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Systematic Review

Vision Zero: Evolution History and Developing Trend in Road Safety: A Scoping Review

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Abstract

Background: Vision Zero is a public policy approach that aims to achieve a road traffic system with no fatalities or serious injuries caused by road traffic crashes (RTCs).
Objective: This study aimed to investigate the history of Vision Zero's evolution and trends in road safety worldwide.
Methods: This scoping review was conducted based on the Arksey and O'Malley and the Joanna Briggs Institute framework. This framework consists of five steps: research question identification; identifying relevant studies; selection of study; data charting; gathering, summarizing, and reporting the results.
Results: Finally, 37 articles met the inclusion criteria. The trending of deaths caused by RTCs in the countries implementing Vision Zero shows a decline. There is a intercountry variation with the most substantial decrease in Sweden.
Conclusion: Vision Zero has had an evolutionary development in many countries. Due to the significant impact of the implementation of the Vision Zero, many countries are seeking to adopt or implement this approach. Although there are some challenges in implementing Vision Zero in different countries but based on its philosophy, there is a growing rate for implementing it in different settings.

Keywords: Vision Zero, Road Safety, Road Traffic Injury, Trend, Safe System, System Approach.

Introduction

Road traffic crashes (RTCs) are one of the important public health problems that the society and policy-makers are widely confronted with the deaths and disabilities caused by it.[1] Annually 1.35 million people lose their lives in RTCs. More than 90 percent of RTCs happen in low-and middle-income countries (LMICs).[2] According to a report from WHO, the financial result of RTCs are remarkable as well and in LMICs, RTCs contribute to 2 to 7% loss of GDP.[2] The multidimensional nature of RTCs makes it a complex issue with many players. Therefor effective and preventive solutions for RTCs are rather complicated subjects.

There are various approaches to RTCs prevention in the world, which have their own goals and methods. One of the new approaches to road safety is Vision Zero. Vision Zero is a public policy approach that aims to achieve a road traffic system with no deaths or serious injuries fromRTCs. Vision Zero is a philosophy and a guide to the road safety structure with a long-term vision. The most important philosophical assumptions underlying Vision Zero relate to philosophical areas such as anthropology, ethics, axiology, and political philosophy.[3]

In general, Vision Zero is based on four principles including ethical principles, Shared responsibility, Safety philosophy, and Mechanisms of change. In its ethical principles; human life has the highest value and takes precedence over all other purposes of the road safety system. Ethically, it could never be acceptable that road users are killed or seriously injured in the road transport system.[3-5] In this view, human has the great value and the transport system must be designed in a way that no incidents cause death or serious injury to this valuable creature.[3] Based on the Vision Zero principles, fatalities and injuries caused by RTCs are preventable. Shared responsibility in Vision Zero emphasizes on sharing the

responsibility in which designers of the transport system are always ultimately responsible for all aspects of the road transport system.[4,6-8] Safety philosophy is about the designing of a road safety systems which could compensate for human errors and the minimize of the risk of human errors and injuries caused by RTCs.[5,9] Mechanisms of change is about ensuring the safety of all road users. In this regards designers and legislators must collaborate with road users to be prepare the necessary changes for achieving safety goals.[5]

Vision Zero has been approved or implemented in various countries.[7,10] Sweden has reduced the death rate from RTCs over the past twenty years by implementing the Vision Zero approach. This success is due to the years of effort in implementing this approach.[11] Given the importance of the Vision Zero approach and the results of its implementation in leading countries such as Sweden, Norway, Australia, and other countries, it seems that more countries are seeking to adopt this approach to reduce RTCs. In 2001, this approach was welcomed by the European Union and adopted as a road safety goal.[12] Knowing the activities related to this approach and the trend of achieving the goals in reducing deaths and serious injuries can help other countries to adopt and implement this approach in road safety. Therefore, this study aimed to investigate the history and activities related to Vision Zero evolution and trends in road safety worldwide.

Materials and Methods

This study was conducted throughout a scoping review. Scoping review is used to design concepts that are based on an area of research and main sources and types of available evidences. It is also used to design the field map and guide the future studies by helping to identify important gaps and evidence.[13] Therefore, scoping review is used when the literature has not yet been comprehensively reviewed or has a wide, complex, or heterogeneous feature that systematically cannot be reviewed.[14] In this study, a scoping review was conducted in accordance with the proposed framework by Arksey and O'Malley[13] as well as the revised version of the Joanna Briggs Institute.[14] This framework consists of five steps: Research question identification; identifying relevant studies; selection of study; data charting; and gathering, summarizing, and reporting the results.

Research question

The purpose of this study was to extract the history of Vision Zero and its evolution in road safety worldwide. A primary search of the literatures available on the subject revealed that there was no comprehensive research on the subject and no specific study was conducted for this purpose. Therefore, this Scoping Review would identify the history of Vision Zero and its evolution in road safety around the world. The question of research was as follows: What is the history of Vision Zero, and its development trend in road safety around the world?

Relevant studies

In this study, all documents were searched in databases including ISI Web of Science, PubMed, Scopus, ProQuest, Embase, and Google search engine without a time limit. At this point, related keywords were searched in databases using MeSH terms. To accomplishes a comprehensive search, words were combined in each aspect using OR and AND, and the term search was performed separately and combined in separate sections. The articles were searched using the following keywords.

"Vision Zero", "Zero Vision", "Toward to Zero', "Zero Accident Vision", "Zero Target', "History", "Trend", "Road Safety Approach", "Road Safety Strategy"

Selection of the study

In this study, the research group considered all scientific articles and literature related to the research question. The research setting at this stage included databases that could be accessed in addition to being relevant to the research topic. Inclusion criteria contained texts related to the Vision Zero approach, articles published in a variety of formats including original research, reviews, case reports, and credible reports provided by international organizations involved in the field of road safety. Exclusion criteria included all non-English-language abstracts and full texts. To facilitate references management, the EndNote software (Version 15) was used. Duplicated and similar articles were removed using EndNote. PRISMA-ScR (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews) checklist in reporting findings was used as well.[15] Accordingly, in the initial search, 815 papers were found, and finally 37 papers met the inclusion criteria (Figure 1).

Charting data

At this step, the data were entered into the Microsoft Excel data-charting form. The data charted included country name; year of Vision Zero implementation; and their goals.

Gathering, summarizing, and reporting the results

The results of this study were reported in two ways: descriptive numerical analysis of the included studies and the summary of the narrative the basis of the evidence.[13]

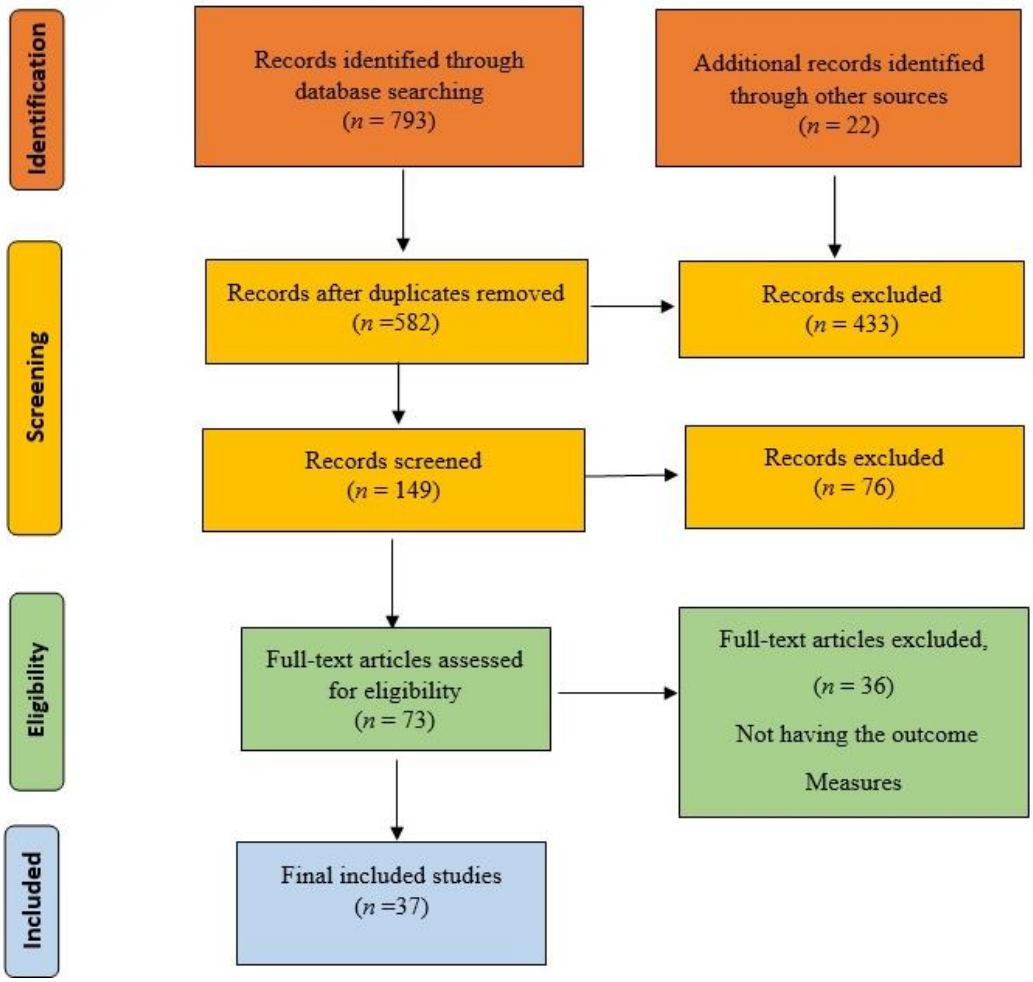

Figure-1. The review process based on PRISMA flow diagram of Vision Zero evolution and trends in road safety in the word.

Results

More than two decades have passed since the emerging of Vision Zero. This approach was first founded and launched by Claes Tingvall and approved by the Swedish Parliament in October 1997.[16,17] Vision Zero describes the end product of a road safety of transport system.[8] This system must be consistent with physical and mental conditions and human limitations, and the road safety responsibility must be shared among designers, professional operators, and road users.[4] Generally, Vision Zero stipulates a system design responsibility; this intent is transformed into a formal regulation; this regulation affects the behavior of system designers; and this behavior affects the safety standard of the road transport system, which ultimately reduces the number of deaths and injuries.[18] Vision Zero operational strategies are classified into four main points, including political/governmental commitment, speed management, vehicle design and safety features, and encouraging the involvement of community stakeholders to create a safer transportation system.[7] Vision Zero is being approved or implemented in many countries. Since the emerging of Vision Zero, many countries have adopted and implemented this concept or significant portions at national, regional, or local level.[17,19-22] The trend of RTCs in Sweden shows that fatal road traffic injuries has reduced by about 46% from 2007-2017 (Figure-2). Also, he history and stages of the evolution of Vision Zero in Sweden[23,24] are shown in Table 1.

Furthermore, the trend of deaths from RTCs in countries with Vision Zero shows that these countries are in a downward trend in deaths from RTCs.[2,25,26] Although this trend varies across countries, it is generally felt in some leading countries such as Sweden and Norway (Figure 3). Based on the results, Table 2 describe the history, actions and principles of Vision Zero in the world.

Discussion

Vision Zero is a philosophy and a guide to the road safety structure with a long-term vision. This approach does look a systemic approach, but it also considers the ethical aspect of human.[3,4] More than twenty years have passed since the emergence of the Vision Zero approach. This approach has continued to evolve over the years. Countries such as Sweden are leaders in Vision Zero, and many countries inspired by it in road transport system. Following the introduction of Vision Zero, there has been a gradual or continuous growth in road transport.[27] This study showed that countries with Vision Zero have a decreasing trend in fatal RTCs. Although this trend varies across countries and may not be an accurate measure of the performance of Vision Zero strategies, it can generally be concluded that countries with Vision Zero policies have been successful in reducing fatal road traffic injuries.

The aim of Vision Zero in some countries has been reach to zero deaths, and in some countries a decrease in the number and rate has been considered. For example, in most countries with Vision Zero, such as the United Kingdom, Australia, Poland, Denmark, Scotland, and the Czech Republic, the reduction in the number and rate of fatal RTCs is considered. These countries aim to reduce the number and rate of fatal RTCs and are not aimed at bringing death to zero but moving toward zero. On the other side, the goal of Vision Zero in countries such as Sweden and the US is to achieve zero fatality in the long run. These cases indicate that the basic principles of the Vision Zero approach can be apply to any country regardless of the level of socioeconomic development. For example, LMICs such as India and Mexico have also adopted or implemented this approach in their countries. The results show that the Vision Zero policy is significantly successful in management of RTCs. For example, Sweden has eliminated fatal RTCs by about 46% from 2007-2017.[2,28] According to the results of this study, there is a downward trend in the number of deaths due to RTCs in countries with Vision Zero. Furthermore, a remarkable progress has been made in decreasing the impact of road traffic fatalities in Europe in the past decade. However, much remains to be done to achieve Europe's "Vison Zero" for road safety by 2050.[29,30]

Table-1. Evolution history and development trend of Vision Zero in Sweden

Year	Measure/Action
1995	Vision Zero was born
1996	Euro NCAP, the European consumer crash test programme, was created
1997	Vision Zero was passed in the Swedish Parliament
1998	The first 2+1 road was opened
1999	30 km/h speed limit was entered use in urban areas
2001	"Skvallertorget" was rebuilt in Norrköping city
2002	Euro NCAP gives points for cars with seatbelt reminders
2003	The first study of electronic stability control systems was carried out
2004	The UN publishes a global report on road safety
2006	New speed cameras were set up with the goal of fining as few people as possible
2008	Speed limits based on the Vision Zero were adopted
2009	Volvo Cars launch their Vision 2020: No one should be killed or seriously injured in a Volvo 2020
2010	EU suggest that by year 2050 we reach "close to" 0 deaths on European roads
2011	Sweden cut the number of traffic fatalities by more than half between 2001 and 2010 and has the lowest traffic fatality rate in world
2012	The global traffic safety management standard ISO 39001, based on Vision Zero, was launched
2014	New York's Vision Zero plan was presented by the city's mayor
2015	The UN adopts Agenda 2030 where road safety was included for the first time and the Vision Zero was the basis
2016	The Swedish Transport Administration and the Swedish Transport Agency report to the Government on how gradual goals towards Vision Zero 2030 and 2050 can be achieved
2017	Volvo lets families test self-driving cars in Gothenburg
2018	work on developing an action plan for safe road traffic for 2019 - 2022
2019	The plan was completed. The action plan describes what 14 different authorities and actors themselves intend to do in the next four years to contribute to a safe road traffic. A total of 111 different measures are reported within three areas; safe speed, sober traffic and safe cycling.

Table-2. Countries implementing Vision Zero, year of implementation, and their target reduction

Country	Year of implementation	Slogan	Measures/Actions	Target Reduction
Sweden	1997	Vision Zero	Sweden was the first country that launched and implemented Vision Zero. The Vision Zero was introduced in Sweden in 19964 and in 1997 the parliament of Swedish adopted this policy to reduce the need for deaths or serious casualties toward zero by 2050.[18,24] This approach has led to considerable success in Sweden. Sweden has one of the least annual death rates in the world. Accordingly, pedestrian deaths, for instance, have fallen by almost 50% in the last five years.[18] Sweden is achieving its goals in 2007, which will cut the death of RTCs by 50% in 2020. In 2013, deaths from RTCs declined by 44% and decreased from 471 in 2007 to 265 in 2013. Also, the trend of RTCs in Sweden shows that fatal road traffic injuries have reduced by about 46% from 2007-2017. If the current downward trend continues, the death from RTCs will be reduced by 65% by 2020.25 Sweden is also considered a new program with Vision Zero titled "Action plan for safe road traffic 2019-2022". Given the developments in road safety in recent years, it is of particular importance that the relevant authorities and stakeholders show more commitment and responsibility for a safe transport system	Reduce deaths and serious injuries to 50% by 2020
Norway	2001	Norwegian Vision Zero	In the latest Norwegian National Transport Program (2006-2015), the Vision Zero was described as the basis for safety actions in the transport system.[28].The action plan is based on the four levels of Vision Zero. Temporary targets, indicator targets, and proceedings. Temporary targets; The number of road traffic deaths and serious injuries should not exceed 350 by 2030. This target is stated in the National Transport Plan 2018-2029 and represents the Parliament's goals for how to approach Vision Zero. Indicator Targets; The Action Plan includes goals to develop the current situation in a number of areas where changes are necessary to the optimal development of deaths or serious injuries. The indicator targets are prioritized into 13 different areas. The majority of the targets should be achieved by 2022, or be fully achieved for the period 2018-2021.[29]	The number of fatalities in RTCs should not exceed 350 by 2030
Australia	2003	Safe System - National Road Safety Strategy[30]	In 2004, Australia created a combination of two approaches to Dutch sustainable safety and Vision Zero in Sweden called the Safe System. Its purpose is to maximize the benefits of traffic and minimize the costs and consequences of RTCs. A fundamental principle here is that RTCs cannot be considered as a cost of growing mobility.[31] The 10-year National Road Safety Strategy for 2011-2020 aims to provide a pathway for national action to reduce the number of fatalities and serious injuries. This partnership coincides with the International Decade for Road Safety and is based on the international "safe system" approach.[11,32] This strategy has been adopted by all states of Australia.[33]	Reduce the annual number of both deaths and serious injuries by at least 30% in a 10-year plan
New Zealand	2003	Road to Zero	In 2003, New Zealand adopted the Safe System Approach, which combines the most effective aspects of Vision Zero and the sustainable safety of Netherlands approaches.[7] It focuses on five objectives to be achieved, including improving infrastructure and speed management, vehicle safety, road safety, road user choice, and system management.[34]	40% reduction in death and serious injury for next 10 years by 2030

Poland	2005	National Road Safety Program	The program adapted Vision Zero as an ethical perspective on road safety, marking the beginning of a systemic approach to road safety in Poland.[31] The first program to follow the Vision Zero was the National Road Safety Program for the years 2005-2013(GAMBIT2005).[22] Poland's current road safety program 2013-2020 was developed based on the Vision Zero that was in the previous road safety programs in the country. In addition to addressing the issue of road deaths, the program focuses on serious injuries. In addition to target reduction as main goal, the objectives are speed management, improving the safety of pedestrians, motorcycles, and cyclists.[31]	Reduce the number of deaths by half; serious injuries by up to 40%
UK	2006	Tomorrow's Roads: safer for everyone	The UK is working to strengthen its Road Safety Framework strategy by using a safe system approach in line with Vision Zero. In 2006, at the request of the British Transport Office, the Stockholm Environment Institute released a report entitled "Vision Zero: Approval of zero target for road traffic fatalities and serious injuries". This report included ten main themes, each of which is clearly outlined a strategy, a set of specific measures or hints, and a timeline for their implementation that included "safer for children, safer drivers- safer training and testing, safer drivers- drinks, drugs and drowsiness, safer infrastructure, safer speed, safer vehicle, safer motorcycles, safety for pedestrians, cyclists and horse riders, better enforcement, and promoting safer road use for everyone".[35,36]	Reduce the number of deaths to less than 65% by 2022 than in 2005-2009 and by 70% by 2030 than in 2010-2014. [37]
Germany	200738	-	Germany's newest national road safety program was launched in 2011. This revised program focuses on capabilities and actions in three "areas of operation". The first and the most important area is human factors, which aim to focus the most on high-risk users. In the area of infrastructure activity, the goal is to make risk points more accessible by using innovative technology and improving traffic flow. Finally, in the field of automotive technology activities, the development of more "intelligent" safety systems is encouraged, which can play a significant role in preventing crash. Road safety goals in Germany include improving road culture, protecting vulnerable road users, reducing young drivers' crash exposure, reducing the potential risk of heavy goods vehicles, and increasing safety on land roads.[39]	Traffic accident deaths decrease by 40% by 2020 (2011-2020)
United States	2010	-	In 2010, Washington began the Zero Program, and the Department of Transportation started a similar program in 2012. In 2015, the US Department of Transportation reported that the federal government's official goal of road safety policy is zero death. In 2016, ten US cities generally announced their programs to direct plans to reduce transport system fatalities.[42] These included New York CT, New York; Boston, Massachusetts; Austin, Texas; Fort Lauderdale, Florida; Chicago, Illinois; Portland, Oregon, and Los Angeles, California.[21,41] In February 2015, Seattle launched Vision Zero. Vision Zero seeks to end disasters resulting in serious injury and death by 2030.[43] More than 30 US cities have implemented the Vision Zero approach.[44] Some of these states achieved remarkable successes due to Vision Zero policy implementation, including a 43% reduction in Minnesota, a 48% in Utah, and a 40% in Washington State in traffic fatalities.[25,45]	Attempts to end events will result in serious injuries and death by 2030 [41]
Czech Republic	2011		The modified Czech Republic Road Safety Strategy, as well as the main National Road Safety Strategy 2020, are based on the concept of Vision Zero.[46]	Decrease in mortality to an average of 27 EU countries in 2020 without more than 360 deaths in 2020 (-60%) and over

				2100 serious injuries in 2020 (-40%) based on 20099 [46]
Finland	2012	National Road Safety	Priorities include reducing accidents caused using drugs and poisons, more traffic control with more advanced equipment, increasing pedestrian safety, systematic planning, targeted and cross-traffic safety planning, establishing a system for assessing driving capacity and the introduction of demerit point system.[46] Finally, significant road safety policies in Finland include the approval of the Vision Zero with a view to establish an intrinsic safety in the transportation system, the necessity of road safety audits and inspections for infrastructure management in Finland, the effectiveness of above-average enforcement than the European Union and the increase in alcohol testing in drivers in 2010 are significantly higher than the EU average, wearing seat belts and cycling caps are above average in the EU.	To reach a maximum of 137 deaths or 24 deaths per million population in 2020 as well as a maximum of 100 deaths in 2025.
Scotland	-	Go Safe on Scotland's Roads – it is Everyone's Responsibility	The Scotland road safety landscape is inspired by Sweden's Vision Zero. Scotland has focused on these four goals, which aim to reduce death and serious injury. However, the death toll has gone from serious injuries, because in recent years, various trends for these people with serious injuries have steadily decreased, but mortality has not decreased as much. Issues such as collaboration, responsibility, driving for life, risk reduction, and designing a system for human error are also considered.[47]	40% reduction in deaths, a 55% reduction in serious injuries, a 50% reduction in under-16 deaths, and a 65% reduction in serious injuries to children under 16. An annual reduction of 10% is also expected by 2020.[47]
Denmark	2013	-	Denmark has one of the lowest mortality rates in the European Union with about 33 deaths per million population in 2012. The seatbelt usage in Denmark is much higher than the EU average. Mandatory vehicle inspection periods are somewhat longer than the EU average. In Denmark, about a quarter of passenger cars are younger than 2 years. The Danish National Road Safety Commission's 2013-2020 action plan is based on Vision Zero.[46]	Reduce 53% of casualties by 2020 (less than 120 deaths) in line with EU road safety goals and to reduce 52% of serious and minor injuries compared to 2010.[46]
Slovenia	2013	We Live Vision Zero	In 2006, the Slovenian Parliament decided that the Vision Zero should apply to road safety in Slovenia.[48] The Slovenian National Road Safety Program 2013-2022, based on the Vision Zero, was also approved by the government in March 2013[49] and started working with the launch of the We Live Vision Zero program in celebration of the World Road Traffic Victims Remembrance Day, which held in Ljubljana in 2017.[50]	The initial aim is to halve deaths and serious injuries, and the fatality rate reaches less than 3.5 per 100,000 people, as the number of serious injuries reaches less than 230 per one million people until 2022.[46]
Luxembourg	2014	Road Safety Action Plan	As such, the Government adopted the National Road Safety Charter in 2015 with a long-term target of zero deaths and serious injuries to the road network. The death toll from RTCs in Luxembourg is on the decline. Between 2000 and 2018, the number of road traffic deaths reduced by 53 percent annually. The number of road traffic deaths has reduced by 66% per 100,000 people between 2000 and 2018.[51]	50% reduction in casualties by 2020 compared to 2010 according to the EU road safety target.[46]

Canada	2015	Toward Zero: The safest roads in the world	In Canada, in December 2015, the injury prevention charity Parachute presented the concept of Vision Zero. The approach has been designed or implemented in some Canadian states and cities, including Edmonton, Vancouver, Toronto, Ottawa, Surrey, British Columbia, Montreal, Hamilton.[52-56] Almost all Canadian municipalities are new to Vision Zero, and only Edmonton and Toronto have begun implementing formal road safety programs.[54] The vision for road safety strategy 2025 "Toward zero: the safest roads in the world" is the fourth national road safety strategy. An updated strategy by the set principles toward zero: Road safety objectives and the safe system approach has been considered.[5,57] This approach is in line with Canada's previous goal of "having the safest roads in the world".[57]	Constant decrease in the number of deaths from RTCs
Mexico	2015	Mexico's Vision Zero	The Mexico City was the first city in a LMICs to approve the Vision Zero in 2015, Three years later, the largest city of Mexico enacted new road safety laws, with its ambitious goal of eliminating road traffic deaths by 35% by 2018, with total road fatalities falling by 21 percent.[56] Mexico considers the installation and implementation of a system of information and monitoring of road safety as an essential tool in the implementation of Vision Zero and is seeking to implement it.[58]	Its ambitious goal was to reduce traffic accident casualties by 35 percent by 2018
Columbia	2017	Safety Integration of Urban Transportation Roads and Strategies	In December 2017, Bogota continued its Vision Zero strategy based on a safe system approach, including concerted, integrated measures to prevent fatalities and serious injuries. Following the implementation of Vision Zero, the death toll for the first seven months of 2019 was the lowest in a decade. Mortality rates have also declined by 11 percent compared to the same period in 2018 and 2019, and decreased by 12 percent compared to the average number of casualties between 2014 and 2018.[59]	Traffic accident deaths decrease by 26% by 2021 (2011-2021)
India	2017	Safer roads for safer cities	In 2015, a road safety conference was organized by Underwriters Laboratories (UL), the Bloomberg Philanthropies Initiative for Global Road Safety and the World Resources Institute of India (WRI). The conference was held under the banner of India's Vision Zero, which was a road safety association to explore the challenges, opportunities, and solutions to reduce road toll in India.[60,61] The first state in India that officially adopt Vision Zero was Haryana. The program initially covered 10 Haryana districts and remarkable results were obtained. It has now spread to all districts of the Haryana with an obvious impact.[62]	50% reduction in traffic deaths by 2020 (2011-2020)

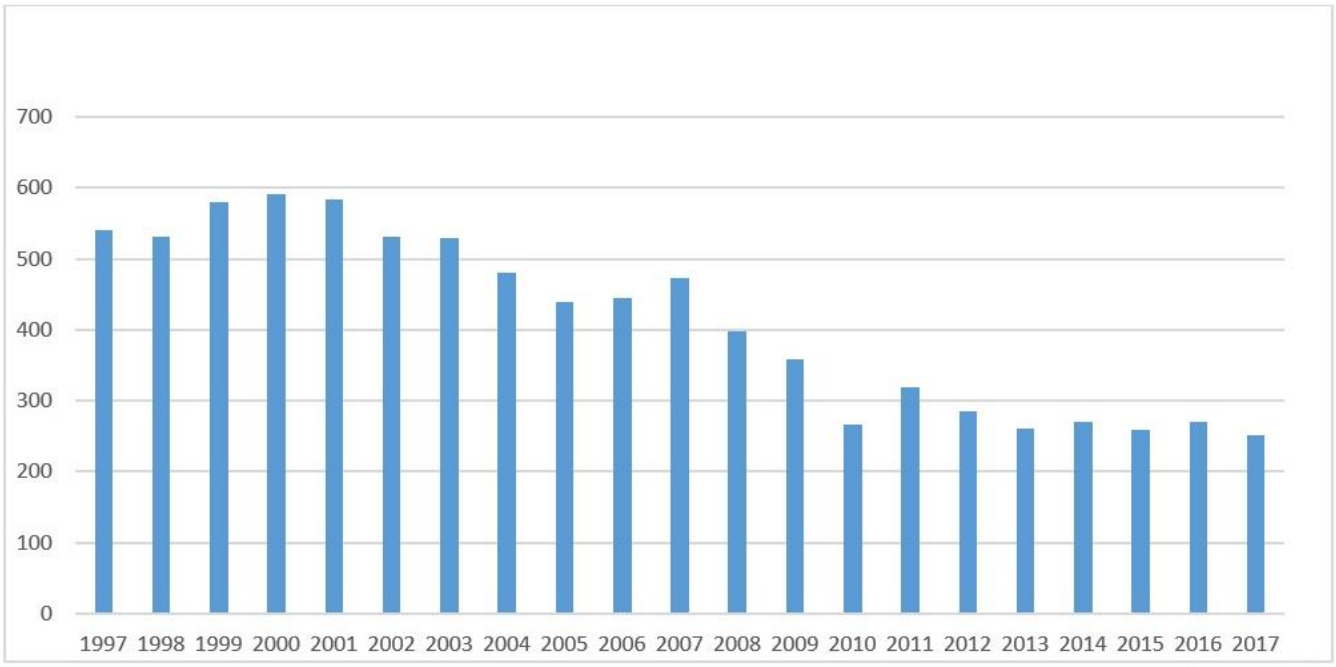

Figure-2. Trends of deaths from road traffic crashes in Sweden between 1997-2017

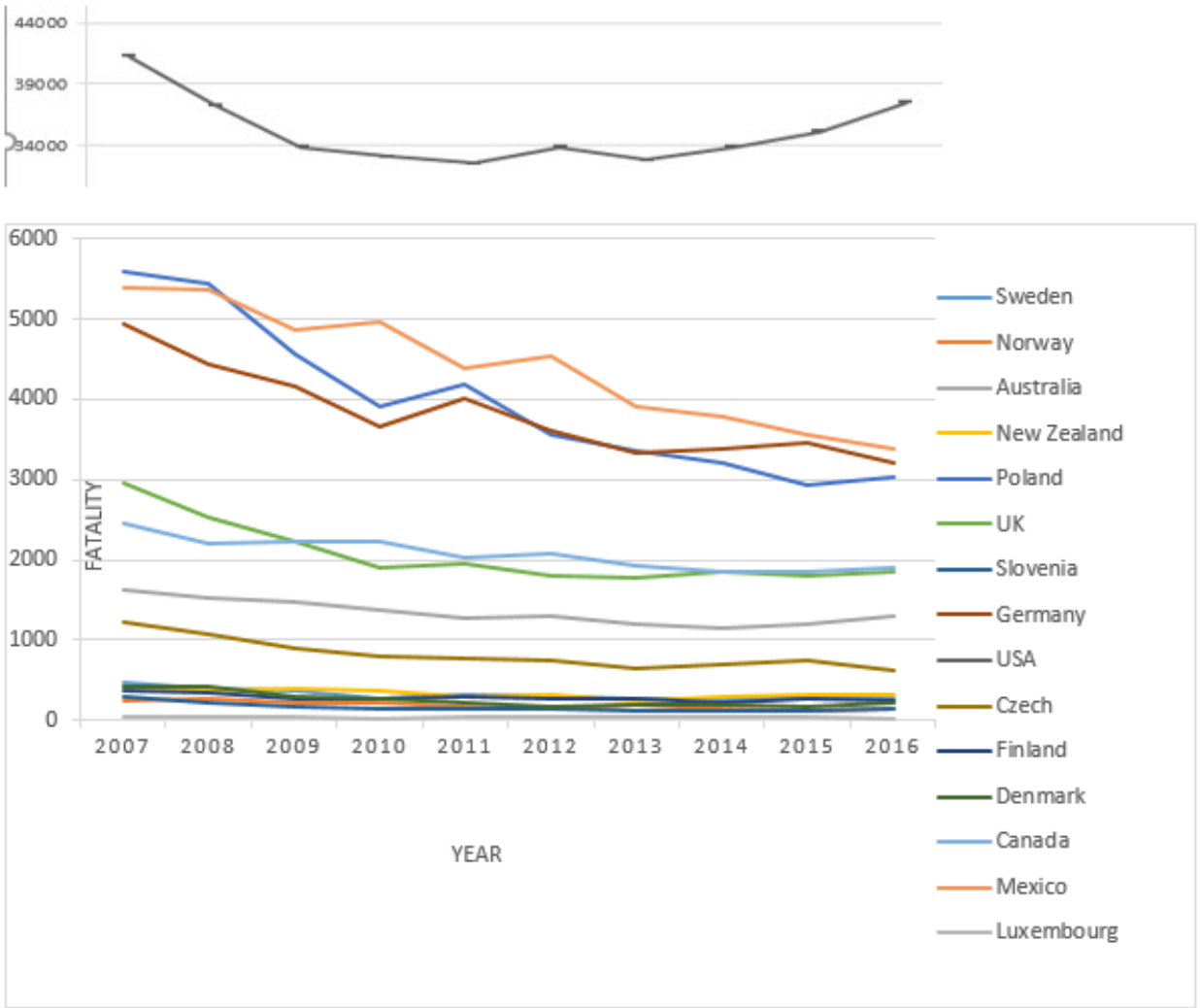

Figure-3. Trend of fatal road traffic crashes in countries with Vision Zero implementation (2007–2016)

Although some of these cities or states have implemented the Vision Zero principles well and have achieved some successes, some cities have not fully implemented it in practice and face challenges. In US the Vision Zero is in their infancy. In US, the greatest challenge for implementing the Vision Zero is the lack of federal resources and support[7]. Commitment, communication, safety culture, and learning are important in implementing Vision Zero.[31] A study in US shows that the adoption and implementation of Vision Zero requires political support, formalization of the plan, the need to develop metric tracking, and increased co-operation between organizational networks. A study of the four leading cities, showed that in all four cities, government agencies were the main leaders.[32] In addition, a study outlines the next steps for implementing this approach in US cities, including developing mechanisms to implement Vision Zero in institutions beyond the transportation sector; focusing on education and respect for road rules; using technology and technological advances - automated tracking of speed and other camera technologies that have safety benefits and facilitated accountability by creating web-based location data systems.[20] Moreover, a unique challenge for Australia in implementing Vision Zero is its wide geographic area with a relatively low population. Studies show that the cultural change and dialogue needed for Vision Zero success is not understood by the public.[7]

This insight into Vision Zero has not yet been fully realized and increasingly new efforts are needed to implement and succeed[33]. Studies have also shown that governments do not spend to introduce mindsets such as Vision Zero in the road transport system.[22] The safety culture must be embedded in the transportation system .This process requires a demand-driven approach and is not based solely on monitoring measures.[7,34] For example, three years after adopting Vision Zero in Mexico City, many Vision Zero interventions, such as speed humps, speed limits, and automated enforcement cameras were protested by road users.[35]

As we move into the second Decade of Action for Road Safety 2021-2030, previous interventions that deal with relatively high-risk reduction are ending their life cycle. Realizing the Vision Zero requires the generation of new knowledge and the creation of a process that enables the new knowledge generation to ensure a safe transportation system.[36] In general, it is necessary to move in line with Vision Zero from the vision to action.

Conclusions

Vision Zero has had an evolutionary trend through development in many countries, states, and cities around the world. Regarding the successful implementation of Vision Zero in pioneer countries like Sweden, many countries endeavor in the direction of designing and executing the approach. Each of these countries has executed this approach according to their targets. In a way that some of these countries have considered the aim of zeroing death in RTCs and some other countries have aimed to reduce the numbers and rates of fatal RTCs. Although there are challenges executing this vision in different countries, according to its existential philosophy, have a growing trend among various countries around the world.

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Authors' Contribution

All authors pass the four criteria for authorship contribution based on the International Committee of Medical Journal Editors (ICMJE) recommendations.

Conflict of Interests

The authors declare there is no conflict of interest among authors.

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