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Towards ‘Vision-Zero’ in Road Traffic Fatalities

This report reviews how some human factors contribute to safety issues on the road and provides suggestions on ways forward to greatly reduce the negative impact of human factors on traffic safety

ارائه دهنده:
نرگس نظری
دانشجوی دکترای پژوهشی سلامت در حوادث و بلایا
مرکز تحقیقات سلامت در حوادث و بلایا
دانشگاه علوم توانبخشی و سلامت اجتماعی

Introduction

- *Human factors play a huge role in road traffic safety.*
- *Previous works have reported that more than 90% of road traffic crashes occur because of some form of human error.*
- *Improving road user behavior has been the major strategy that has been emphasized for improving road traffic safety.*
- *Meanwhile, despite the training efforts, and testing for drivers, the global status of road traffic safety is alarming.*
- *This research highlights the seriousness of human factors on road traffic safety and provides actionable strategies to greatly reduce the negative impact of human factors on road traffic safety.*

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Introduction

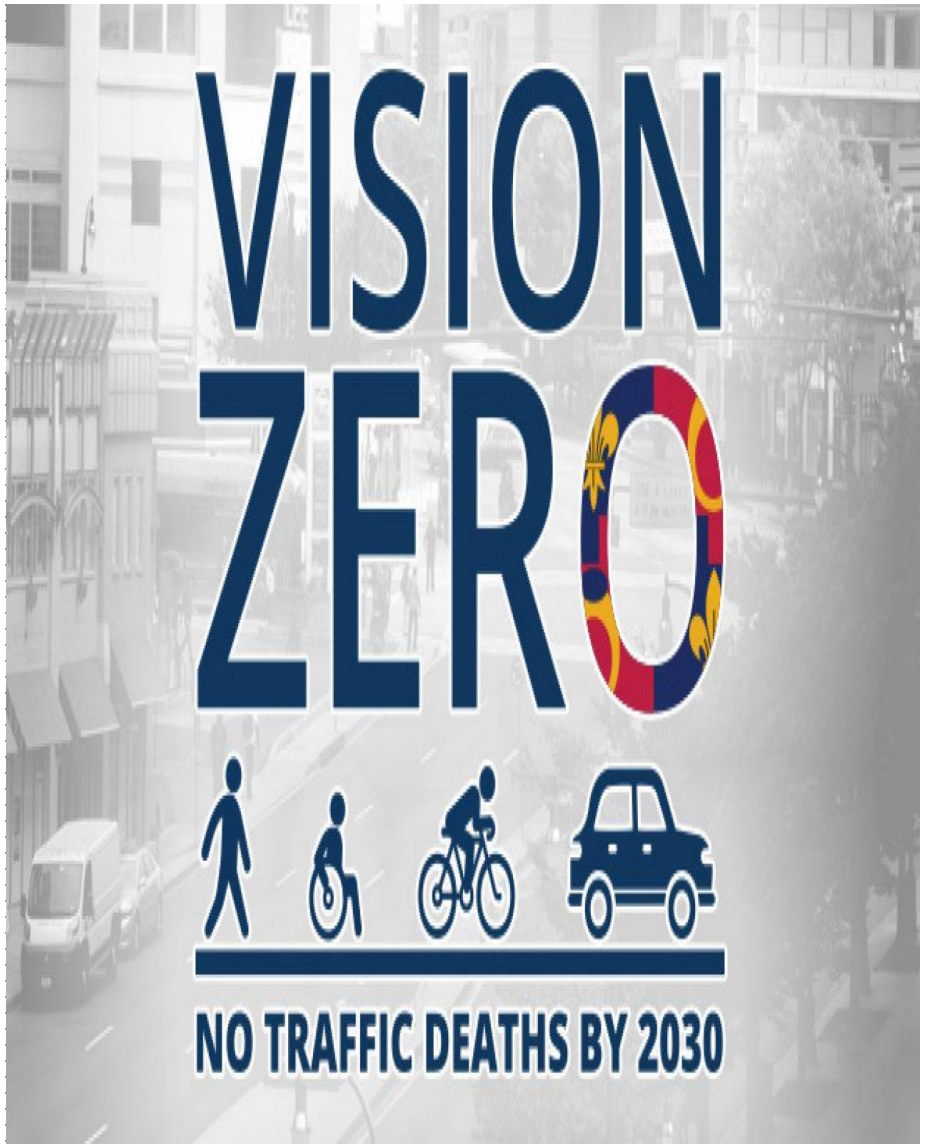
Human factors in driving can also be related to the level of experience of the driver.
The age of drivers and driving history show a significant impact on some driving behavior indices and reaction time.

Research has also found that the presence of drugs and alcohol in the system of road users is detrimental to road traffic safety.

To achieve a consensus on what a reasonable degree of automation for vehicles on the road is at any point in time, it is important to evaluate the status of road safety, the causes of traffic fatalities, and whether there is any reasonable level of automation that could help reduce the fatalities on the road.

(towards the achievement of vision-zero in road traffic crashes, property damage, injury, and fatalities).

Introduction



What is Vision Zero?

Vision Zero is a comprehensive approach aimed at eliminating traffic fatalities and severe injuries, while promoting safe, healthy, and equitable mobility for everyone .

Originally implemented in Sweden during the 1990s, Vision Zero has proven effective in reducing traffic-related deaths and serious injuries in cities across the globe.

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What is the goal zero traffic?

Vision Zero is a multi-national road traffic safety project that aims to achieve a roadway system with no fatalities or serious injuries involving road traffic.

The core Vision Zero principles are serious and fatal traffic crashes are unacceptable, preventable, and the design, construction, and maintenance of the roadway system can minimize the consequences of human error .

Traditional vs. Safe System Approach

Source: Alta Planning. (2022). Elements of Robust Data in the Safe Systems Approach.

Vision Zero Plan2024

the five elements the Safe System Approach address every aspect of crash risks to build in redundancies that prevent deaths and series injuries and create a holistic approach to safety

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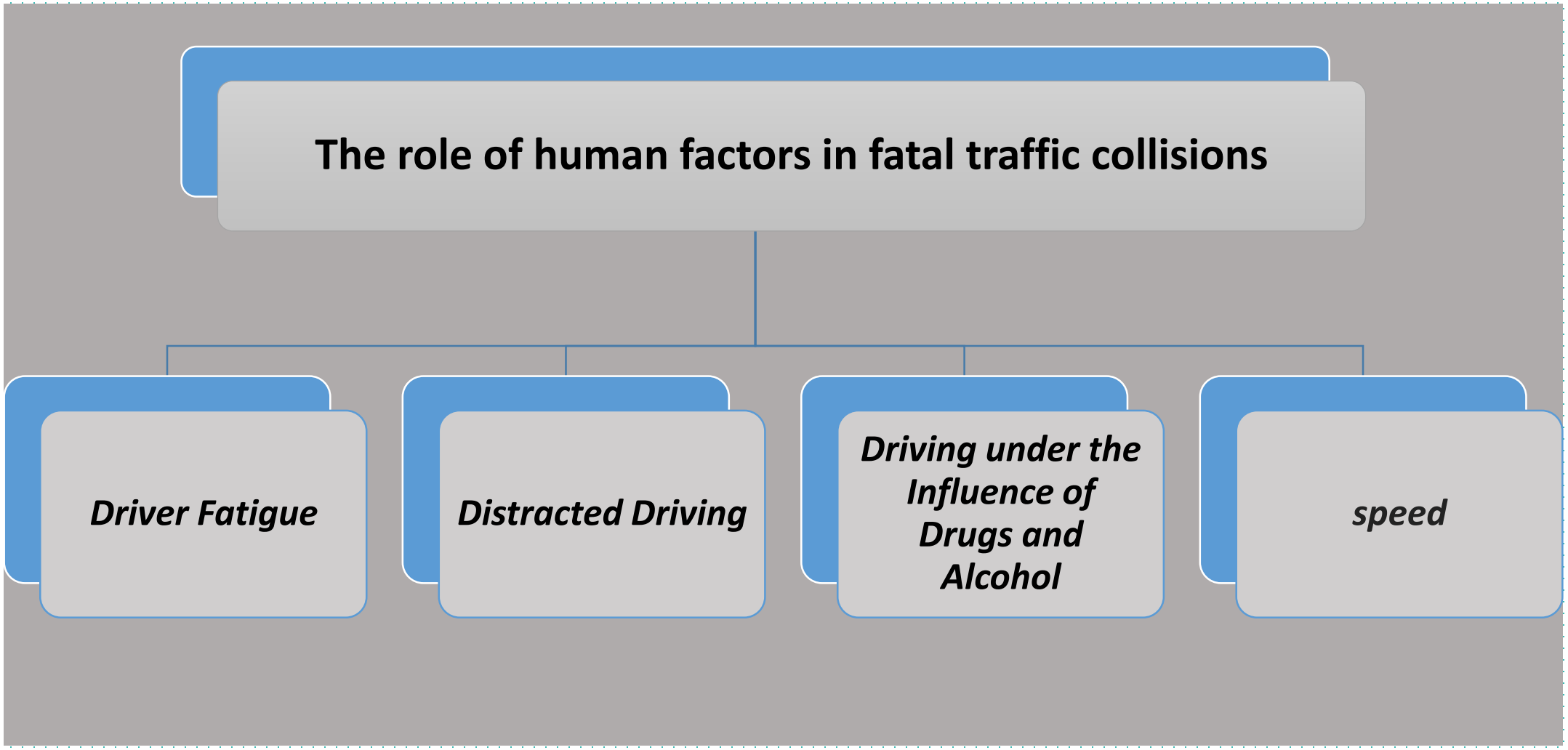


Mofolasayo, A. (2024).

.1. Driver Fatigue

- ***Driver fatigue has been found to be one of the major factors that negatively impact road traffic safety.***

- ***Driver fatigue, sleep restriction, and falling asleep while at the wheel has been identified as some of the major factors that contribute to accidents on the road .***

Driving under the Influence of Drugs and Alcohol

- ***Random police inspection can be increased, especially during the time that is common that there will be drunk drivers outside .***
- ***Those who sell alcohol may be obliged to take the car keys away from their customer and call a taxi if the customer is drunk, or even call the police if one of their drunk customers gets behind the wheel .***
- ***Police checkpoints for drunk driving may be situated close to liquor stations .***
- ***Adequate fines for drunk driving, including revocation of driving license***
- ***reasonable collision avoidance systems, such as lane departure warning systems, frontal collision warning systems (audible and vibrational effect to alert the driver), auto-brake systems, backup camera warning systems, etc .***

Distracted Driving

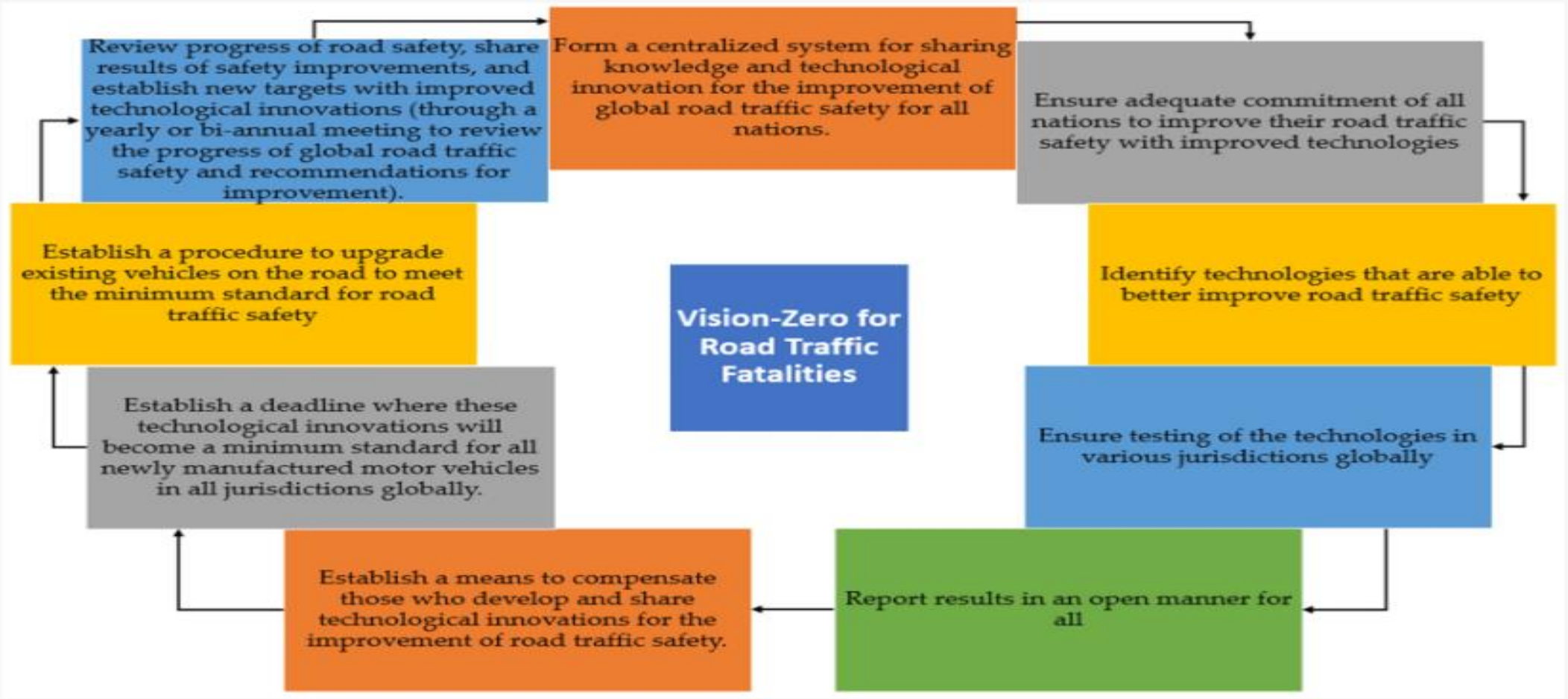
Distraction can occur when drivers have to:
take their eyes off the road to look at the information on the display boards in the vehicles (Head-down display, HDD).
The use of smartphones while driving.
the impact that billboards have on drivers' visual behavior.

the automation system should be able to alert the driver, both audibly, on a screen in the vehicle, and possibly through vibration.

A good auto-assist system should be able to alert the driver audibly, through a screen display, a vibration (on the seat, steering or the entire vehicle), and other means that may put the driver back on an alert mode.
Improvement in engineering controls to protect vulnerable road users in various communities, construction of more guard rails, gates/barriers to restrict vulnerable road users from accidentally getting in the way of high-speed vehicles...,

Six of the most common new technologies as mentioned by the IIHS and the HLDI: include auto-brake, forward collision warning, blind spot detection, adaptive headlights, lane departure warning, and lane departure prevention.

Figure 7. Model for continuous improvement of road traffic safety on a global scale.



Actionable Strategies towards the Achievement of Vison-Zero for Road Traffic Fatalities Globally

- ***Form a centralized system for sharing knowledge and technological innovation for the improvement of global road traffic safety for all nations.***
- ***Ensure adequate commitment of all nations to improve their road traffic safety with improved technologies.***
- ***Identify technologies that are able to better improve road traffic safety.***
- ***Ensure testing of the technologies in various jurisdictions globally.***
- ***Report results in an open manner for all.***

Actionable Strategies towards the Achievement of Vison-Zero for Road Traffic Fatalities Globally

- ***Establish a means to compensate those who develop and share technological innovations for the improvement of road traffic safety.***
- ***Establish a deadline where these technological innovations will become a minimum standard for all newly manufactured motor vehicles in all jurisdictions globally.***
- ***Establish a procedure to upgrade existing vehicles on the road to meet the minimum standard for road traffic safety.***
- ***Review progress of road safety, share results of road safety improvements, and establish new targets with improved technological innovations (through a yearly or a bi-annual meeting to review the progress of global road traffic safety and recommendations for improvement).***

Conclusions

This report also includes some recommendations that are hoped to help humanity at large achieve a breakthrough in the effort to reduce road traffic crashes and the associated property damage, injuries, and fatalities. Among other things, the discussion in this study illustrates human challenges with fatigue, sleepiness behind the wheel, distraction while driving, and driving under the influence of drugs and alcohol.

From the review of human factors, it is evident that errors associated with human factors (fatigue, sleepiness behind the wheel, distraction while driving, and driving under the influence of drugs and alcohol.)present a real challenge to improving transportation safety.

This study supports the fact that challenges with human factors in driving operations present a real threat to improvement in road traffic safety .

Recommendation

- *A concerted effort is needed (cooperation between all nations on transportation (road traffic safety).*
- *Open sharing of knowledge on what has resulted in positive achievements (improvement) in road safety in various municipalities will be beneficial.*
- *There is a need to legislate an increase to the minimum safety standard for all motor vehicles on the road. This should be a continuous effort until zero fatality is achieved on the roads globally.*
- *There is a need to create a sense of global accountability for road traffic safety for people in all jurisdictions. This should be strictly motivated by the intention to improve road traffic safety in all communities globally.*
- *There is a need to set a timeline for various nations to come up with adequate legislation, and enforcement of legislation that is aimed at improving road traffic safety.*

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