendency.
- Road traffic accidents are the leading cause of death among people between the age of 5 and 29.
- Low and middle-income countries account for 90% of global traffic deaths.
- Low and middle-income countries loose ~3% of their GDP through traffic crashes.
- Thailand xxxxxxxxxxxxxxxxxxxxxxxxx**
- Loss of breadwinner or expenses for prolonged medical care drives many families into poverty.



Distribution of Fatalities by Road User Type

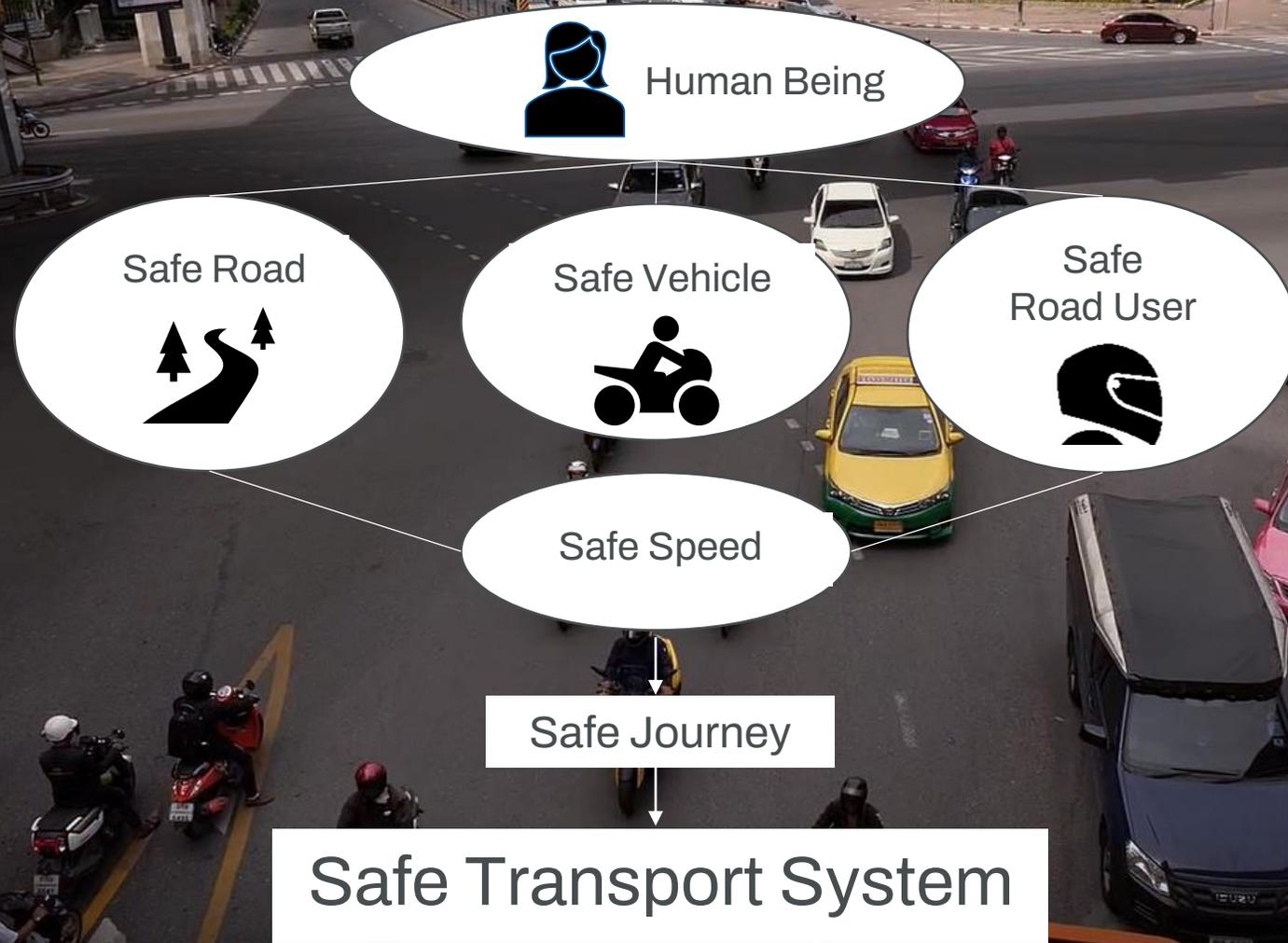
1.35 m fatalities of which 50% vulnerable road users*



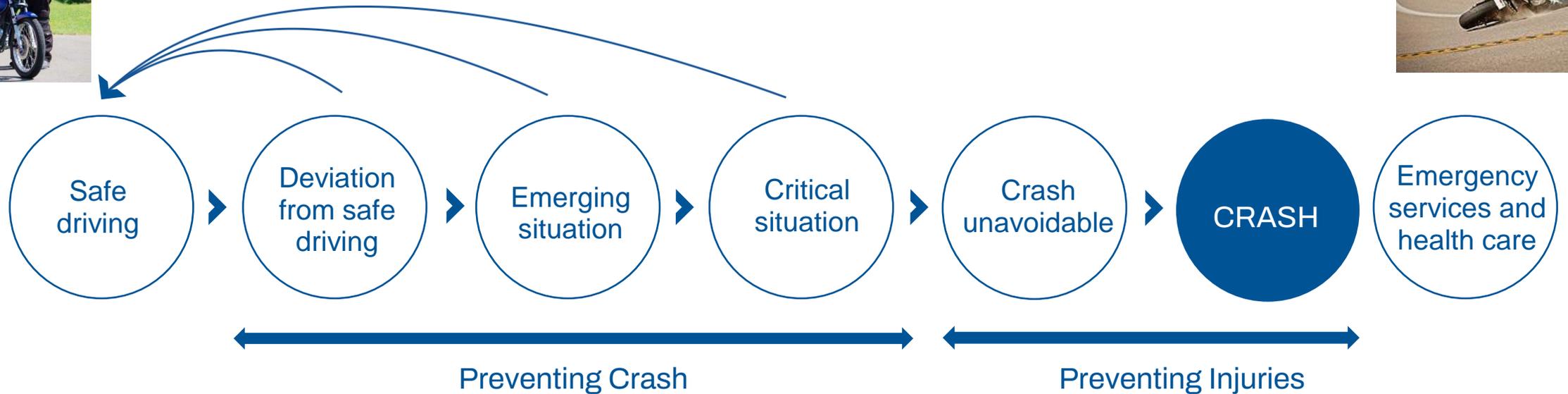
Source: WHO Global Status Report on Road Safety 2018

*VRU = Motorcyclists, Cyclists, Pedestrians

Vision Zero - Model for Safe Traffic



Integrated Safety Chain for Countermeasure Evaluation



Motorcycle Safety – Holistic approach

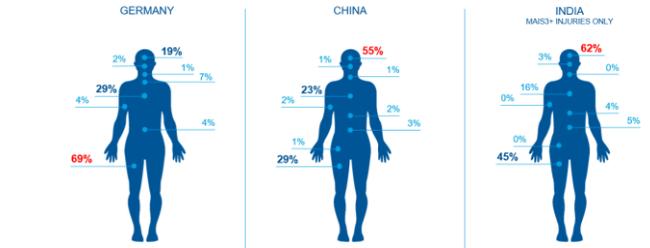


Test Methods / Validation

Countermeasures
On-vehicle | On-rider | Digital



PTW Riders – Most common injuries



Source: Autoliv analysis of GIDAS, CIDAS and RAISS



Autoliv

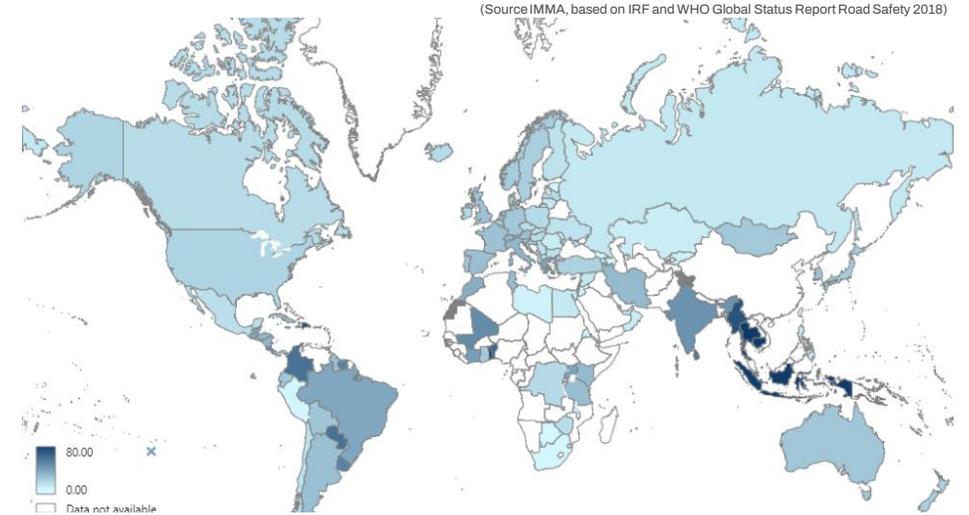
Data Analysis

CAE Simulations / Physical Testing

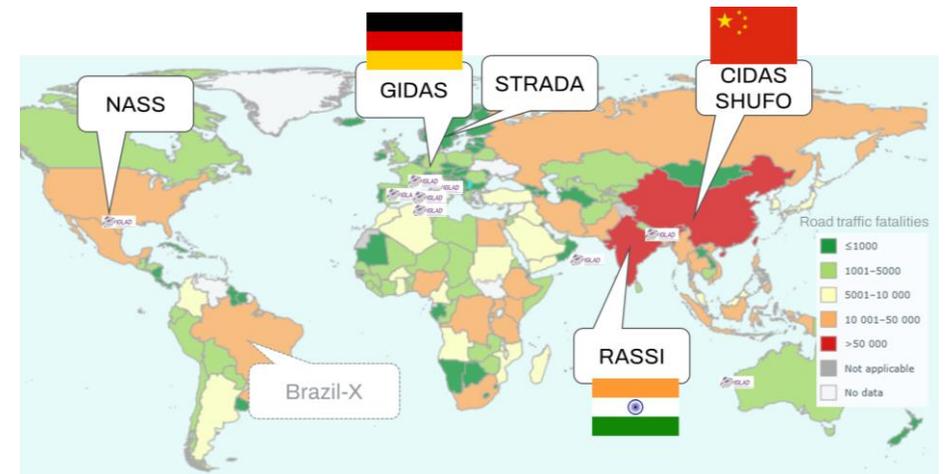


Traffic Safety Research

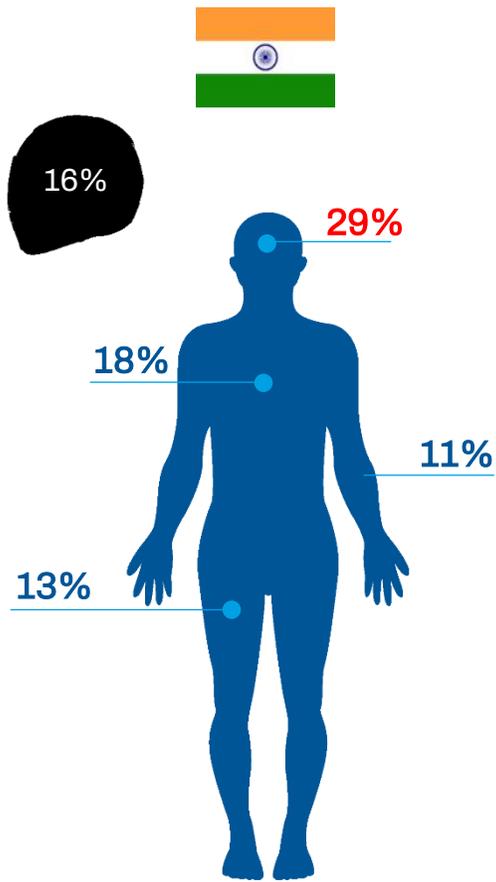
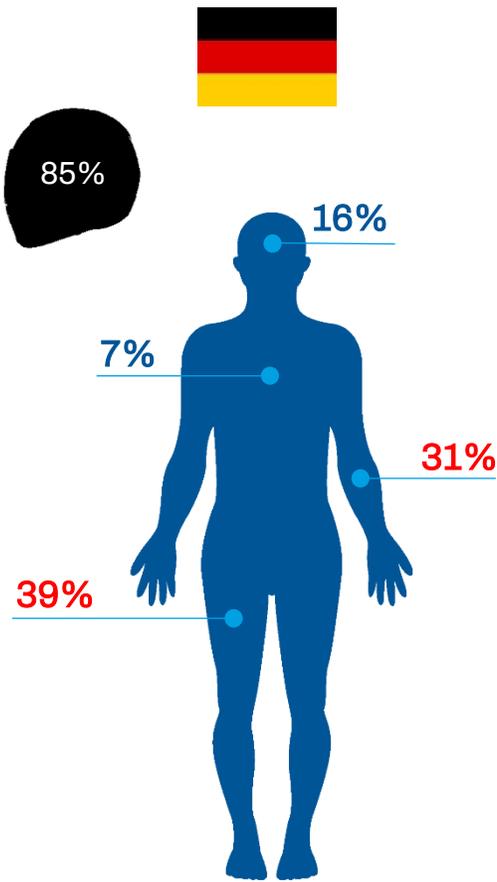
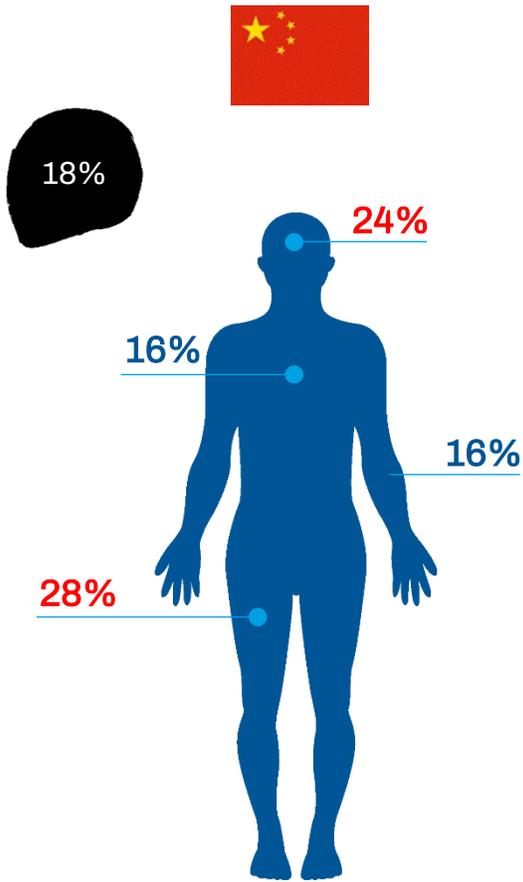
- Government Statistics
- Insurance Data
- In-depth crash data
- Naturalistic Driving Studies



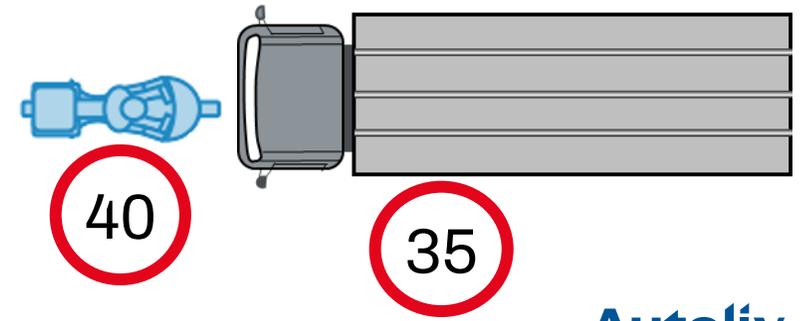
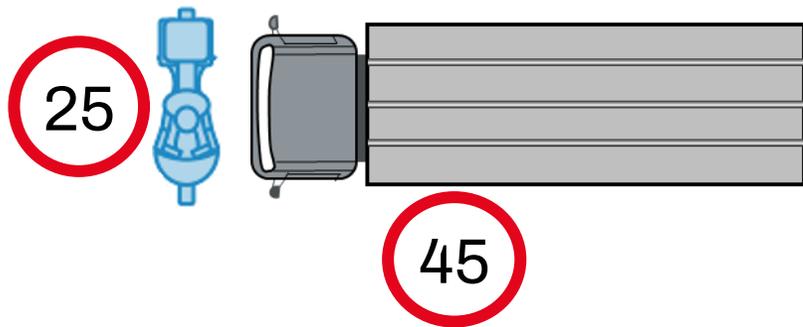
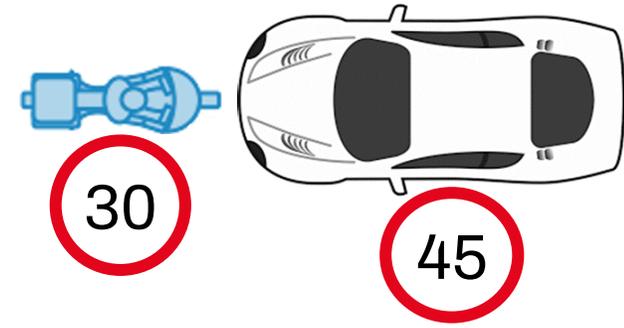
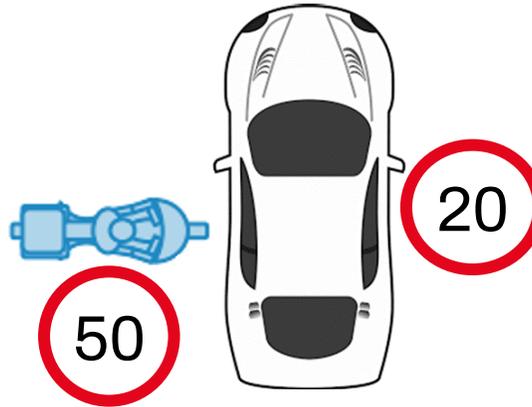
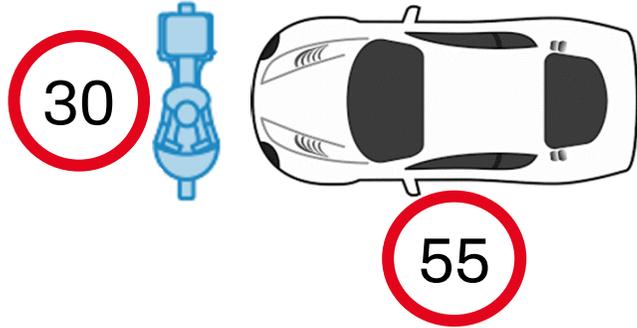
			
Database	RASSI	GIDAS	CIDAS
Total no. of accidents	2432	34513	2895
Total number of PTW involved accidents	1034	4959	1278
PTW rider suffered at least one severe injury or fatal	808	1824	321



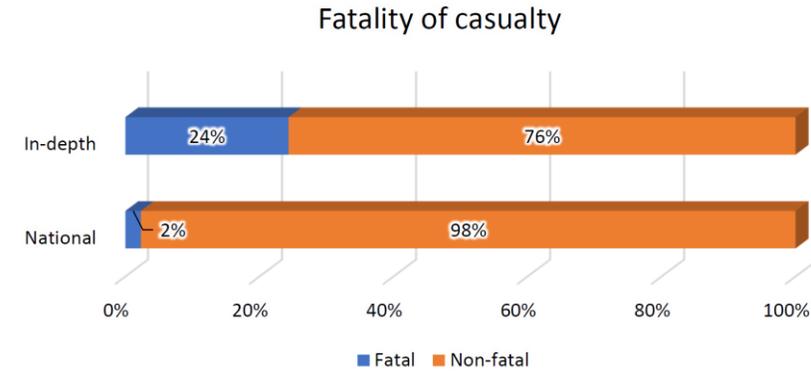
Injured body regions to powered-two-wheeler users in urban crashes (MAIS2+)



Traffic Safety Research: Most Frequent Load Cases



Powered Two-Wheelers – Load cases

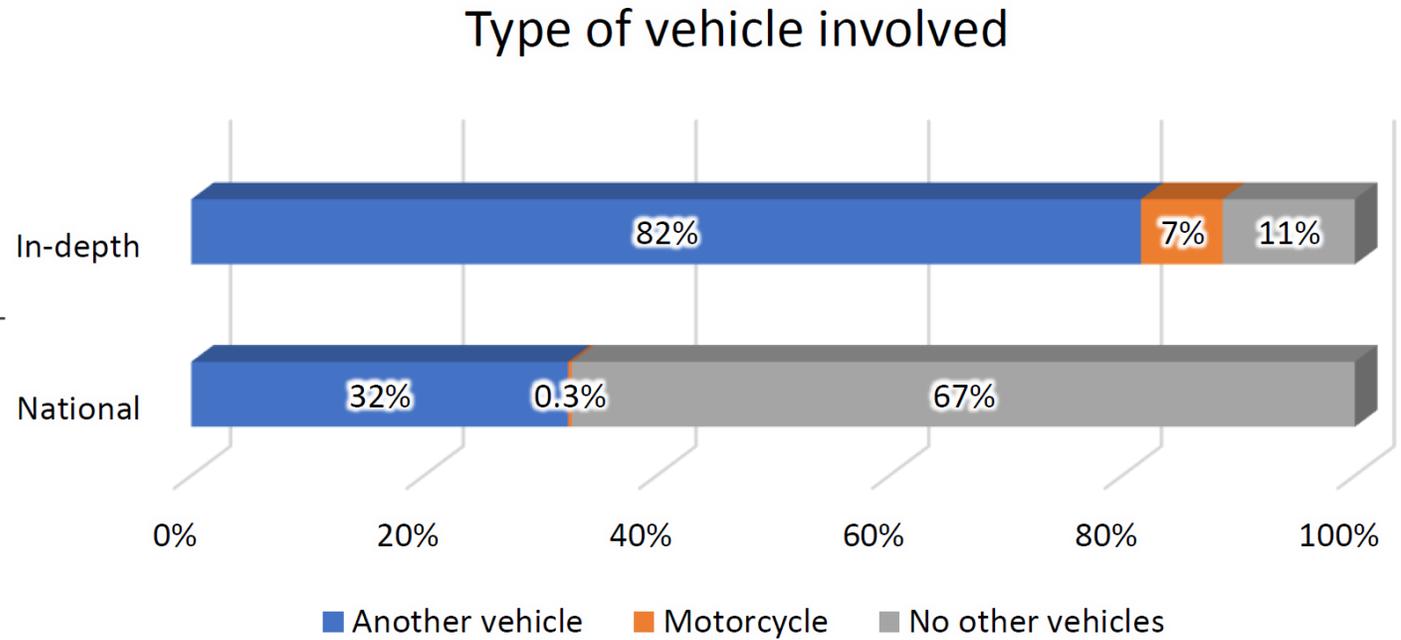


In-depth

(in-depth motorcycle accident investigation project done by Thailand Accident Research Center (TARC) during 2016-2020)

National

(motorcycle accident data in Thailand from 2017-2019)

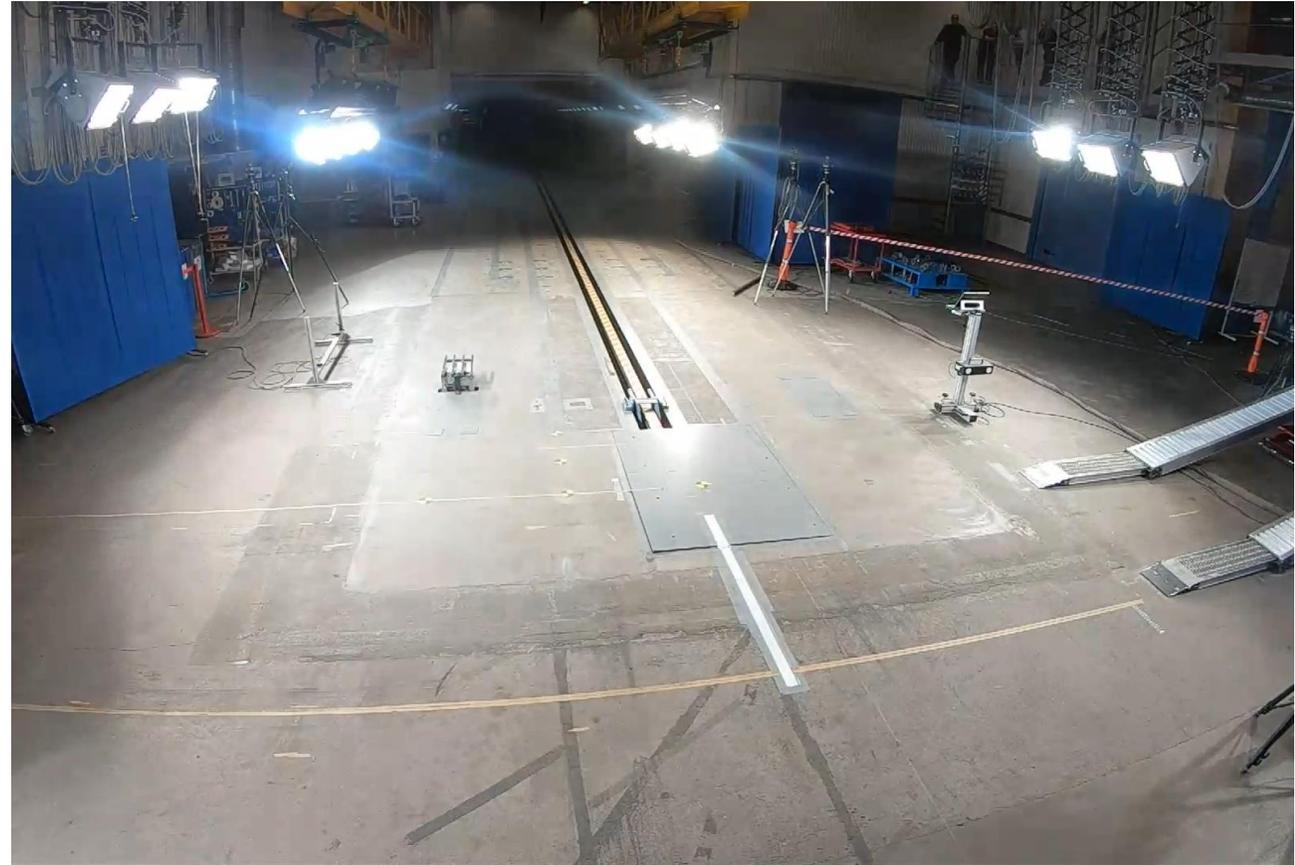
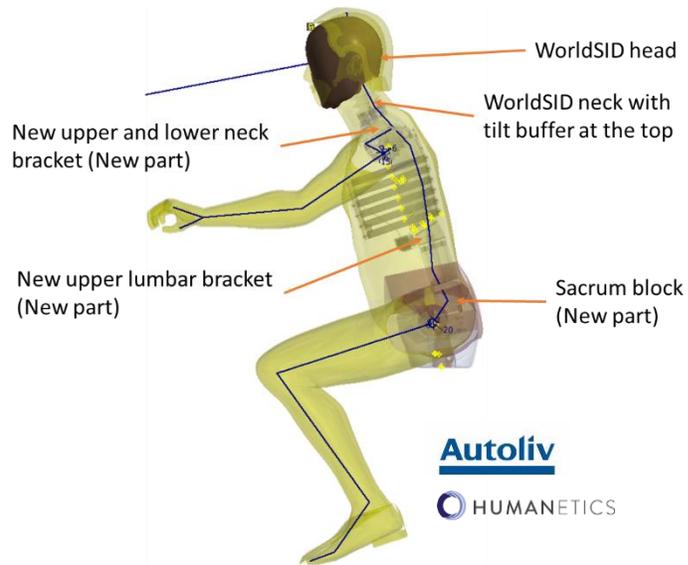


Testing and simulations

CAE Model



Modified HIII anthropometric testing device



Motorcycle-to-car crash test, partially funded by the Swedish Transport Administration

Physical & Virtual Evaluation



Solutions

On Vehicle Safety Active and Passive Safety



On Rider Safety Personal Protective Equipment

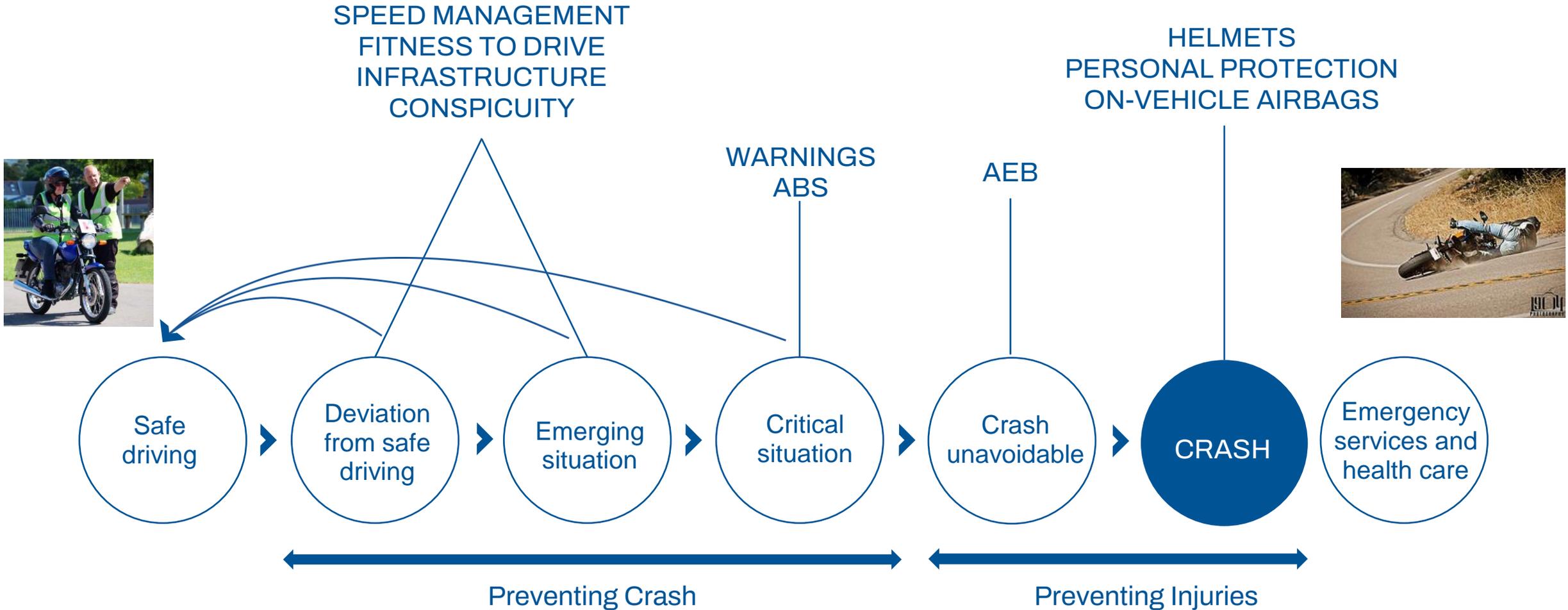


Safety Awareness

Connected Safety Systems

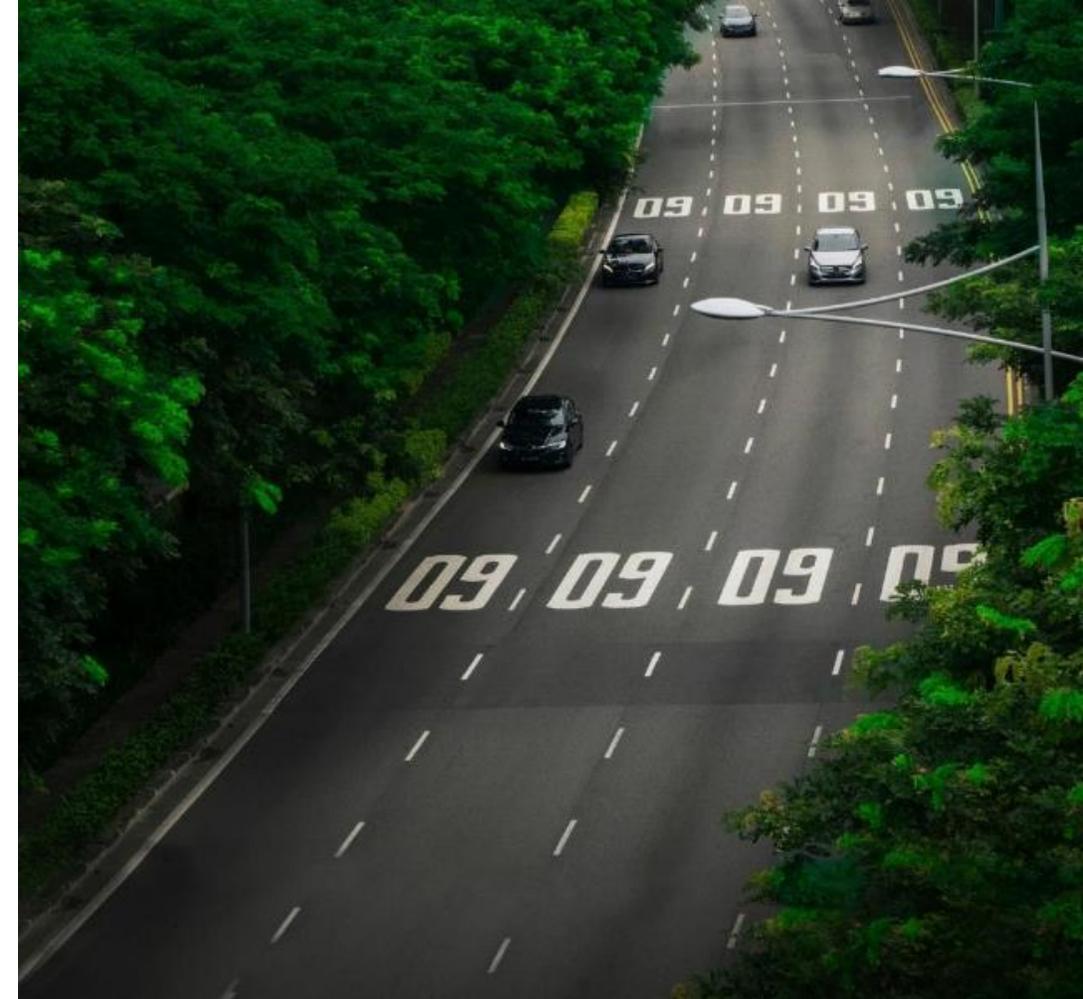


Integrated Safety Chain for Countermeasure Evaluation



Conclusions and Recommendations

- Autoliv is uniquely positioned as a supplier to directly influence road traffic safety. Our most important contribution is by providing pioneering safety solutions that address real safety challenges, both current and future, and to help advocate to accelerate progress in safety.
- **1/ Accelerate the adoption of Safe System principles and evidence-based approach**
 - Progress in safety relies heavily on having capacity to systematically understand safe concerns and track the effectiveness of measures – it becomes more effective if it is underpinned by a continuous constructive and evidence-based collaboration between authorities, industry, and academia.
- **2/ Address the safety of unprotected road users**
 - There is a need and opportunity to enhance performance requirements on both vehicles and on transport system level for the protection of unprotected road users – this is particularly true in a country like Thailand, with such significant proportion of two-wheelers.
- **3/ Accelerate the adoption of harmonized technical regulation and fitment of proven safety technologies**
 - We need to accelerate the fitment of proven safety technologies in LMIC by a combination of establishment of national NCAPs to stimulate innovation and guide consumers towards the safest options, and through mandatory regulation using harmonized standards, to make safety available to all.





Saving More Lives