NATIONAL ROAD SAFETY STRATEGY

OF THE SLOVAK REPUBLIC

2021 – 2030

MINISTRY
OF TRANSPORT
AND CONSTRUCTION
OF THE SLOVAK REPUBLIC

BECEP

VISION ZERO
SLOVAKIA

TABLE OF CONTENTS

List of charts, tables and figures

1.
BACKGROUND

The Slovak Republic (hereinafter referred to as the "SR") as a full member of the European Union (hereinafter referred to as the "EU"), the United Nations (hereinafter referred to as the "UN") and the World Health Organization (hereinafter referred to as the "WHO") became a participating country in the ***Third Global Ministerial Conference on Road Safety***, held on 19 – 20 February 2020 in Stockholm (Sweden), within the framework of which a new Decade of Action for Road Safety by 2030 was proclaimed.

At the same time, the Slovak Republic became a signatory to the ***Stockholm Declaration***, which built on the *Moscow Declaration* (2009) and the *Brasilia Declaration* (2015), and adopted targets for improving road safety for the period 2021 – 2030.

Since its establishment on 1 January 1993, the Slovak Republic has been adopting its international commitments in the field of improving road safety (hereinafter referred to as "RS") and in the course of three decades it has translated these commitments and specified objectives at the governmental level into the following national strategies (plans) for road safety:

1/ **Decade of Action 2001 – 2010:** *National Road Safety Enhancement Plan for the 2nd half-year 2005 with outlook until the year 2010*, approved by Government Resolution of the SR No. 391/2005 of 18 May 2005;

2/ **Decade of Action 2011 – 2020:** *Road Safety Enhancement Strategy in the Slovak Republic in the Years 2011 to 2020 (National Road Safety Plan of the SR 2011 – 2020),* approved by Government Resolution of the SR No. 798/2011 of 14 December 2011.

3/ **Decade of Action 2021 – 2030:** *National Road Safety Strategy of the Slovak Republic 2021 – 2030,* approved by Government Resolution of the SR No. 700/2021 of 1 December 2021.

In the first programming period, under the *European Road Safety Charter*, the Slovak Republic undertook to reduce the number of people killed in road accidents by 50% by 2010 compared to the number in 2002. Based on the evaluation of the aforementioned programming period, the number of persons killed in road accidents in the Slovak Republic decreased from 610 in 2002 to 345 in 2010, i.e., an overall decrease of 43.44%. The set objective of the National Plan has thus been almost met.

The Decade of Action for Road Safety for 2011 – 2020, together with the second national strategy, also brought the basic goal of reducing the number of road fatalities in the Slovak Republic by 50% by 2020 compared to the number in 2010. Based on the evaluation of the aforementioned Decade of Action, the number of persons killed in road accidents in the Slovak Republic decreased from 345 in 2010 to 224 in 2020, i.e. an overall decrease of 35.07 %. The set objective of the strategy has not been met. A detailed assessment of the road-safety situation between 2011 and 2020 is presented in Section 2.2.

The Ministry of Transport and Construction of the Slovak Republic (hereinafter referred to as "MDV SR") in the position of the national coordinator for improving road safety in relation to the *Stockholm Declaration* and the document *Road Safety Enhancement Strategy in the Slovak Republic in the Years 2011 to 2020 (National Road Safety Plan of the SR 2011 – 2020)* has prepared the National Road Safety Strategy of the Slovak Republic 2021 – 2030, which is conceived as a key document of all entities that directly or indirectly influence the field of road safety in the Slovak Republic in the framework of their competences and professional activities.

The measures set out for the Decade of Action for Road Safety by 2030 are organised into five framework objectives, which take into account the proposed initiatives of the *White Paper 2050 – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system* in the area of improving road safety. The intention of the strategy is to be a starting document for all entities that influence road safety in the Slovak Republic and at the same time contribute to its improvement.

Key terms: strategy, decade of action, safety, road traffic, road safety, road accidents, road user, reducing fatalities, reducing serious injuries, prevention.

2.
ANALYSIS OF THE CURRENT STATE

Road safety in the Slovak Republic is related not only to national road transport safety, but also to safe transport on European roads, in the context of the Slovak Republic's participation in the EU and the European area. The direction of the process of improving road safety in the Slovak Republic is based on the direction of the Slovak government and the European transport policy. Significant attention is paid to road safety issues in the *White Paper 2050 – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*. In its list of initiatives, the tasks arising in particular from Objective 1.4 are high on the agenda for transport safety – *Acting on transport safety: saving thousands of lives*. It is not only about harmonising and developing new intelligent technologies and transport systems, but also about developing comprehensive strategic measures on road accidents, emergency services, definitions for classifying injuries and deaths in preparation for adopting the objective of reducing injuries, focusing on user training and education, promoting the use of safety equipment and paying particular attention to the most vulnerable user groups such as pedestrians, cyclists and motorcyclists, including through safer infrastructure, vehicle technology and improved legislation.

2.1 REGULATORY FRAMEWORK AND STRATEGIC DOCUMENTS

The development of the strategy was based to a large extent on the basic legal regulations on which road safety in the Slovak Republic depends, on the programme documents of the EU and international organisations of which the Slovak Republic is a member, and on the strategic and conceptual materials of the ministries (as of 1 January 2021).

These regulations and documents form the basis for the purposeful and effective setting of the objectives and measures of the strategy in accordance with the requirements and needs for road safety and for the definition of major programme changes to achieve the set objectives.

2.1.1 Regulatory framework – national and international legislation

A. Acts

- Act No. 135/1961 Coll. on roads (Road Act) as amended;
- Act No. 71/1967 Coll. on administrative proceedings (Administrative Procedure Code) as amended;
- Act No. 50/1976 Coll. on land-use planning and building rules (Building Act) as amended;
- Act of the National Council of the Slovak Republic No. 171/1993 Coll. on the Police Force as amended;
- Act of the National Council of the Slovak Republic No. 258/1993 Coll. on the Railways of the Slovak Republic as amended;
- Act of the Slovak National Council No. 372/1990 Coll. on offences as amended;
- Act No. 359/2000 Coll. on the Slovak Chamber of Driving School Training Centres and on the amendment to Act of the National Council No. 315/1996 Coll. on road traffic as amended;
- Act No. 315/2001 Coll. on the Fire and Rescue Corps as amended;
- Act No. 575/2001 Coll. on the organisation of activities of the Government and organisation of the central government as amended;
- Act No. 129/2002 Coll. on integrated rescue system as amended;
- Act No. 579/2004 Coll. on emergency medical service and on the amendment to certain acts as amended;
- Act No. 639/2004 Coll. on the National Motorway Company and on the amendment to Act No. 135/1961 Coll. on roads (Road Act) as amended;
- Act No. 416/2001 Coll. on the transfer of certain competences from public authorities to municipalities and higher territorial units, as amended;
- Act No. 93/2005 Coll. on driving schools and on the amendment to certain acts as amended;
- Act No. 300/2005 Coll., the Criminal Code as amended;
- Act No. 280/2006 Coll. on the compulsory basic qualification and periodic training of certain drivers as amended;
- Act No. 245/2008 Coll. on education and training (Education Act) and on the amendment to certain acts as amended;
- Act No. 8/2009 Coll. on road traffic and on the amendment to certain acts as amended;
- Act No. 513/2009 Coll. on railways and on the amendment to certain acts as amended;
- Act No. 249/2011 Coll. on road safety management and on the amendment to certain acts as amended;
- Act No. 56/2012 Coll. on road transport as amended;
- Act No. 317/2012 Coll. on intelligent transport systems in road transport and on the amendment to certain acts;
- Act No. 474/2013 Coll. on the collection of tolls for the use of specified road sections and on the amendment to certain acts as amended;
- Act No. 488/2013 Coll. on vignette and on the amendment to certain acts as amended;
- Act No. 106/2018 Coll. on the operation of vehicles in road traffic and on the amendment to certain acts as amended.

B. Decrees

- Decree of the Federal Ministry of Transport No. 35/1984 Coll. implementing the Act on Roads (Road Act);
- Decree of the Ministry of Environment of the Slovak Republic No. 453/2000 Coll. implementing certain provisions of the Building Act, as amended;
- Decree of the Ministry of Environment of the Slovak Republic No. 532/2002 Coll. laying down details on general technical requirements for construction and on general technical requirements for buildings used by persons with reduced mobility and orientation, as amended;

- Decree of the Ministry of Interior of the Slovak Republic No. 9/2009 Coll. implementing the Road Traffic Act and on the amendment to certain acts as amended;
- Decree of the Ministry of Transport, Posts and Telecommunications of the Slovak Republic No. 350/2010 Coll. on construction and technical rules of railways, as amended;
- Decree of the Ministry of Transport, Construction and Regional Development of the Slovak Republic No. 251/2011 Coll. laying down details of road safety management;
- Decree of the Ministry of Transport, Construction and Regional Development of the Slovak Republic No. 124/2012 Coll. implementing Act No. 56/2012 Coll. on road transport as amended;
- Decree of the Ministry of Transport, Construction and Regional Development of the Slovak Republic No. 135/2012 Coll. laying down details of professional training, professional examinations and performance of activities of a road safety auditor, registration in the list of road safety auditors and registration in the list of educational institutions accredited in the field of road safety management;
- Decree of the Ministry of Transport, Construction and Regional Development of the Slovak Republic No. 476/2013 Coll. implementing certain provisions of the Act on the Collection of Tolls for the Use of Specified Road Sections and on the amendment to certain acts as amended by Decree No. 267/2019 Coll.;
- Decree of the Ministry of Transport, Construction and Regional Development of the Slovak Republic No. 44/2016 Coll. implementing Act No. 280/2006 Coll. on the compulsory basic qualification and periodic training of certain drivers as amended, as amended by Decree No. 130/2020 Coll.;
- Decree of the Ministry of Transport, Construction and Regional Development of the Slovak Republic No. 45/2016 Coll. implementing Act No. 93/2005 Coll. on driving schools and on the amendment to certain acts as amended as amended by Decree No. 154/2020 Coll.;
- Decree of the Ministry of Transport and Construction of the Slovak Republic No. 132/2018 Coll. laying down details on technical requirements for certain vehicles, systems, components and separate technical units for the purpose of approval, as amended by Decree No. 498/2019 Coll.;
- Decree of the Ministry of Transport and Construction of the Slovak Republic No. 134/2018 Coll. laying down details on the operation of vehicles in road traffic as amended;
- Decree of the Ministry of Transport and Construction of the Slovak Republic No. 135/2018 Coll. laying down details on technical roadside inspection as amended by Decree of the Ministry of Transport and Construction of the Slovak Republic No. 424/2019 Coll. amending Decree of the Ministry of Transport and Construction of the Slovak Republic No. 135/2018 Coll. laying down details on technical roadside inspection;
- Decree of the Ministry of Transport and Construction of the Slovak Republic No. 137/2018 Coll. laying down details in the field of technical inspection as amended;
- Decree of the Ministry of Interior of the Slovak Republic No. 30/2020 on traffic signs.

C. Government Orders

- Government Order of the Slovak Republic No. 154/2006 Coll. on the use of speed limitation devices for certain categories of motor vehicles as amended by Government Order of the Slovak Republic No. 129/2018 Coll.;

- Government Order of the Slovak Republic No. 554/2006 Coll. on the compulsory use of safety belts and child restraint systems in vehicles of certain categories as amended by Government Order of the Slovak Republic No. 241/2014 Coll. amending Government Order of the Slovak Republic No. 554/2006 Coll. on the compulsory use of safety belts and child restraint systems in vehicles of certain categories;
- Government Order of the Slovak Republic No. 113/2008 Coll. on the retrofitting of mirrors to goods vehicles of certain categories;
- Government Order of the Slovak Republic No. 497/2013 Coll. laying down the method of toll calculation, the amount of the toll rate and the system of discounts from toll rates for the use of specified sections of roads as amended.

D. EU regulations and international legislation

- Directive 2004/54/EC of the European Parliament and of the Council of 29 April 2004 on minimum safety requirements for tunnels in the Trans-European Road Network;
- Directive 2006/126/EC of the European Parliament and of the Council of 20 December 2006 on driving licences (Recast);
- Directive 2008/96/EC of the European Parliament and of the Council of 19 November 2008 on road infrastructure safety management as amended by Directive (EU) 2019/1936 of the European Parliament and of the Council of 23 October 2019 amending Directive 2008/96/EC on road infrastructure safety management;
- Regulation (EU) No. 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No. 661/2010/EU;
- Directive 2014/45/EU of the European Parliament and of the Council of 3 April 2014 on periodic roadworthiness tests for motor vehicles and their trailers and repealing Directive 2009/40/EC;
- Directive 2014/47/EU of the European Parliament and of the Council of 3 April 2014 on the technical roadside inspection of the roadworthiness of commercial vehicles circulating in the Union and repealing Directive 2000/30/EC;
- Directive (EU) 2015/413 of the European Parliament and of the Council of 11 March 2015 facilitating cross-border exchange of information on road-safety-related traffic offences;
- Regulation (EU) 2019/2144 of the European Parliament and of the Council of 27 November 2019 on type-approval requirements for motor vehicles and their trailers, and systems, components and separate technical units intended for such vehicles, as regards their general safety and the protection of vehicle occupants and vulnerable road users, amending Regulation (EU) 2018/858 of the European Parliament and of the Council and repealing Regulations (EC) No. 78/2009, (EC) No. 79/2009 and (EC) No. 661/2009 of the European Parliament and of the Council and Commission Regulations (EC) No. 631/2009, (EU) No. 406/2010, (EU) No. 672/2010, (EU) No. 1003/2010, (EU) No. 1005/2010, (EU) No. 1008/2010, (EU) No. 1009/2010, (EU) No. 19/2011, (EU) No. 109/2011, (EU) No. 458/2011, (EU) No. 65/2012, (EU) No. 130/2012, (EU) No. 347/2012, (EU) No. 351/2012, (EU) No. 1230/2012 and (EU) 2015/166.

E. Other regulations

- technical regulations of the ministry, approved by the MDV SR:
  - technical conditions,
  - technical-quality conditions,
  - catalogue sheets,
  - specimen sheets for road constructions;
- Curriculum of traffic education for the 1st – 9th grades of primary schools;
- Curriculum for driving courses.

2.1.2 Strategic and conceptual documents

A. National strategic and conceptual documents

- Manifesto of the Government of the SR;
- Strategic Transport Development Plan of the Slovak Republic until 2030;
- National Strategy for the Development of Cycling Transport and Cycling Tourism in the Slovak Republic;
- Comprehensive programme for solving the problem of level crossings;
- Concept of traffic education in primary schools in the Slovak Republic;
- Recovery and Resilience Plan of the SR.

B. Strategic and conceptual material from the EU and international organisations

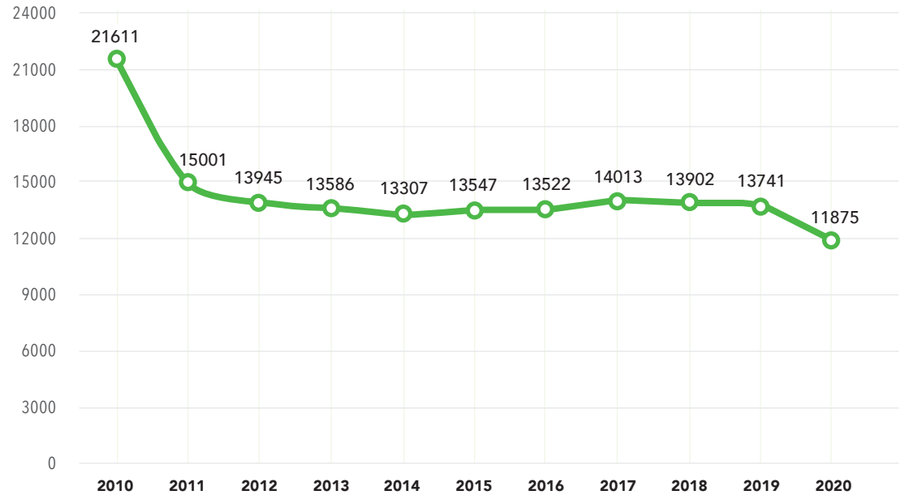
- White Paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system;
- European Road Safety Charter;
- Europe 2030 strategy;
- Valletta Declaration on Road Safety;
- Communication from the Commission No. COM/2018/293 to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Europe on the Move – Sustainable Mobility for Europe: safe, connected, and clean;
- EU Road Safety Policy Framework 2021-2030 - Next steps towards "Vision Zero" No. SWD (2019) 283 final (Commission staff working document);
- Stockholm Declaration;
- UN Resolution No. A/RES/74/299 of 31 August 2020 on improving global road safety.

2.2 ASSESSMENT OF THE ROAD-SAFETY SITUATION AND THE OBJECTIVE OF THE DECADE OF ACTION 2011 – 2020

2.2.1 Development of the number of road accidents in the SR

A key indicator of the country's road accident rate is the total **number of road accidents**, which has been relatively stable over the Decade of Action 2011 – 2020, with the exception of 2015 to 2017, when the trend was slightly increasing. The biggest decrease in the total number of road accidents in the Slovak Republic occurred at the end of the Decade of Action, in 2020, when the number of road accidents in the Slovak Republic decreased by a total of 45.05% compared to their number in the reference year 2010. The decrease in road accidents (including a decrease in the number of persons killed, seriously and slightly injured) has undoubtedly been influenced to some extent by the reduced mobility of the population caused by measures to prevent the spread of COVID-19. However, the extent of this impact cannot be quantified.

CHART 1 DEVELOPMENT OF THE NUMBER OF ROAD ACCIDENTS (RA) IN THE SLOVAK REPUBLIC BETWEEN 2010 AND 2020



Source: Statistics of the Presidium of the Police Force of the Slovak Republic (hereinafter referred to as the "PPF")

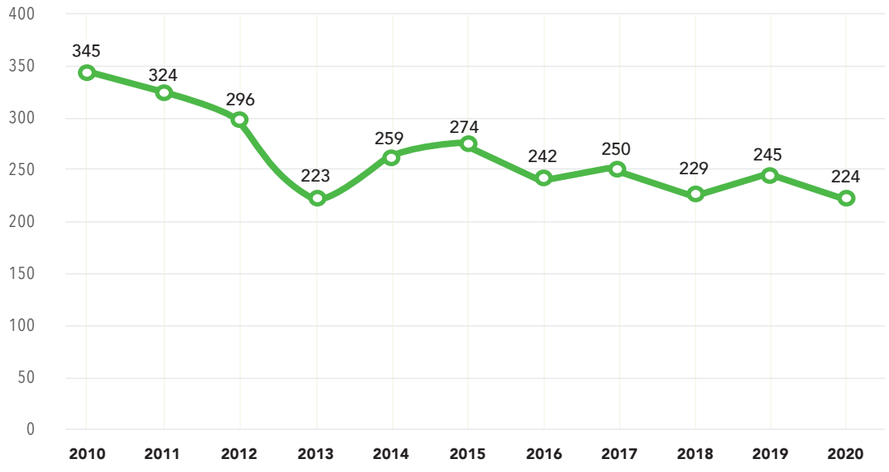
2.2.2 Development of the number of road fatalities in the Slovak Republic – evaluation of the basic objective of the Decade of Action 2011 – 2020

The primary quantitative target of halving the **number of road fatalities** by 2020 compared to the 2010 reference year was set as part of the Road Safety Enhancement Strategy, which defined priority areas for action through a set of complementary measures. By simply projecting the planned evolution of the number of fatalities in order to set an absolute target value, it was assumed that the set target would be met if the value of this indicator reached the level of 173 road fatalities.

A negative phenomenon of the monitored period can be identified as a sharp increase in the values in 2014 and 2015, which was recorded after a period of radical decline in the number of deaths in the period 2011 – 2012, after 2015 the curve of the development of deaths was again relatively stable.

By ending the Decade of Action with 224 road fatalities, the basic quantitative target was not met. The number of road fatalities between 2011 and 2020 decreased by 121 persons (-35.07%) compared to the number of fatalities in the reference year 2010.

CHART 2 DEVELOPMENT OF THE NUMBER OF ROAD FATALITIES IN THE SLOVAK REPUBLIC BETWEEN 2010 AND 2020

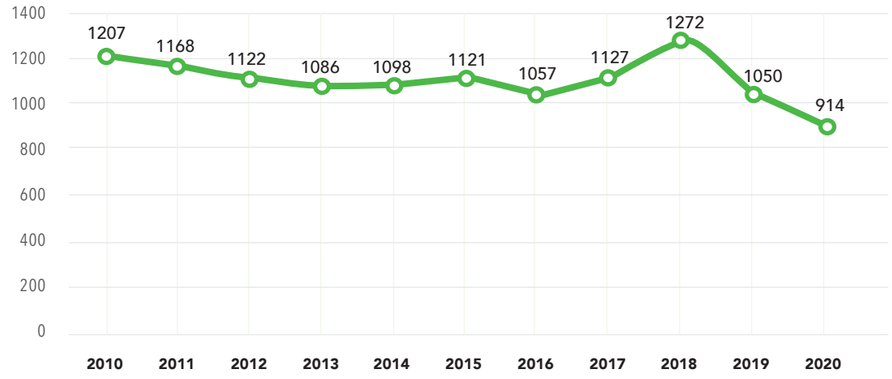


Source: Statistics of the PPF

2.2.3 Development of the number of persons seriously injured in road accidents in the SR

The development of **the number of seriously injured persons** in road accidents in the Slovak Republic has had a stable course since 2011 with minimal year-on-year changes. The lowest values were reached in the period from 2013 to 2016 and at the end of the decade in 2020, which also corresponds with the development of the total number of road accidents in the Slovak Republic. For 2017 and 2018, there was an increase in the values of this indicator, with the 2018 figure representing the maximum for the whole period under review. Also, the year-on-year increase in the number of seriously injured between 2017 and 2018 was the highest for the entire period under review. From 2019 onwards, the indicator was again on a downward trend until the end of the period under review. The overall percentage decrease of seriously injured persons in road accidents in the Slovak Republic over the last ten years was 24.28% compared to the reference year 2010.

CHART 3 DEVELOPMENT OF THE NUMBER OF PERSONS SERIOUSLY INJURED IN ROAD ACCIDENTS IN THE SLOVAK REPUBLIC BETWEEN 2010 AND 2020

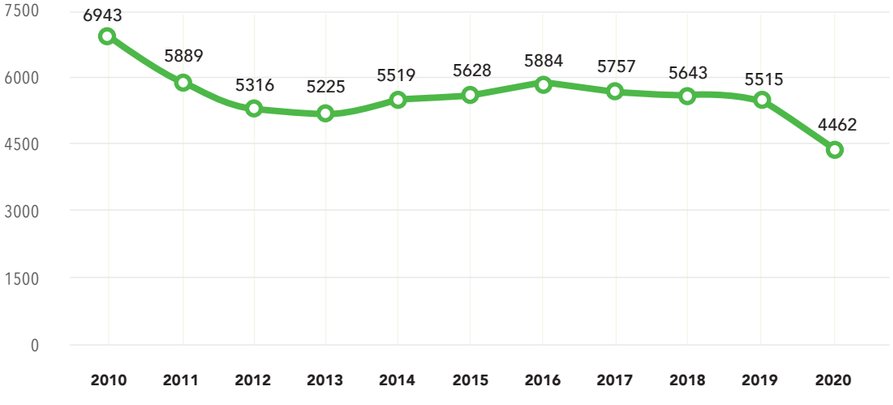


Source: Statistics of the PPF

2.2.4 Development of the number of persons slightly injured in road accidents in the SR

With the exception of 2020, the **number of slightly injured persons** on our roads has ranged between 5,000 and 6,000, with minor year-on-year changes. In terms of the long-term assessment, there was a short-term spike in year-on-year values in 2016, when the number of slightly injured persons reached the second highest value (just behind 2011) for the entire Decade of Action. Subsequently, after 2016, there has already been an annual decline in the values to a final value of 4,462 persons in 2020. The overall percentage decrease of slightly injured persons in road accidents over the last ten years was 35.73 % compared to the reference year 2010.

CHART 4 DEVELOPMENT OF THE NUMBER OF PERSONS SLIGHTLY INJURED IN ROAD ACCIDENTS IN THE SLOVAK REPUBLIC BETWEEN 2010 AND 2020



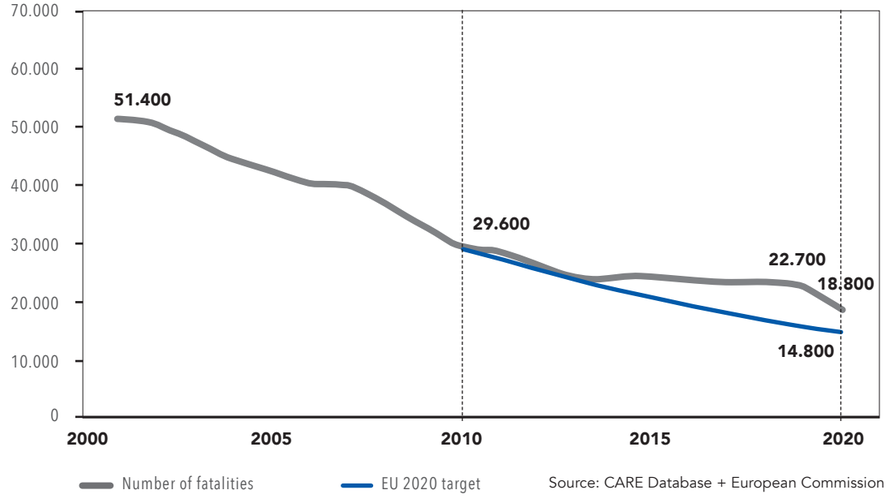
Source: Statistics of the PPF

2.3 ROAD ACCIDENT TRENDS IN THE EUROPEAN CONTEXT

Reducing road accidents and their consequences at European level is the result of a joint effort by European countries to find effective solutions to this societal problem by embedding this issue in the EU's developing transport policies.

The priority in the European area for 2011-2020 was to reduce the number of people killed in road accidents by 50% compared to 2010. By defining a new quantitative target and benchmark, the first three years of the decade saw a real reduction in the number of deaths in line with the planned trend, but since 2013 there has been a noticeable stagnation at European level. As in the previous programming period, the efforts of individual EU Member States peaked at the end of the programming period and the stagnation has been overcome to some extent. The spread of COVID-19 and the associated reduction in mobility due to national measures aimed at partially restricting the free movement of the population in order to prevent the spread of the disease have also had some impact on this phenomenon.

CHART 5 COMPARISON OF THE TARGET AND THE ACTUAL REDUCTION IN THE NUMBER OF ROAD FATALITIES IN THE EU – BY 2020

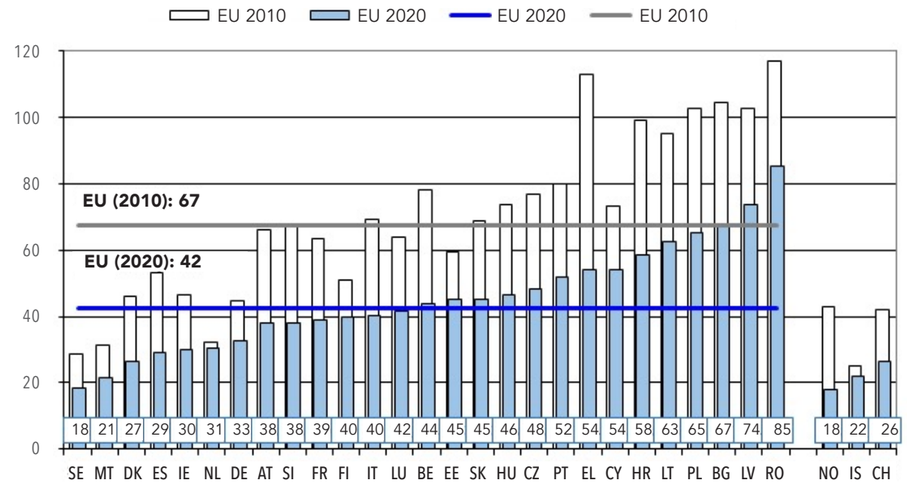


Source: CARE Database + European Commission

Based on the European Commission's evaluation of the Decade of Action 2011-2020, there has been an overall decrease of 36% in road fatalities in EU Member States compared to 2010.

Although only one EU Member State has managed to meet the target of reducing road fatalities by 50% set for this decade, the EU remains the area with the safest roads in the world, with 42 road fatalities per 1 million inhabitants. The 36% reduction in the number of fatalities represents a further step towards achieving "Vision Zero" as the leitmotif of the strategy in the long term.

CHART 6 DEVELOPMENT OF THE NUMBER OF ROAD FATALITIES PER 1 MILLION INHABITANTS IN EU COUNTRIES COMPARING 2010 AND 2020



Source: CARE Database + European Commission

Today, the direction of European policy to progressively increase the level of safety is defined by the Single European Transport Area strategy, the central idea of which is the global nature of transport, which requires strong international cooperation for effective action. This statement creates a significant imperative for the field of safety enhancement with the aim:

- of developing and harmonising technologies in the field of transport safety - driver assistance systems, cooperative systems and vehicle-infrastructure interfaces, etc.;
- of developing a comprehensive strategy of action on road injuries and emergency services;
- of focusing on training and education of road users;
- of paying particular attention to vulnerable road users, including through safer infrastructure and vehicle technologies.

One of the basic principles of the current strategy for improving safety at EU level is to strive for higher safety standards in the transport system - creating a safe transport area, but at the same time placing the primary responsibility for their own safety and the safety of others on the road user themselves, who is at the centre of the system. An integrated approach is used to create a safe transport area, with the aim of integrating the safety element into other EU economic and social policies.

The current EU strategy and the resulting activities are seen more in the context of seeking synergies with the requirements for a functional transport system as a whole. Reducing environmental burdens, promoting multimodality and reducing the share of individual car transport have been at the forefront of EU transport policy.

2.4 SUSTAINABLE MOBILITY

The EU's strategic development policies in the field of transport need to be taken into account when setting the direction for improving road safety. Safety, as one of the central parameters of the transport system, should be developed in line with the general principles and priorities set for the future shape of the system. In this context, the European Commission has adopted mobility packages containing legislative proposals and initiatives aimed at delivering the Low Emission Mobility Strategy and ensuring a smooth transition to clean, competitive and connected mobility for all.

Identifying the direction of the European transport policy is important for the Slovak Republic mainly because it makes it possible to identify areas of support for the development of this segment, which is a key issue from the point of view of financing activities at national level, since a significant share of funding comes from EU sources.

The focus will be on achieving sustainability in the face of growing demand for mobility, to be ensured by packages of measures targeting the following areas:

- Accelerating the transition to clean and sustainable mobility:
  - by promoting sustainable mobility through the introduction of stricter emission standards;
  - by allowing the consumer to freely choose one of the sustainable transport modes;
  - through smart road pricing;
  - through the prioritisation of innovative products and sustainable transport solutions in the selection of suppliers of goods and work by general government entities;
  - by reducing the share of individual car transport in the overall modal split and, conversely, increasing the share of sustainable forms of transport (including public transport);
  - by reducing the maximum speed limit in the municipality by introducing "30" zones;
  - by creating infrastructure for green transport and intelligent transport systems in cities (especially rail and non-motorised transport infrastructure) and promoting alternative transport solutions (e.g. "car-pooling", "car-sharing");
  - through more work on 'perceived safety', which is an important factor in mode choice.
- Ensuring a fair and competitive internal market for road transport:
  - by creating a level playing field in road freight transport;
  - by improving the social framework and working conditions;
  - through compliance and enforcement of legislation using smart digital technologies;
  - by promoting new skills;
  - **by improving road safety**.

- Reaping the benefits of digitalisation, automation and intelligent mobility services:
  - through cooperative, connected and automated mobility;
  - by streamlining transport networks;
  - through compliance and enforcement of legislation using smart digital technologies.
- Investing in modern mobility infrastructure:
  - by stepping up investment in infrastructure;
  - by accelerating the deployment of infrastructure for alternative fuels;
  - through developments in the battery segment as a key enabling technology.

The Communication *Europe on the Move – Sustainable Mobility for Europe: safe, connected, and clean* is the EU's conceptual paper for this area, which should be translated into the development of national road safety strategies for each Member State in order to harmonise a common approach.

One of the fundamental changes in the way this material looks at the transport system is that this system is being transformed and the traditional frontiers between vehicle, infrastructure and user are becoming increasingly blurred. No longer is the means of transport the focus; today, thanks largely to increased connectivity and automation, the user is more and more at the centre of a far more flexible and integrated mobility system. The arrival on the market of increasingly automated and connected vehicles will revolutionise how road users enjoy mobility in the future and will require a regulatory framework which should ultimately make vehicles safer, easier to share and more accessible for all individual road users. However, the gradual transition to automated vehicles brings new risks related to their functioning in mixed traffic and the complex interaction between driver and vehicle, as well as cybersecurity issues. In terms of synergies with transport policy as a whole, the effects between safety and sustainability measures should be better exploited. Promoting the use of zero-emission transport modes must go hand in hand with, for example, improving the safety of the environment for pedestrians and cyclists. New and safer forms of mobility must also be accompanied by improved access to mobility for all members of society, including people with disabilities and the growing age group of older people.

2.5 IMPACTS OF ROAD ACCIDENTS

Although the consequences of road accidents are most tangible in the form of loss of loved ones or health disadvantages of injured persons, they also have their economic dimension, manifested in social costs. The nature of the social cost of negative externalities implies that it is the action of an individual or entity that causes a loss or change in the level of well-being of another entity without compensating for that loss. For the area of road accidents, this principle can be interpreted as the costs borne by the society for, inter alia, medical treatment of injured persons or in the form of loss of production in the event of a fatality. These social costs are then compensated by the whole population (the State), regardless of the extent to which they participate in road traffic.

The costs resulting from these negative externalities of the transport sector are used as a crucial argument to justify the need for investment in improving road safety. In the context of the implementation of investment projects, the assessment of the eligibility of the proposed project usually includes a cost-benefit analysis, which includes the quantification of the social costs in the framework of an economic analysis. This approach can also be considered relevant in terms of defining the extent of the problem of road accidents in the economic context in the conditions of the Slovak Republic. Accidents and risk situations in transport affect perceived safety, which is one of the barriers to the use of sustainable transport modes.

For the expression of the social costs of road accidents, the procedure set out in the methodological guidance for projects implemented under the Operational Programme Integrated Infrastructure 2014 – 2020 has been modified. The unit social cost rates depending on the severity of the injury at the 2019 price level were used as the basis. These rates have been recalculated for each year of the Decade of Action 2011 to 2020.

TAB. 1 UNIT COSTS OF ROAD ACCIDENTS DURING THE DECADE OF ACTION 2011 – 2020 BY SEVERITY OF CONSEQUENCES IN EUROS

Consequence	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fatal injury	1 845 746	1 867 155	1 886 642	1 922 960	1 979 158	2 022 453	2 067 586	2 130 413	2 190 587	2 247 246
Serious injury	254 558	257 510	260 198	265 207	272 957	278 928	285 153	293 818	302 117	309 931
Slight injury	18 191	18 402	18 594	18 952	19 506	19 933	20 377	20 997	21 590	22 148
Material damage	3 138	3 199	3 237	3 270	3 333	3 406	3 482	3 588	3 689	3 785

Source: Transport Research Institute (hereinafter referred to as "VÚD")

For the calculation of the total social costs, data on the frequency of accident consequences within 30 days in the period were used, with necessary corrections made in the reclassification of injury severity for data corresponding to accident statistics within 24 hours of the occurrence of the accident event. The resulting accident consequence frequencies were then converted to unit rates to reflect the total social costs for a given type of injury severity.

TAB. 2 TOTAL SOCIAL COSTS OF ROAD ACCIDENTS DURING THE DECADE OF ACTION 2011 – 2020 BY SEVERITY OF CONSEQUENCES IN THOUSANDS OF EUROS

Consequence	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fatal injury	655 239,7	649 769,8	473 547,2	559 581,3	607 601,6	550 107,1	568 586,0	553 907,5	591 458,4	555 069,8
Serious injury	289 941,2	277 081,0	276 070,0	284 036,4	297 796,5	287 017,2	314 523,6	366 097,0	310 878,1	277 078,3
Slight injury	107 090,2	97 751,2	97 098,0	104 501,1	109 720,3	117 243,1	117 291,9	118 147,5	118 980,2	98 757,9
Material damage	20 601,2	21 030,1	21 643,0	21 090,5	22 286,5	23 135,1	24 925,9	25 532,6	26 556,3	23 587,0
Total	**1 072 872,3**	**1 045 632,1**	**868 358,2**	**969 209,3**	**1 037 404,9**	**977 502,5**	**1 025 327,4**	**1 063 684,6**	**1 047 873,0**	**954 493,0**

Source: VÚD

It is clear from the above trends that fatalities and serious injuries account for almost 87% of the total social costs. It follows that defining quantitative targets to halve the number of killed and seriously injured by 2030 is also justified from an economic point of view. The costs of fatalities account for the largest share (almost 58%) of total social costs and are thus a priority for targeted efforts to eliminate their occurrence.

The social costs of accidents average more than €1 billion per year between 2011 and 2020.

The financing of the measures of the strategy, which should ultimately result not only in the reduction of road accidents but also in the reduction of the calculated social costs of road accidents, will be implemented from the budget chapters of the concerned ministries and institutions (the State budget), which are budgeted for these purposes, and in cases where the rules for the use of EU funds allow it, also from the EU funds and operational programmes.

It follows from the above that raising the level of road safety has its justification among other national policies.

3.

DEFINING THE VISION AND OBJECTIVES OF THE STRATEGY

In a process such as transport, it is essential to combine a number of strategic objectives into a framework that ultimately delivers the desired transport environment according to the demands of its users and participants. In road transport terms, the desired transport environment refers to a fast, reliable, safe and environmentally friendly system for transporting people and freight.

In the past, increasing mobility has been at the forefront of societal interest, but its rapid increase has also highlighted the negatives, e.g., in the form of road fatalities. Improving road safety is an inevitably induced process that seeks to mitigate the negative effects of the increase in the share of individual car traffic and the resulting road accidents. Personal safety should not be the right and responsibility of a particular group, it is something that we should all participate in. The so-called **principle of shared responsibility** is one of the important pillars of the process of improving safety in the country.

The main tasks of the strategy in meeting its objectives include:

- ensuring horizontal and vertical coordination of stakeholders;
- concentration of professional staff capacities in platforms to address specific problems and topical issues of road safety improvement;
- promotion of the issue to the general public;
- ongoing monitoring of the status of implementation of measures on the basis of inputs from responsible entities (the so-called reports on the implementation of measures of the strategy);
- on-going reporting on the implementation of measures and on the evolution of fulfilment of the strategy's objectives at national and international level;
- updating the content of the strategy (if necessary).

3.1 "VISION ZERO" AND SAFE TRANSPORT SYSTEM

"Vision Zero" (also "Vision 0") is an international vision that considers it unacceptable for road users to be killed or seriously injured in road accidents.

For the EU, the long-term goal is for road safety to be as close as possible to 'Vision Zero", i.e., zero road fatalities and zero serious injuries from road accidents on Europe's roads by 2050.

In the medium term, the EU will pursue new interim targets under the Stockholm Declaration to reduce road fatalities by 50% between 2021 and 2030 and to reduce the number of serious injuries in road accidents by 50% over the same period. The benchmarks for both targets are the 2020 numbers of people killed and seriously injured in road accidents.

To achieve these goals in the period 2021-2030, the European Commission has proposed a common framework to be implemented by applying the ***Safe System Approach***, recommended globally by the WHO and adopted in the EU by an increasing number of Member States, regions and municipalities. Its main objective is to address the causes of accidents in an integrated way by creating levels of protection that ensure that if one element of the system fails, another element of the system will compensate for that failure.

TAB. 3 COMPARISON OF THE DIFFERENCES BETWEEN THE TRADITIONAL APPROACH AND A SAFE TRANSPORT SYSTEM

	Traditional approach	Safe transport system
What is the main problem?	Road accidents	Consequences of road accidents
What causes this problem?	Human factor	People who make mistakes and are vulnerable
Who is ultimately responsible?	Individual road users	People who design and operate the transport system
What is the approach from a planning perspective?	Incremental approach aimed at eliminating the problem	Systematic approach to creating a safe transport system
What goal to set?	Reducing the frequency and severity of road accidents	Zero tolerance for the consequences of road accidents

Source: VÚD

FIG. 1 ESSENTIAL ELEMENTS OF A SAFE TRANSPORT SYSTEM APPROACH

Source: VÚD

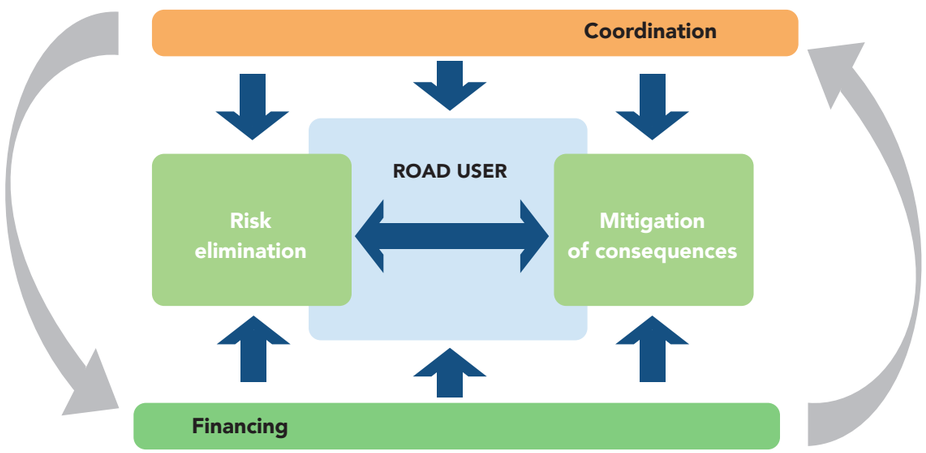
The primary and essential objective of national and European efforts to raise the level of road safety is to minimise the number of road accidents, the essence of this objective being the prospective fulfilment of "Vision Zero". The vision set out must be shared by all road users and therefore the responsibility for implementing the measures identified in the safety improvement strategy is shared by all actors involved directly or indirectly. The primary objective should be a real improvement in the safety of all road users.

In order to achieve "Vision Zero", it is necessary to create a safe transport system involving road users, vehicles and transport infrastructure. The application of the principles of "Vision Zero" and a safe transport system requires the incorporation of cross-cutting activities into the strategy mechanism, thus creating the conditions for the actual implementation of a set of measures and tasks with the potential to increase the level of road safety. These cross-cutting activities are primarily focused on coordination activities enabling the organisation, management and exchange of information between stakeholders and securing funding for actions through the integration of safety improvement issues into development policies at all levels of government and the selection of proposals with the highest potential to reduce accidents and their consequences. The implementation core of the strategy is represented by specific measures resulting from the analysis and identification of bottlenecks in the safety improvement process. The substantive focus of these measures is closely linked to the user of the traffic space - the road user, reducing the incidence of road accidents by eliminating risks and mitigating the consequences of accidents that could not have been avoided for various reasons.

The common denominator of the group of measures aimed at eliminating risk factors is the effort to create conditions within the transport system that would prevent road users from being exposed to them.

Each of the elements of the transport system - the human factor, the transport space and the means of transport – contains a set of primary risk factors that need to be systematically addressed.

FIG. 2 STRUCTURE AND MECHANISM OF THE 2030 STRATEGY ACTIONS



Source: VÚD

3.2 STRATEGIC OBJECTIVES, BREAKDOWN AND MEASURABLE INDICATORS OF THE STRATEGY

The general objective in the area of improving safety levels is a real improvement in the safety of all road users. International documents point to the need to increase the level of integration of the various actors involved in addressing this issue at both horizontal and vertical levels. Special attention is to be paid to closer cooperation and exchange of information between countries. Long-term prospects include:

- Adoption of new societal and mobility trends affecting transport and safety policy (GDP growth, growth in mobility requirements, growth in the number of vulnerable road users, ageing population, information and communication technologies);
- *"Safe System Approach"* – Adopting this principle based on the principle that life and health must not be endangered by our need to travel. Human beings and their health become the focus of attention. It is a set of organisational principles that address the key elements of a comprehensive transport system. In general, we are talking about a synthesis of the current broad knowledge on how to effectively approach ambitious road safety targets;
- Broadening the scope of institutional coverage - deepening the coordination of the different responsible actors both horizontally and vertically;
- Support for transport-safety policy in terms of setting up EU funding mechanisms, including addressing the provision of an adequate level of funding for safety measures at the level of individual Member States;
- Sustainable development based on economic, social and environmental pillars (reduction of individual car transport performance and use of sustainable modes of transport), i.e. alignment of road safety objectives with other societal objectives and the consequent increased effect of the measures taken;
- Setting a mid-term line - to halve the number of deaths and serious injuries by 2030 compared to 2020, and promoting "Vision Zero" and creating and meeting other ambitious targets;
- Focus on the prevention of road accidents.

3.2.1 Strategic objectives

In setting a quantitative objective for the reduction of road accidents at national level, it is necessary to follow the common EU approach.

The long-term goal for the EU is to move as close as possible to zero fatalities and zero serious injuries in road transport by 2050, in line with the "Vision Zero" declaration.

In the medium term, for the time-frame of this strategy, the EU also declares to pursue new interim targets of a 50% reduction in road fatalities between 2021 and 2030 and a 50% reduction in serious road injuries over the same period.

On this basis, ***two medium-term strategic objectives*** for the SR for the period 2021 – 2030 and ***one long-term strategic objective*** for the period up to 2050 have been set:

MEDIUM-TERM STRATEGIC OBJECTIVE No. 1:

Reducing the number of road fatalities in the Slovak Republic by half by 2030 compared to the number in the reference year 2020.

In the reference year 2020, 224 people were killed in road accidents in the Slovak Republic; the strategic goal is therefore to reduce the *number of deaths to 112* or fewer by 2030.

MEDIUM-TERM STRATEGIC OBJECTIVE No. 2:

Reducing the number of serious injuries in the Slovak Republic by half by 2030 compared to the number in the reference year 2020.

In the reference year 2020, 914 people were seriously injured in road accidents in the Slovak Republic; the strategic goal is therefore to reduce the *number of serious injuries to 457* or fewer by 2030.

LONG-TERM STRATEGIC OBJECTIVE "VISION ZERO":

Reducing the number of people killed and seriously injured as a result of road accidents in the Slovak Republic to zero by 2050.

In order to achieve a real reduction in road accidents and their consequences, it is necessary to monitor the continuous implementation of the medium-term strategic objectives on an annual basis, whose ***year-on-year decreases*** in the monitored values should reach ***an average of 5% per year*** with a steady development, in order to avoid a one-off significant decrease at the end of the monitoring period.

3.2.2 Strategy breakdown

In order to meet the strategic objectives, ***measures*** are defined which form the core of the strategy and which are based on the identified current problems or the direction of national and European policy in the field of improving road safety.

These measures are embedded in ***five areas of action*** in the process of raising the level of road safety, applying the principle of a comprehensible architecture depending on the substantive focus of these areas of action:

1/ Area of action: **Human factor**
(Reducing road accidents and their consequences by influencing road users' attitudes towards safe and responsible behaviour.)

2/ Area of action: **Risk groups of road users**
(Reducing road accidents and their consequences through targeted measures aimed at risk groups of road users.)

3/ Area of action: **Road safety**
(Reducing road accidents and their consequences through the creation of a safe traffic area.)

4/ Area of action: **Vehicles and technologies**
(Reducing road accidents and their consequences through improved motor vehicle safety and the application of modern technologies.)

5/ Area of action: **Post-accident care**
(Reducing the consequences of road accidents through the provision of prompt and skilled medical care.)

For each of these five areas of action, the so-called ***spheres*** were further defined, grouping the proposed actions into individual clusters that have a common overlap in terms of their substantive focus at the level of a given area of action. These spheres are:

- ***Law enforcement,***
- ***Awareness-raising,***
- ***Legislation,***
- ***Infrastructure,***
- ***Science and research,***
- ***Technical inspection.***

3.2.3 Measurable indicators

The measurable indicators (indicators for the implementation of measures) have been divided into two groups for the purpose of meeting the objectives and measures of the strategy:

- measurable indicators for the achievement of the medium-term strategic objectives,
- measurable performance indicators by spheres.

TAB. 4 MEASURABLE INDICATORS

Strategic objective	Measurable indicator
Medium-term strategic objective No. 1	Number of persons killed in road accidents in the Slovak Republic per calendar year.
	Number of road accidents per person killed in road accidents per calendar year.
	Decrease/increase in road fatalities per calendar year compared to the previous calendar year, including calculation of the percentage decrease/increase.
	Decrease/increase in road fatalities per calendar year compared to the reference year 2020, including calculation of the percentage decrease/increase.
Medium-term strategic objective No. 2	Number of persons seriously injured in road accidents in the Slovak Republic per calendar year.
	Number of road accidents per person seriously injured in road accidents per calendar year.
	Decrease/increase in serious injuries per calendar year compared to the previous calendar year, including calculation of the percentage decrease/increase.
	Decrease/increase in serious injuries per calendar year compared to the reference year 2020, including calculation of the percentage decrease/increase.

Sphere	Measurable indicator
Law enforcement	Total number of road accidents in the SR per calendar year.
	Number of inspections carried out to monitor compliance with road traffic rules per calendar year.
	Number of detections of violations of road traffic rules (offences and criminal offences) in the framework of inspections carried out to monitor compliance with road traffic rules per calendar year.
	Number, type and amount of penalties imposed for violations of road traffic rules in the framework of inspections carried out to monitor compliance with road traffic rules per calendar year.
	Increase/decrease in the number of automated technical means for monitoring compliance with road traffic rules within the application of the principle of strict liability per calendar year.
Awareness-raising	Number of participants in each activity per calendar year.
	Media coverage during individual activities carried out through the media per calendar year.
Legislation	Number of legal regulations adopted into the legal order of the SR in a calendar year.
Infrastructure	Number of infrastructure measures implemented during a calendar year.
	Extent of infrastructure measures implemented in units of length during a calendar year.
	Sum of infrastructure measures implemented during a calendar year.
	Number of audits and inspections carried out in accordance with the legislation in force on road safety management per calendar year.
	Increase/decrease in the number of professionally competent persons for the performance of activities according to the current legislation on road safety management per calendar year.
	Number of accident locations identified on the road network per calendar year.
Science and research	Number of analyses and other outputs issued or published per calendar year.
Technical inspection (including technical roadside inspection)	Number of technical inspections carried out per calendar year, including their results.
	Number of technical roadside inspections carried out per calendar year, including their results.
	Number of professional supervisions carried out per calendar year, including their results.
	Number and amount of penalties imposed for breaches of provisions during the professional supervisions carried out per calendar year.
	Number and amount of penalties imposed for breaches detected during technical roadside inspections per calendar year.

4.
SCOPE OF THE STRATEGY

4.1 HUMAN FACTOR

4.1.1 Alcohol and other addictive substances

Currently, drivers of motor vehicles and cyclists in the Slovak Republic are prohibited from consuming alcohol before driving, but for a cyclist driving in the built-up area of a municipality and for a cyclist driving on a cycle path this prohibition does not apply if the amount of alcohol in his/her body does not exceed the value of 0.5 ‰ (0.24 mg/l). The issue of the negative effects of alcohol on driving has been analysed in several foreign studies, and the main findings can be interpreted as follows:

- *Driver's reactions:* The speed at which a driver can process and react to perceptual information from road traffic deteriorates from a blood alcohol level as low as 0.3‰ (0.14 mg/l). Slower reactions of the driver result in a later recognition of the risk situation as well as execution of the necessary traffic manoeuvre;
- *Driving a vehicle:* Under normal circumstances, a driver's driving performance deteriorates from a blood alcohol level of 0.5 ‰ (0.24 mg/l), but in exceptional circumstances (e.g. strong crosswinds) these conditions can occur as low as 0.2 ‰ (0.10 mg/l) of blood alcohol;
- *Vision:* The ability to focus vision is impaired from a blood alcohol level as low as 0.3‰ (0.14 mg/l). It takes longer for an intoxicated person to blink his or her eyes once, which also increases the time for simple visual stimuli.

TAB. 5 AN OVERVIEW OF THE NEGATIVE EFFECTS OF SELECTED ADDICTIVE SUBSTANCES AND MEDICINAL DRUGS ON DRIVING

Addictive substance / Medicinal drug	Effects on the driver	Effects on driving
Marijuana	euphoria relaxation drowsiness	prolonged reactions impaired coordination worse memory impaired vision
Stimulants (amphetamine, ecstasy, cocaine)	a feeling of energy vigilance	faster driving aggressive behaviour willingness to risk impaired vision impaired driving
Medicinal drugs (benzodiazepines, antidepressant drugs, opiates)	drowsiness inattention restlessness	impaired coordination lower level of ability to assess the situation impaired vision impaired driving

Source: VÚD

4.1.2 Speed and aggressive behaviour

Maximum speed limits are set on roads and compliance with them should lead to smoother and safer traffic for all road users. Failure to respect these speed limits in the form of ***speeding*** offences thus creates the conditions not only for an increased incidence of road accidents, but also for the severity of their consequences. Another phenomenon that is increasingly observed is closely related to failure to adjust speed or speeding – ***aggressive behaviour***. According to experts in the field of traffic psychology, aggression and anger are mainly triggered by a violation of the personal safety zone, frustration or an obstacle to reaching the destination. Attention should be paid to increased use of the principle of strict liability and automation in the light of the planned changes outlined in the Recovery and Resilience Plan of the Slovak Republic (Component 16 "Fight against corruption and money laundering, security and protection of the population", Investment 2 "Modernization and building of professional capacities of the Police Force").

4.1.3 Not being fully engaged in driving

In general, inattention or failure to fully concentrate on driving is one of the most common risk factors for road accidents. This term covers a number of partial manifestations of road user behaviour.

Despite the different approaches to defining the failure to be fully engaged in driving, the different definitions share common features which can be summarised as follows:

- distraction from safe driving;
- attention divided into a number of competing percepts that originate from inside or outside the vehicle;
- the competing activity may or may not force or cause the driver to divert their attention towards it;
- there is an absolute or clear presumption that safe driving is adversely affected by other competing activity.

Depending on the nature of the phenomenon that is the source of driver distraction, the following types are recognised:

- visual (drawing the eye to a phenomenon unrelated or marginal to safe driving);
- cognitive (engaging in another activity requiring information processing, such as making a phone call while driving, having a conversation);
- physiological (performing another activity instead of properly holding the steering wheel);
- auditory (overlapping sound stimuli from road traffic with other sources such as loud car radios).

TAB. 6 A TAXONOMIC SCHEME SUMMARISING DIFFERENT APPROACHES TO DEFINING INATTENTION IN ROAD TRAFFIC

	Categories	Definitions		Examples
Not being fully engaged in driving	Physiologically limited attention	Insufficient or no attention to activities critical to safe driving that are caused by the driver´s biological manifestations		Blinking/sneezing causing the necessary information not to be picked up
	Inappropriate prioritisation of attention	Insufficient or no attention to activities critical to safe driving caused by prioritisation of a minor traffic phenomenon		The driver observes the turning vehicle and overlooks the pedestrian entering the roadway
	Neglected attention	Insufficient or no attention to activities critical to safe driving caused by a failure to pay attention to a significant traffic phenomenon		A driver fails to pay attention to other road users when crossing an intersection
	Inadequate attention	Insufficient or no attention to activities critical to safe driving caused by superficial attention to a significant traffic phenomenon		The driver pays only fleeting attention to other road users when crossing an intersection
	Distraction	Driving-related distraction	Distraction from activities critical to safe driving in order to perform another task related to driving	The driver manipulates the navigation while looking for another route
		Distraction unrelated to driving	Distraction from activities critical to safe driving in order to perform another non-driving task	Talking on the phone behind the wheel

Source: VÚD

4.1.4 Fatigue

Fatigue behind the wheel refers not only to driving for long periods of time without taking breaks, but also to the psychological state of the driver induced by sleep deprivation or driving at night. Fatigue or drowsiness are adverse road traffic phenomena, especially when making longer journeys, with the risk of loss of attention, prolonged reaction time and impaired ability to process surrounding information and sensations.

The main causes of fatigue can be considered to be sleep deprivation, which can be chronic (long-term sleep deprivation) or acute (sleepless nights). In addition to sleep deprivation, fatigue can be caused by inappropriate biorhythms, indirect physiological factors (e.g. age, physical condition, etc.), alcohol ingestion and external stimuli in the form of air temperature, noise or routine driving.

TAB. 7 GROUPS OF FACTORS WITH A PREDISPOSING RELATIONSHIP TO THE OCCURRENCE OF FATIGUE BEHIND THE WHEEL

Risk groups of drivers	Time factors	Factors related to environment	Factors related to sleep
young drivers up to 25 years of age	driving from 02:00 a.m. to 05:00 a.m.	driving in a monotonous landscape environment	driving with sleep deficit
drivers over 50 years of age	more than 16 hours of wakefulness before driving	monotonous driving	driving at times when the driver is usually asleep
males	long time at work before driving	driving on the motorway	driving after poor-quality sleep
shift staff	long-term driving without breaks	long-distance transport	
professional drivers	irregular working shifts	driving in a traffic jam	
people with health problems	driving under time pressure	extreme climatic conditions	
drivers after consuming alcohol		driving on well-known routes	
drivers after insufficient rest			

Source: VÚD

From the above matrix of predisposing factors, three high-risk groups of drivers are identified for whom fatigue behind the wheel is a relatively dangerous risk factor for the occurrence of road accidents:

- young people (mostly men) up to the age of 25,
- shift workers whose life rhythms are disrupted by night work, irregular or long working hours,
- people with sleep disorders and unresolved narcolepsy syndrome.

The reason why the issue of fatigue has received special attention in the field of road safety improvement is related to its consequences, which are manifested in the form of reduced attention, longer reaction times to external sensations and lower levels of information processing. The driver's ability to drive safely is significantly reduced by these consequences, thereby exposing themselves and other road users to an increased risk of accidents.

4.2 RISK GROUPS OF ROAD USERS

4.2.1 Pedestrians

Pedestrians are generally considered to be the most vulnerable group of road users. This is due to the fact that they are not protected by the safety features provided to drivers by the means of transport. The only natural protective feature of a pedestrian is its body structure alone. Due to their physiological vulnerability, *children and the elderly* (seniors) are the most at-risk groups among pedestrians. According to road accident statistics, there were 801 road accidents - collisions with pedestrians in the Slovak Republic in 2020, with 290 accidents caused by pedestrians and 42 pedestrians killed in road accidents.

The severity of a pedestrian's injuries in a collision with a vehicle depends on:

- the speed of the vehicle in the collision,
- the vehicle type,
- the stiffness and shape of the vehicle body,
- the age and height of the pedestrian,
- the position of the pedestrian in relation to the vehicle in the collision.

The following risk factors influence the actual occurrence of accidents involving pedestrians:

- *Vehicle speed* affecting driver and pedestrian reaction time, braking distance and the magnitude of energy released in a crash as one of the most important factors influencing the severity of pedestrian injuries. Research analysing the relationship between speed and injury outcomes in vehicle-pedestrian collisions has shown that a pedestrian has up to a 90% chance of surviving a collision with a vehicle at vehicle speeds of 30 km/h and below;
- *Alcohol* is dangerous for both the pedestrian and the driver because its consumption results in distorted reasoning, impaired coordination of movements, prolonged reaction time, reduced alertness or impaired visual acuity and spatial perception;
- *The lower level of safety of the infrastructure and its equipment* results objectively from the spatial conditions in the road section, and relates to insufficient or absent sidewalks, lack of traffic calming elements and no or insufficiently marked and illuminated pedestrian crossings;
- *Insufficient visibility of pedestrians*, which is influenced by insufficient lighting of the road, poor choice of vehicle lighting with regard to weather conditions (the phenomenon of the use of so-called day lighting), dark clothing of pedestrians who are not wearing reflective elements or the colour of their clothing blends in with the surroundings, especially in low visibility. A special case is lorries, whose drivers also have a higher percentage of so-called "blind spots" due to their higher position in relation to the road, which makes it much more difficult for them to see;
- *Other risk factors* currently include not paying enough attention to one's surroundings due to the use of communication devices such as mobile phones or headphones. The lack of experience or bad habits of some drivers and pedestrians can also be included in this group. The misunderstanding of the pedestrian's right of way at a pedestrian crossing, whether by some pedestrians or drivers, also has a negative impact.

4.2.2 Cyclists

Cyclists, like pedestrians, are vulnerable road users due to their physiological vulnerability despite the compulsory use of safety features (bicycle helmets and reflective elements) under certain conditions defined by the legislation when they move in road traffic. In some respects, they can be considered to be slightly more vulnerable, as they move at higher speeds and more often in shared traffic space with motor vehicles.

However, accidents involving cyclists can also occur without the involvement of motor vehicles. These include collisions with other cyclists, collisions with fixed obstacles, collisions with pedestrians if they share a common traffic area, or crashes without third parties involved. According to road accident statistics, there were 718 road accidents involving cyclists in the Slovak Republic in 2020, 386 of which were caused by cyclists and 20 cyclists were killed in road accidents.

Collisions between cyclists and motor vehicles occur in most cases in the urban area and most often at intersections, which is also confirmed by foreign studies. In these cases, the most common problem is the lack of cycling infrastructure and cyclists are forced to share the road space with motor traffic. Then, especially at intersections, there are often problematic situations caused by blind spots when drivers turning right do not notice a cyclist who wants to go straight ahead and cross their path, resulting in a collision. This applies mainly to lorry and bus drivers.

In addition to blind spots at intersections, a common cause of collisions is the dangerous behaviour of cyclists or motor vehicle drivers who do not pay enough attention to traffic and are inconsiderate of each other. A large proportion of accidents involving cyclists are caused without fault of other road users, due to poor road quality, driving under the influence of alcohol or addictive substances, technical problems or overestimation of their abilities and too risky driving.

Accidents involving cyclists are most often caused by three main factors or their interaction:

- *Infrastructure* – poor quality pavement, lack of infrastructure for cyclists, cycling infrastructure with inadequate technical parameters, opaque or unsafe crossings of cycle routes with roads or railways, lack of visibility of fixed obstacles;
- *Bicycle* – technical condition (especially the condition of brakes), seat adjustment, type of tires and their wear, absence of reflective elements and lighting;

- *Behavioural habits*
  - Behaviour of drivers of motor vehicles in terms of observing maximum speed limits, paying attention to driving and the current traffic situation, observing traffic regulations and instructions resulting from traffic signs, traffic lights or instructions of police officers, not driving under the influence of alcohol and addictive substances;
  - Behaviour of cyclists themselves in terms of obeying traffic rules and traffic signals, paying attention to driving and the traffic situation, not riding under the influence of alcohol and addictive substances.

There is a growing phenomenon of assisted bicycles, which make cycling more accessible to a wider population, but also carry significant risks. This is mainly due to their higher travelling speed and higher weight, which increases stopping distances and can make them more difficult to handle. The same applies to other modern forms of micro-mobility that are becoming increasingly popular (e.g. electric scooters, shared electric scooters, etc.).

4.2.3 Motorcyclists

The vulnerability of motorcyclists in road traffic results from two factors:

- the driving stability of a single-track vehicle is significantly lower compared to two-track vehicles, while the driving method and technique require a higher level of driving skills compared to other means of transport;
- there is little protection for motorcyclists in the event of an accident with another vehicle or after a motorcycle crash. The motorcyclist's protection consists only of the helmet and clothing (gear), which is not protected by any crumple zones or active safety features, as in the case of other motor vehicles.

The combination of the aforementioned facts is more serious when combined with the specifics of motorcycle operation in road traffic, such as:

- *Seasonality:* Motorcyclists ride at an increased rate primarily on a seasonal basis during selected months of the year (spring to autumn);
- *Weather:* Weather conditions significantly affect motorcyclists' activity in traffic and also have a direct impact on the safety of motorcycle operation in traffic;
- *Indiscipline of motorcyclists:* non-compliance with traffic rules by some motorcyclists, especially speeding and aggressive driving;
- *The low level of motorcyclist's driving skills* or their overestimation creates risky situations in road traffic. However, the lack of driving skills and poor driving technique may not be related to age or length of driving experience (although even in the case of motorcyclists, young drivers with a short period of experience are a risk group in particular);
- *The visibility of a motorcyclist* in traffic is significantly lower compared to other road users (the narrow silhouette of a motorcycle, which can manoeuvre faster in traffic, is easily overlooked);

- *Aversion of other road users towards motorcyclists:* Aggressive behaviour of drivers on the roads is a frequent phenomenon, resulting also in illogical and dangerous behaviour of drivers of other motor vehicles, consisting in pushing a motorcyclist to the side of the road, failing to give the right of way, unsafe overtaking, or failing to keep a safe distance. Such dangerous behaviour by other drivers directly endangers the health and life of the motorcyclist.

These specific features, or their combination, create a prerequisite for the occurrence of extremely serious injury (or death) of motorcyclists (including their passengers) in the event of a road accident. According to road accident statistics, in the SR in 2020 there were 571 road accidents involving motorcyclists, 334 of which were caused by motorcyclists and 29 motorcyclists (including 1 passenger) were killed in road accidents.

4.2.4 Driving licence applicants and novice drivers

Nowadays, the number of registered vehicles in the Slovak Republic is constantly increasing, the intensity of road traffic is increasing, traffic jams on roads are more frequent and more people are getting behind the wheel.

The group of young and inexperienced drivers can be specified by several characteristics:

- being distracted and not paying enough attention to driving,
- not adapting the driving speed to their abilities,
- insufficient experience in driving and operating a motor vehicle,
- unpredictability of road traffic situations,
- failure to keep vehicles at a safe distance,
- adopting bad driving habits,
- overestimating their abilities and skills,
- impulsive and risky behaviour,
- inadequate assessment of the traffic situation,
- a higher risk of causing an accident due to a combination of factors such as alcohol, drugs and fatigue.

The most common causes of road accidents for novice drivers are their inexperience and lack of driving experience and the associated inappropriate and inadequate response to a crisis situation. According to road accident statistics, drivers of motor vehicles with driving experience of up to 2 years after obtaining a driving licence were at fault in up to 1,051 road accidents in the Slovak Republic in 2020.

4.2.5 Children and youth

One of the most visible road accident problems in terms of perception by the general public is road accidents involving children and young people (victims). According to road accident statistics, 7 children aged 0 to 14 and 28 young people aged 15 to 24 were killed in road accidents in Slovakia in 2020. Young drivers of motor vehicles (15-24 years old) were responsible for 1,664 accidents in that year.

Most of the factors influencing the occurrence of road accidents affect the general population as well as the group of children, but there are safety risks that are specific to this group of road users. One group of these risk factors is the physiological development of the individual, which manifests itself in the following contexts:

- the nature and type of injuries change with the physiological, psychological and behavioural development of the individual, with the risk itself changing as the child acquires new skills;
- the field of vision is limited to a greater extent than it is in an adult;
- children are shorter in stature and thus do not have the same ability to judge the traffic situation and are less visible to drivers due to this fact;
- younger children, in particular, show relatively low awareness of the risks involved in road traffic.

Parental education and supervision play an important role in keeping children safe on the road and developing their knowledge of the basic road traffic rules. Gradually, this role is partly taken over by the school and the educational process within the traffic education system. It is therefore necessary to start traffic education at the earliest possible age and to continue the continuity of road safety education through adolescence and into adulthood, which creates the prerequisite that the system will develop the minor into an aware adult road user.

An important part of the theme of children and young people moving in road traffic is improving road safety through traffic engineering measures with an emphasis on traffic calming (e.g. no through roads and dead ends, construction of deceleration strips, raised intersections, construction of intelligent pedestrian crossings, installation of deceleration cushions, construction of median islands, pavement changes, localised road narrowing, introduction of "30" zones, school zones, residential zones, etc.).

4.2.6 Elderly people (seniors)

Demographic analyses of age structure development of the population of the Slovak Republic show that the ageing of the population brings with it an increase in the number and representation of the population of retirement age, which represents one of the most significant challenges in the medium and long term. The growth in the number of people of retirement age is expected to be more intense compared to other age groups. By raising the level of healthcare and its accessibility, this part of the population cannot be expected to become a passive component of the population, but on the contrary, to become more and more active people with a direct role in various spheres of social life. Corresponding to this is the need to create and adapt living conditions for this population group. Road safety is no exception, and one of the tasks is to respond adequately to the needs of older people in terms of the design of the transport space and the development of technologies to support safe interaction within it. When creating a safe transport space, it is first of all necessary to understand the specificities of elderly people and to incorporate them into the subsequent procedures.

The level of safety of the elderly (over 65 years of age) is largely influenced by two main factors: *functional limitations and physiological vulnerability,* both of which contribute significantly to the occurrence and severity of road accidents in this age group. With increasing age, the incidence of functional limitations and impairments in the form of reduced levels of recognition of visual and auditory sensations, prolonged reaction times and difficulties in dividing attention also increases. In some cases, the incidence of accidents is also influenced by a reduction in motor skills, manifested by slowed movements and a reduced ability to coordinate body movements in relation to sensations in risky road traffic situations. According to road accident statistics, drivers of motor vehicles aged 65 and over were at fault in 603 road accidents in the SR in 2020.

4.3 ROAD SAFETY

4.3.1 Road infrastructure safety management

Road Infrastructure Safety Management (RISM), or also *Road Safety Management*, refers to a set of activities intended to improve the level of safety of road infrastructure in the process of its design, construction and operation. These activities are based on Directive 2008/96/EC of the European Parliament and of the Council of 19 November 2008 on road infrastructure safety management, as amended by Directive (EU) 2019/1936. Under the 2019 amendment to the Directive, the national regulations of EU Member States are to be brought into line with its amended version by 17 December 2021 at the latest. The transposition is led and coordinated by the Ministry of Transport and Construction.

Under the Slovak legislation in force on 1 January 2021, the following procedures were established to identify potential safety risks associated with the operation of the planned and existing road network concerned.

- road safety impact assessment,
- road safety audit,
- management and control of safety of road in use (inspection).

RISM resulting from the provisions of the Directive represents the basic approach to improving the level of safety of road infrastructure. The amended text of the Directive is intended to contribute to even greater road infrastructure safety and introduces in particular the following changes:

- *extending the scope* to motorways and to other primary roads, whether they are at the design stage, under construction or in operation, in addition to roads that are part of the TEN-T network, as well as to roads and to road infrastructure projects which are situated outside urban areas, which do not serve properties bordering on them and which are completed using Union funding, with the exception of roads that are not open to general motor vehicle traffic;
- *setting general performance requirements for road marking and road signs* to facilitate the deployment of cooperative, connected and automated mobility systems;
- *strengthening the focus on vulnerable road users,* especially pedestrians, cyclists and motorcyclists, with a view to prioritising these at-risk groups in terms of creating a safe transport space;
- *network-wide road safety assessment,* replacing the classification of high accident rate road sections;
- *regular reporting* to the European Commission on the implementation of network-wide road assessments.

.

4.3.2 Pavement quality, shoulder treatment, elimination of fixed obstructions and installation of road restraint systems

Poor pavement quality is a frequent source of road accidents, despite the fact that it is often ignored in accident assessment due to the difficulty of identification. Insufficient pavement roughness is critical for braking distance and ruts in the road track are a frequent source of "aquaplaning". Pavement defects (potholes, deformations), which significantly affect vehicle stability, are also potential sources of road accidents.

Shoulders and their immediate surroundings are an important safety feature of the traffic area and perform a number of functions, including creating space for emergency vehicle stops, manoeuvring space for errant traffic manoeuvres and, structurally, affecting the service life of the pavement as a whole. In order to achieve a higher level of safety, it is advisable to have a sufficiently wide shoulder which, in relation to the surrounding terrain, does not create risky conditions for an increased occurrence of road accidents or does not adversely affect their severity.

The existence of *fixed obstacles* in the immediate vicinity of a road does not generally have a causal effect on the occurrence of accidents, but if they do occur, the risk of severity of consequences to health increases to a large extent. The key factor in this case is vehicle speed, which determines the amount of energy released that physically deforms the vehicle and its passengers, suggesting that fixed obstacles pose the greatest risk on rural roads where higher speeds are achieved. Fixed barriers are usually considered to be man-made objects (e.g., poles, bridge piers, billboards, culverts, etc.) or natural barriers (e.g., isolated trees or tree lines).

When fixed obstacles cannot be eliminated, *safety restraints*, which are installed to reduce the extent of damage and injuries in the event of a sudden lane departure, have an indispensable function. Safety barriers belong to the group of road restraint systems and are longitudinal barriers used to protect motorists from natural or artificial obstacles located on both sides of the road, it being understood that these fixed obstacles cannot be removed or moved for various reasons. The role of safety barriers is to keep the vehicle in the traffic space and reduce the severity of accidents.

4.3.3 Level crossings and road tunnels

The specificity of traffic accidents localised at *level crossings* is that with a relatively low frequency of accidents, relatively serious consequences occur, which consequently have a negative impact on the overall accident statistics. This is usually due to the significant disparity between the masses of the vehicles involved and the volume of kinetic energy released in the collision. A collision between a rail vehicle at operating speed and a passenger car almost always results in the total demolition of the vehicle with minimal chances of survival for its crew. In the event of a collision with a lorry, the situation is even more complicated due to the potential derailment of the train set and the danger to the occupants of this means of transport. The subsequent resumption of traffic on the affected infrastructure causes non-negligible time losses in both road and rail transport.

The most frequent reasons influencing the occurrence of traffic accidents at level crossings according to the analyses of the project of the International Union of Railways "SAFER LC" include:

- the human factor (failure to respect the basic rules governing the operation of vehicles on roads, failure to to pay attention to driving),
- inappropriate configuration of the road infrastructure (small distance between the crossing and the intersection with the parallel road, absence of turning lanes),
- vehicles stationary at a level crossing due to congestion,
- the absence of separate roads (pavements) for the safe passage of pedestrians and cyclists across the crossing,
- impaired visibility conditions at the level crossing or visibility of the warning device of the level crossing interlocking equipment,
- crossing interlocking equipment not corresponding to the current level of traffic on the road and railway line.

With the construction of road infrastructure of higher transport importance, the number of *road tunnels* is increasing due to the geomorphological conditions of the Slovak Republic, where safety issues also arise with the increasing traffic intensity. Although the occurrence of road accidents in these road objects is a marginal phenomenon in terms of scale, their consequences due to the confined space can have fatal consequences not only for the accident participants, but also for the drivers who are in the tunnel at that moment. Particular attention should also be paid to the traffic area in the immediate vicinity of the tunnel exit, as there is an increased risk of collision with a fixed obstacle in this area.

4.3.4 Lighting of roads and improvement of visibility

The basic prerequisite for the creation of a safe traffic area is to ensure mutual visibility between road users as well as in relation to the road infrastructure itself. The risk of a motor vehicle accident during darkness is approximately 1.5 to twice as high as during daylight hours. The need to ensure visibility stems from the fact that most of the information used by drivers in road traffic is visual. During darkness, the human eye picks up contrast, detail and movement to a much lesser extent than in daylight, which is one of the reasons for the higher risk of a road accident in the dark.

For infrastructure measures, this condition can be met by lighting the road and by increasing the visibility conditions.

Road lighting is the artificial illumination of roads, streets, intersections and pedestrian crossings, while in built-up areas the street network is usually illuminated to a greater extent. The purpose of road lighting is to try to reduce the incidence of accidents in the dark by making the road, its immediate surroundings and other vehicles more visible.

Visibility conditions influence the amount of time available to the driver to register the traffic situation, assess it and make the appropriate traffic manoeuvre. If there is an obstacle in the driver's field of vision within the zone for carrying out the above actions, this reduces the time required for the driver to react, as well as the distance for the vehicle to stop in the event of unexpected events. Depending on the location of the section in question, different types of obstructions to visibility are encountered, some of which cannot be removed and need to be dealt with by other means (e.g. traffic mirrors). In rural zones, vegetated sight obstructions are usually present and pose a risk usually at bends, road intersections or level crossings. Reduced visibility conditions in the form of buildings or fixed installations close to the road shoulder (e.g. billboards) are encountered in urban areas. A particular feature is the frequent occurrence of vulnerable road users moving on the road not only in designated areas. This is one of the reasons why it is necessary to pay due attention to the issue of ensuring sufficient visibility conditions and to implement measures to reduce the occurrence of road accidents due to insufficient visibility conditions.

4.3.5 Traffic signs

Safe and comfortable driving for drivers depends on landmarks in the vicinity of the vehicle and further in the direction of travel. Especially in low visibility, such landmarks are essential. The importance of traffic signs lies precisely in providing drivers with such orientation (reference) perceptions so that they can adapt their driving style to the surrounding conditions. Its primary function is to guide road traffic by indicating the route of the carriageway and marking the road in relation to its surroundings. It may also draw the attention of road users to special conditions related to the construction layout of the road. Traffic signs placed in the driver's field of vision provide constant information, enabling the driver to keep the vehicle in the correct position on the road.

In order to ensure the effective function of *horizontal and vertical traffic signs*, a number of conditions must be met. One of the most important conditions is their location, so that the driver is able to record the information at all times of the day and night and in all weather conditions. The following deficiencies are most frequently identified in safety inspections focusing on the level of traffic signs:

- low visibility due to improper placement of signs (e.g., inappropriate height, proximity to other traffic signs),
- incorrect appearance of traffic signs (e.g., colour),
- incorrect positioning of repetitive types of traffic signs (e.g., in front of a level crossing),
- inconsistency in the meaning of vertical and horizontal signs,
- incorrect use of signs or combinations of signs,
- too many traffic signs for operational needs,
- the absence of traffic signs in places where they are needed.

4.3.6 Collisions with wildlife

One of the adverse effects of the construction and operation of transport infrastructure is the fragmentation of the landscape, which can be defined as a process or state of division, fragmentation of natural areas (original habitats) into several smaller parts while reducing the area of the original habitats and increasing the mutual isolation of the resulting areas. Not only roads, but also railways and waterways create linear objects of fragmentation hindering the movement of animals. At the same time, the increase in traffic intensity amplifies the fragmentation effect of transport infrastructure. Linear objects and transport infrastructure structures act as a barrier effect - an obstacle to the movement and migration of animals. Negative impacts of landscape fragmentation by transport infrastructure include animal encounters with vehicles. In addition to the direct connection with the occurrence and consequences of road accidents, this phenomenon also has an impact on native habitats, which are thus broken up into smaller and isolated areas. Species within these small and isolated areas have limited food resources, choice of sexual partners and conditions for movement. The increased incidence of encounters with wildlife is also caused by the absence of vegetation trimming on lands adjacent to roads, where wildlife hides, or the vegetation obstructs drivers' vision and prevention of possible collisions between wildlife and road vehicles, especially at night. During the construction of roads, as well as roads that are already in operation, it is necessary to consider the construction of so-called ecopassages, suitable for the designated species of animals occurring in the location.

4.4 VEHICLES AND TECHNOLOGIES

4.4.1 Increasing the level of safety within the SR vehicle fleet

The current level of safety of motor vehicles as one of the technical attributes of design characteristics is regulated by a set of legislative measures at EU level that define the minimum technical requirements for their placing on national markets. The type-approval of vehicles and their components is subject to a complex system of technical requirements and related test procedures. Access to the national market cannot be refused by EU Member States to any vehicle that complies with these technical requirements. Once the approval of a vehicle or its component, system or separate technical unit is recognised, Member States cannot impose stricter requirements on it beyond those set out in EU legislative measures.

A list of safety measures has been adopted at EU level, which will be part of the compulsory equipment of vehicles from 6 June 2022. Advanced technologies will prevent the consequences of road accidents on life and health. They include in particular:

- Intelligent Speed Assistance (ISA) system,
- alcohol interlock installation facilitation,
- driver drowsiness and attention warning,
- advanced driver distraction warning,
- emergency stop signal,
- reversing detection.

In addition to the above requirements for all vehicle categories, specific provisions are defined for individual vehicle categories.

Passenger cars and light commercial vehicles must integrate:

- advanced emergency braking systems designed and fitted in two phases and providing for:
  - the detection of obstacles and moving vehicles ahead of the motor vehicle in the first phase;
  - extending the detection capability to also include vulnerable road users ahead of the motor vehicle in the second phase
- emergency lane-keeping systems;
- event data recorders.

Vehicles shall be designed and constructed to provide for an enlarged head impact protection zone with the aim of enhancing the protection of vulnerable road users and mitigating their potential injuries in the event of a collision.

Specific requirements relating to *buses and trucks* (vehicles of categories M2, M3, N2 and N3) which must be equipped with:

- a lane departure warning system;
- an advanced emergency braking system;
- advanced systems that are capable of detecting vulnerable road users located in close proximity to the front or nearside of the vehicle and of providing a warning or avoiding collision with such vulnerable road users.

Vehicles of categories M2, M3, N2 and N3 shall be designed and constructed to enhance the direct visibility of vulnerable road users from the driver seat.

Specific requirements relating to *autonomous vehicles* relate to:

- systems to replace the driver's control of the vehicle, including steering, accelerating and braking;
- systems to provide the vehicle with real-time information on the state of the vehicle and the surrounding area;
- driver availability monitoring systems;
- event (accident) data recorders for automated vehicles;
- harmonised format for the exchange of data for instance for multi-brand vehicle platooning.

4.4.2 Supporting the deployment of autonomous vehicles

Autonomous vehicles represent one of the greatest technological and safety challenges of our time, and one that could have a lasting impact on the future of road transport. These vehicles could pave the way for new services and offer new ways to respond to the ever-increasing demand for mobility of people and goods. Once all the safety risks associated with their operation in road traffic have been addressed, driverless vehicles could significantly improve safety, as it is estimated that human error plays a role in up to 94% of road accidents. The most important proclaimed benefits of autonomous vehicles, besides increasing safety, are:

- ensuring mobility for those who cannot drive themselves (e.g. elderly or disabled people) or who are underserved by public transport;
- promoting car sharing and "mobility as a service" (i.e. selling rides, not cars);
- accelerating the electrification of vehicles and the development of electromobility with a positive effect on environmental quality;
- freeing up space unnecessarily used for parking;
- significant changes in land-use planning approaches and more efficient use of available living space.

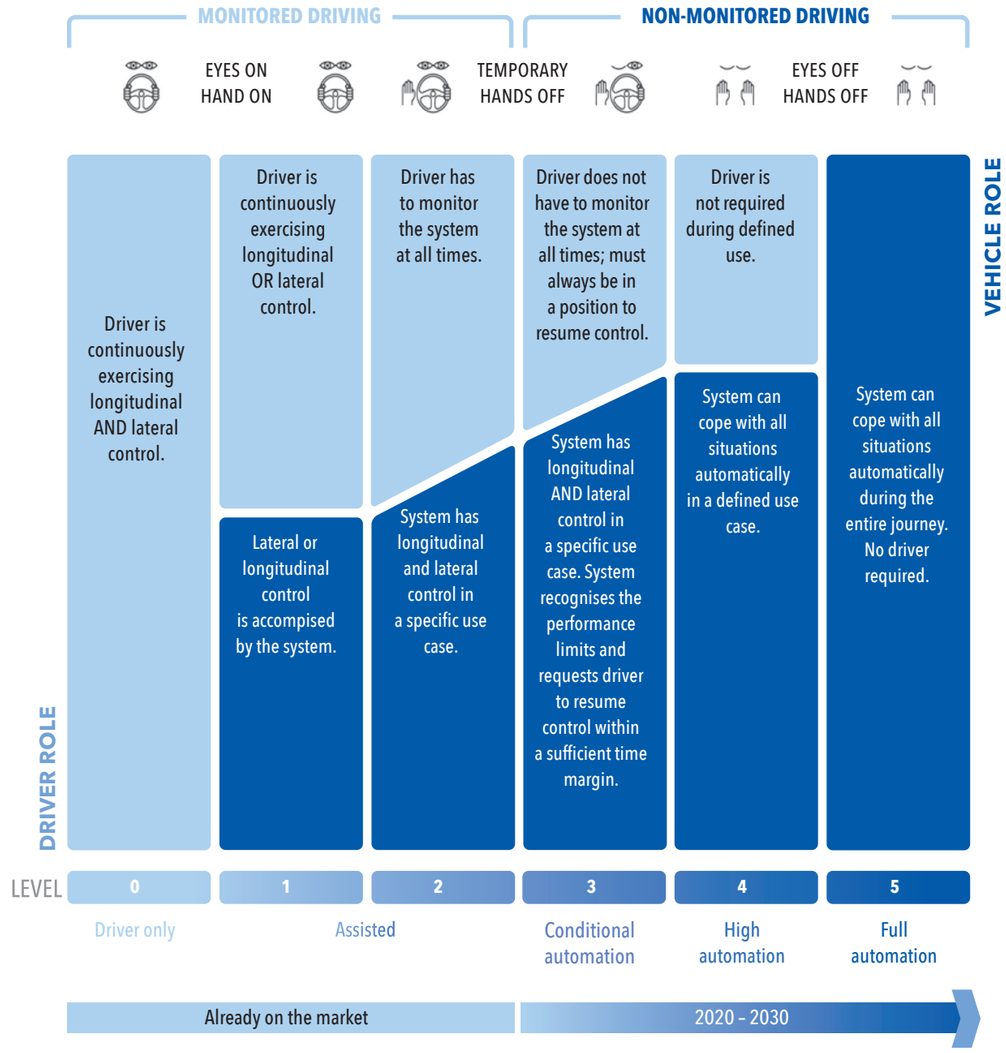
There are still safety risks and issues related to the introduction of autonomous vehicles, which can be summarised as follows:

- over-reliance on and inappropriate use of technology;
- the level of infrastructure support for driverless vehicles;
- integration of infrastructure with vehicles;
- ethical issues related to the transfer of driving responsibility to vehicles

The actual introduction of autonomous vehicles into the road traffic environment should be seen as a continuous process, which is composed of several phases with varying degrees of automation. The individual degrees are defined as follows:

- ***Level 0:*** The automated system issues warnings and may momentarily intervene but has no sustained vehicle control.
- ***Level 1*** *(„hands on"):* The driver and the automated system share control of the vehicle. Examples are systems where the driver controls steering and the automated system controls speed *(Adaptive cruise control or ACC)*; and Parking Assistance, where steering is automated while speed is under manual control. The driver must be ready to retake full control at any time. Lane Keeping Assistance (LKA) Type II is a further example of Level 1 self-driving;
- ***Level 2*** *(„hands off"):* The automated system takes full control of the vehicle (accelerating, braking, and steering). The driver must monitor the driving and be prepared to intervene immediately at any time if the automated system fails to respond properly. The shorthand "hands off" is not meant to be taken literally. In fact, contact between hand and wheel is often mandatory during driving, to confirm that the driver is ready to intervene;
- ***Level 3*** *(„eyes off"):* The driver can safely turn their attention away from the driving tasks, e.g. the driver can text or watch a movie. The vehicle will handle situations that call for an immediate response, like emergency braking. The driver must still be prepared to intervene within some limited time when called upon by the vehicle to do so;
- ***Level 4*** *(„mind off"):* As level 3, but no driver attention is ever required for safety, e.g. the driver may safely go to sleep or leave the driver's seat. However, self-driving is supported only in limited spatial areas (geofenced) or under special circumstances, such as traffic jams. Outside of these areas or circumstances, the vehicle must be able to safely abort the trip;
- ***Level 5*** *(„steering wheel optional"):* No human intervention is required at all.

FIG. 3 DIFFERENT LEVELS OF AUTOMATION IN THE DEPLOYMENT OF AUTONOMOUS VEHICLES



Source: COM (2018) 283 final, On the road to automated mobility: An EU strategy for mobility of the future, 2018

4.4.3 Technical condition of motor vehicles

The poor technical condition of motor vehicles is one of the marginal causes of road accidents from the point of view of statistical registration of road accidents. On the other hand, almost every motor vehicle driver is aware that having a vehicle in good roadworthy condition is a prerequisite for avoiding being involved in a collision. In the conditions of the Slovak Republic, a system for checking the technical condition of the vehicle fleet is in place pursuant to Act No. 106/2018 Coll. on the operation of vehicles in road traffic and on the amendment to certain acts as amended through a network of technical inspection stations (STK).

Carrying out *technical roadside inspections* in the performance of duty in the supervision of road traffic safety and fluidity is one of the activities of the Ministry of Interior of the Slovak Republic. The main objective of carrying out technical roadside inspections is to reduce the risk of road accidents and their consequences. The technical roadside inspection consists of a document check and a visual assessment of the technical condition of the stationary vehicle and, if necessary, a more detailed technical inspection. EU Member States are currently obliged to use *risk assessment* systems to identify shipping companies with a high-risk profile.

4.5 POST-ACCIDENT CARE

A road accident is an event occurring in road traffic in direct connection with the operation of a vehicle. The result of this event is the occurrence of material damage (to the vehicle, road, transport equipment), while operating liquids may escape, which may pollute or endanger the environment and the most serious consequence is injury or death of persons.

Post-accident care is the system responsible for the emergency medical care and treatment of persons injured in a road accident. This system represents the totality of actions related to the arrival of the emergency medical service (hereinafter referred to as "ZZS"), the provision of emergency medical care at the scene of the accident, the transport of the patient to a medical facility and the care of the patient in that medical facility.

The qualitative level of the pre-hospital health care system has a direct impact on the number of victims of road accidents as well as their consequences.

Factors influencing the quality of post-accident care in the Slovak Republic can be summarised in several sets:

- *transport or logistic* – it is related to the fact that the rescue forces (Integrated Rescue System – IZS) get to the place of the accident in the shortest possible time. The location of ZZS ambulance call stations should be optimised so that the time of arrival of the ZZS ambulance to any location at a certain interval is guaranteed;
- *personnel and technical equipment of ZZS vehicles*. There are a number of companies operating in the Slovak Republic that provide emergency medical services;

- *care of the patient in an inpatient medical facility* during their hospitalisation and convalescence. Different types of injuries lead to situations where the patient has to be transported to another medical facility in order to undergo a specific medical procedure, which also increases the risk of worsening the consequences of the accident;
- *collecting, exchanging and sharing information* on the condition of patients after road accidents between the different stakeholders, especially in terms of changes in the health status of patients.

Providing first aid and proactive medical care in the first hour after a road accident is crucial to reduce the risk of serious consequences. The average ZZS ambulance journey time for 2020 was 11 - 13 minutes. Emphasis must be placed on avoidable deaths in which proper and timely first aid was not provided in the first minutes immediately after the accident. The qualitative level of health care is directly dependent on the provision of timely and correct first aid immediately and in the first minutes after a road accident. Failure to provide timely and proper first aid in the first minutes after an accident increases the consequences of health impairment and death.

5.
IMPLEMENTATION OF THE STRATEGY

5.1 STRATEGY DEVELOPMENT PROCEDURE

The development of the strategy and its implementation part in the form of specific measures (action plan) was based on the initial conditions, which reflect the current setup of mechanisms for increasing the level of road safety in the conditions of the Slovak Republic and the requirements for modification and improvement of this system, which would lead to the achievement of the set quantitative goals at national and European level for the period of the Decade of Action for the years 2021 to 2030. This strategy and the resulting objectives should be seen in the context of seeking synergies with the requirements for a functional transport system as a whole.

The preparation of the strategy itself started in 2019, when the analytical material was prepared by the Transport Research Institute (Výskumný ústav dopravný, a. s.) for the client, the Ministry of Transport of the Slovak Republic, within the framework of permanent analytical activities, serving as an initial background document for the evaluation of the effects of the past Decade of Action 2011 – 2020 and the elaboration of the draft version of the strategy for the years 2021 – 2030, encompassing all the current challenges and needs necessary for the improvement of road safety in the Slovak Republic for the next ten years.

With effect from 15 May 2020, by Decision of the Minister of Transport and Construction of the Slovak Republic No. 75/2020, a ***Ministerial Working Group for the preparation of the draft National Road Safety Plan of the SR for 2021 – 2030*** was established, based on an expert level, composed of internal civil servants of the Ministry of Transport and Construction of the Slovak Republic, responsible for the implementation and direction of the state policy in the field of road safety, road transport and roads, driving schools, the management of EU-funded projects, control, state supervision and oversight, rail transport, bicycle transport, and education.

On the basis of the working meetings of this ministerial group, the procedure of the broadest possible professional discussion on the form of the strategy's wording was chosen at the level of several ministries, selected organisations within the scope of these ministries, as well as third sector organisations, in order to identify and address for cooperation those entities that directly or indirectly influence the field of road safety in the country through their focus and professional activities.

On the basis of the above identification, the following entities were asked by the MDV SR, as the manager and coordinator for the preparation of the draft strategy, to nominate an expert member responsible for the process of preparing the draft version of the strategy on behalf of the respective organisation: Ministry of Interior of the SR, Ministry of Education, Science, Research and Sport of the SR, Ministry of Health of the SR, Ministry of Environment of the SR, Ministry of Economy of the SR, Slovak Road Administration, Národná diaľničná spoločnosť, a. s. (National Motorway Company), Railways of the Slovak Republic, University of Žilina in Žilina, Slovak Chamber of Driving School Training Centres, Slovak Red Cross, Slovak Chamber of Psychologists, Association of Towns and Municipalities of Slovakia, Union of Towns and Cities of Slovakia, Association of Self-Governing Regions SK8, Výskumný ústav dopravný, a. s. (Transport Research Institute), Central Automobile Club Slovak Republic, Autoclub Slovakia Assistance, ČESMAD Slovakia, Cycling Coalition and Chairwoman of the MDV SR working group on improving the quality of driving school training centres. The draft material was also sent to the Association of Slovak Towing Services and Yellow Angel Assistance at their request. The nomination of an expert member from the above-mentioned entities was not proposed by the Ministry of Economy of the Slovak Republic and Výskumný ústav dopravný, a. s. (Transport Research Institute).

The wording of the draft strategy, including its implementation part (action plan) was sent to the entities that proposed the expert members for comments, subsequently consulted and modified in order to achieve the greatest possible consensus at the expert level, leading to the submission of quality material for the area of improving road safety in the Slovak Republic to the meeting of the Government of the Slovak Republic.

The financing of the measures of the strategy, the main objective of which is to reduce road accidents, will be implemented in relation to the amount of funds allocated in the respective budget year within the approved limits of the entities concerned and, where the rules for the use of EU funds so allow, also from EU funds and operational programmes. At the same time, once an expert working group has been established to implement and coordinate the implementation of the measures of the approved national strategy, its members should determine their expected average financial costs, coming from the entity's own budgetary resources, for the implementation of the measures of the strategy for the entire period of validity of the strategy.

5.2 ENTITIES INVOLVED IN THE IMPLEMENTATION OF THE STRATEGY

Considering the wide spectrum of entities directly or indirectly involved in the process of improving road safety in the country, it is necessary to ensure effective cooperation of these entities in the form of unambiguous management of their activities and close cooperation even after the adoption of the strategy by the Government of the Slovak Republic.

An appropriately set system of management of defined measures creates the preconditions that all entities will actively cooperate, thus avoiding inconsistency and uncoordinated activities with the possibility of achieving synergistic effects within the scope of each of these entities.

These are entities involved in the implementation of the measures of the strategy not only directly, i.e. in the form of an unambiguous position of the entity as a responsible or cooperating entity, but also indirectly - i.e. despite the fact that the entity does not have the position of a responsible or cooperating entity set out in the implementation part (action plan), it indirectly influences the area of road safety improvement by the nature and character of its activities.

For the purpose of implementing the measures of the strategy and achieving its strategic objectives, the following entities of the public, private and third sector are mainly concerned (extensive list of entities):

- Government, ministries and other central government bodies
- Organisations under the founding and management responsibility of ministries
- Higher territorial units (self-governing regions)
- Municipalities
- Technical inspection stations and technical vehicle inspection service
- Road administrators under public-private partnerships (concessionaires)
- Interest associations of legal persons in the field of road transport
- Interest associations of legal persons in the field of production and distribution of alcoholic beverages
- Driving school training centres
- Training centres carrying out compulsory basic qualification and periodic training of certain drivers
- Toll system operator
- Healthcare providers
- Healthcare organisations
- Rescue and emergency services - Integrated Rescue System (IZS)
- Education sector (kindergartens, primary and secondary schools)
- Scientific and research institutions
- Operators of children's traffic parks
- Transport and land-use planners, road safety auditors
- Traffic psychologists
- Transport companies and taxi services
- Manufacturers and importers of vehicles and their components
- IT sector and mobile applications developers
- Motoring associations
- Operators of professional safe driving centres
- Companies providing towing services
- Insurance companies
- Media, social networks
- Foundations, non-profit organisations and civic associations
- Social services for the elderly and pensioners' clubs
- Volunteers
- Private companies with their corporate social responsibility

The aforementioned entities can be considered as the primary ***users of the strategy***, but it should be noted secondarily that the user of the strategy is every individual who actively or passively enters the road traffic as a participant and thus influences the process of increasing road safety in the country by their degree and level of compliance with the road traffic rules.

5.3 (TAB. 8) ACTION PLAN FOR THE IMPLEMENTATION OF MEASURES OF THE NATIONAL ROAD SAFETY STRATEGY OF THE SLOVAK REPUBLIC 2021 – 2030

Sphere	No. of measure	Measure	Deadline	Responsible entities	Cooperating entities
Area of action No. 1: HUMAN FACTOR					
Law enforcement	**1.1**	Effective supervision of breaches of road traffic rules, which are the most frequent causes of road accidents	on an annual basis	MV SR	
	1.2	Effective supervision of compliance with road traffic rules on alcohol and other addictive substances	on an annual basis	MV SR	
	1.3	Effective supervision of compliance with maximum speed limits and safe distances for vehicles	on an annual basis	MV SR	
	1.4	Ensuring effective enforcement of controls aimed at compliance with legislation in road freight transport and bus transport, as well as setting sufficient penalties for non-compliance	on an annual basis	MV SR	
	1.5	Extending the performance of technical roadside inspections for vehicle categories M1 and N1 to a level corresponding to a share of at least 5 % of the number of vehicles of this category in the vehicle fleet of the SR	on an annual basis from 2023	MV SR	
	1.6	Ensuring the performance of special inspection departments exclusively for the performance of technical roadside inspections	on an annual basis	MV SR	
Awareness-raising	**1.7**	Awareness-raising activities focused on the risks of alcohol and other addictive substances in road traffic	on an annual basis	MDV SR, MV SR, MZ SR	SKVZA, ÚVZ SR, SČK, driving schools, SKP, transport companies, insurance companies, media
	1.8	Awareness-raising activities concerning the risks of speeding and failing to keep a safe distance between vehicles	on an annual basis	MDV SR, MV SR	SKVZA, driving schools, transport companies, insurance companies, media
	1.9	Awareness-raising activities concerning the risks associated with non-use of safety belts and child restraint systems in vehicles	on an annual basis	MDV SR, MV SR	MZ SR, SKVZA, driving schools, transport companies, insurance companies, media
	1.10	Awareness-raising activities concerning the risks associated with not being fully engaged in driving and distraction (phone and other mobile device use while driving)	on an annual basis	MDV SR, MV SR	SKVZA, driving schools, transport companies, insurance companies, media
	1.11	Involvement of driving school operators in the implementation of preventive activities to improve road safety	on an annual basis	SKVZA, driving schools	MDV SR, MV SR
	1.12	Supporting volunteer activities for improving road safety in the regions of the SR	on an annual basis	MDV SR, MV SR, SČK, VÚC, municipalities	ZMOS, ÚMS, driving schools, volunteers

Legislation	**1.13**	Consideration of the establishment of the Slovak Government Council for Road Safety	2022	MDV SR	MV SR, MZ SR, MŠVVaŠ SR, ÚMS
	1.14	Consideration of the possibility of creating a road safety fund, formed from a relevant source of state budget revenue	2023	MDV SR, MV SR	
	1.15	Dividing the driving course into theoretical instruction, culminating in an electronic theoretical test on the road traffic rules, followed by practical training, culminating in a driving test	2025	MDV SR, MV SR	SKVZA
	1.16	Updating the curriculum content of driving courses for driving schools, focusing on teaching and training in the areas where the most frequent causes of road accidents are recorded, with an emphasis on increasing drivers' consideration for the most vulnerable road users	2025	MDV SR	MV SR, SKVZA
Infra-structure	**1.17**	Alignment of maximum speed limits and the level of safety features placed on road sections in urban and rural areas	on an annual basis	road administrators	MV SR, MDV SR, ZMOS, ÚMS
Technical inspection	**1.18**	Effective exercise of state supervision over the activities of technical inspection stations	on an annual basis	MDV SR	TS TK

Sphere	No. of measure	Measure	Deadline	Responsible entities	Cooperating entities
Area of action No. 2: RISK GROUPS OF ROAD USERS					
Law enforcement	**2.1**	Effective supervision of compliance with road traffic rules on using retro-reflective elements in low visibility	on an annual basis	MV SR	
	2.2	Effective supervision of compliance with road traffic rules on using safety belts and child restraint systems	on an annual basis	MV SR	
	2.3	Effective supervision of compliance with road traffic rules concerning provisions on cyclists	on an annual basis	MV SR	
	2.4	Effective implementation of state professional supervision over the activities of driving schools and training centres	on an annual basis	MDV SR	
Awareness-raising	**2.5**	Effective implementation of theoretical teaching and practical training in driving schools and training centres carrying out compulsory basic qualification and periodic training of certain drivers, improving the quality of activities of driving schools and training centres	on an annual basis	SKVZA, driving schools, training centres	
	2.6	Awareness-raising activities concerning the risks associated with non-use of retro-reflective elements and visibility in road traffic	on an annual basis	MDV SR, MV SR	SKVZA, driving schools, transport companies, SČK
	2.7	Awareness-raising activities focused on risk factors in road traffic with emphasis on the most vulnerable road users (pedestrians, cyclists, motorcyclists, children and young people, seniors, novice drivers)	on an annual basis	MDV SR, MV SR	SKVZA, driving schools, transport companies
	2.8	Incorporation of proven methodological and practical procedures into the educational process of children and young people in the framework of traffic education at schools	on an annual basis	MŠVVaŠ SR	MDV SR
	2.9	Support for the operation and further development of the network of children's traffic parks with emphasis on increased participation and interest from pre-school and school facilities according to the possibilities of the ministry	on an annual basis	MŠVVaŠ SR	DDI operators, VÚC, municipalities
	2.10	Raising awareness of using bicycle as a means of transport promoting environmentally friendly and sustainable mobility through a nationwide campaign	on an annual basis	MDV SR, national cycling coordinator	Cycling Coalition
	2.11	Raising awareness of safe cycling rules through a national campaign	on an annual basis	MDV SR, national cycling coordinator	Cycling Coalition
Legislation	**2.12**	Re-evaluation of the effectiveness of the current system of traffic education in schools and the gradual introduction of a modern teaching system of continuous traffic education in schools, including the teaching of first aid	2023	MŠVVaŠ SR	MDV SR, MV SR, MZ SR
	2.13	Consideration of the possibility of introducing additional practical training for Group B licence holders to improve their practical skills in coping with risky situations in road traffic, with a focus on young drivers and novice drivers	2026	MDV SR, MV SR	scientific and research institutions
	2.14	Change of the subsidy mechanism for supporting the development of the network of children's traffic parks in the Slovak Republic, which will include, in addition to financial support for the operation and maintenance of existing DDIs, financial support for the establishment and construction of new DDIs	2023	MŠVVaŠ SR	MDV SR, MV SR

Sphere	No. of measure	Measure	Deadline	Responsible entities	Cooperating entities
Area of action No. 3: ROAD SAFETY					
Law enforcement	**3.1**	Introduction of a system of automated detection of breaches of road traffic rules for the purpose of dealing with them in the form of strict liability	2026	MV SR	MDV SR, road administrators
	3.2	Establishment of an expert working group to define the conditions for the introduction of a system of automated detection of breaches of road traffic rules for the purpose of dealing with them in the form of strict liability at the level of municipalities	2022	MV SR	MDV SR, ÚMS
Legislation	**3.3**	Transposition of Directive (EU) 2019/1936 of the European Parliament and of the Council of 23 October 2019 amending Directive 2008/96/EC on road infrastructure safety management	no later than by 17 December 2021	MDV SR	SKSI
	3.4	Updating of methodological procedures for the application of road infrastructure safety management tools and training of persons implementing these procedures	2022	MDV SR	SKSI, scientific and research institutions
	3.5	Ensuring that road users are informed about new traffic signs and traffic light signalling equipment at level crossings in accordance with Decree of the Ministry of Interior of the Slovak Republic No. 30/2020 Coll. on traffic signs	2024	MDV SR, road administrators, ŽSR	MV SR
	3.6	Legislative regulation of ensuring the participation of entities (road administrators, regional and local government, the Police Force) in the performance of commission inspections at level crossings in Decree of the Ministry of Transport, Posts and Telecommunications of the Slovak Republic No. 350/2010 Coll. on construction and technical rules of railways, as amended	2025	MDV SR	ŽSR, road administrators, MV SR, municipalities
Infra-structure	**3.7**	Preparation of an overview of accident locations on the entire road network	on an annual basis	road administrators, MV SR	MDV SR
	3.8	Implementation of activities resulting from the applicable legislation on road infrastructure safety management on the road network in the process of its design, construction and operation	on an annual basis	road constructors, road administrators	MDV SR
	3.9	Ensuring the professional training of competent persons in accordance with the current Road Safety Management Act and its implementing regulation	on an annual basis	MDV SR, accredited educational institutions	SKSI
	3.10	Installation of informative speed cameras in combination with information about a specific imminent road hazard	on an annual basis	road administrators	MV SR, MDV SR, ZMOS, ÚMS, municipalities
	3.11	Implementation of safety measures aimed at minimising risks at level crossings and in their vicinity	on an annual basis	ŽSR, road administrators	MDV SR, MV SR
	3.12	Implementation of safety measures aimed at minimising risks in road tunnels, their entrances and exits	on an annual basis	road administrators	MDV SR, MV SR
	3.13	Implementation of safety measures aimed at the visibility and clarity of horizontal and vertical traffic signs	on an annual basis	road administrators	MDV SR
Infra-structure	**3.14**	Implementation of safety measures aimed at modifications to allow the safe passage of migratory animals or to intercept them in order to prevent them from colliding with vehicles.	on an annual basis	MŽP SR, road administrators	ŠOP SR, MPRV SR, MDV SR
	3.15	Increasing the level of safety of pedestrian crossings	on an annual basis	road administrators	
	3.16	Application of traffic calming elements in municipalities and towns on sections with increased movement of vulnerable road users	on an annual basis	road administrators	ZMOS, ÚMS
	3.17	Construction of road infrastructure (bypasses and relocations)	on an annual basis	MDV SR, road administrators	
	3.18	Implementation of measures to improve the structural-technical parameters of roads	on an annual basis	MDV SR, road administrators	
	3.19	Building cycling infrastructure in urban and rural areas	on an annual basis	MDV SR, municipalities	national cycling coordinator
	3.20	Implementation of safety measures aimed at modification of shoulders and their surroundings	on an annual basis	road administrators	
	3.21	Using EU funding for road infrastructure projects	on an annual basis	MDV SR	road administrators
Science and research	**3.22**	Considering options to ensure that indirect road safety indicators are collected and evaluated to the greatest extent possible, in line with EU recommendations: – speed, alcohol, vehicle safety	on an annual basis	MV SR	scientific and research institutions
		– safety belts, safety features, inattention, infrastructure	on an annual basis	MDV SR	scientific and research institutions
		– post-accident care	on an annual basis	MZ SR	scientific and research institutions
	3.23	Making selected road accident data available to the public in the form of "open data"	on an annual basis	MV SR	all cooperating entities as relevant
	3.24	By 31 December of the current calendar year (y), quantify the amount of the expected available budgetary resources for the implementation of individual measures for the following calendar year (y + 1) with a view to the next two calendar years (y + 2, y + 3) and communicate it to the strategy coordinator.	on an annual basis from 2022	MDV SR, MV SR, MŠVVaŠ SR, MZ SR	all cooperating entities as relevant

Sphere	No. of measure	Measure	Deadline	Responsible entities	Cooperating entities
Area of action No. 4: VEHICLES AND TECHNOLOGIES					
Law enforcement	**4.1**	Ensuring a sufficient number of technical means for detecting the consumption of alcohol and other addictive substances when monitoring compliance with the road traffic rules	on an annual basis	MV SR	
	4.2	Ensuring a sufficient number of mobile equipment for technical roadside inspections in each region of the Slovak Republic	on an annual basis from 2022	MV SR	
Awareness -raising	**4.3**	Implementation of activities within the educational process aimed at raising awareness of the benefits of driver assistance systems to improve road safety, highlighting their operational specifics in the context of driving	on an annual basis	MDV SR	MV SR, SKVZA, driving schools
Legislation	**4.4**	Carrying out risk assessments of transport undertakings	on an annual basis	MDV SR	
	4.5	Implementation of EU legislation concerning the technical condition of motor vehicles into the legal order of the SR	on an annual basis	MDV SR	
Infra-structure	**4.6**	Introduction of modern technologies for monitoring, analysis and organisation of traffic on the road network	on an annual basis	MDV SR	road administrators, scientific and research institutions
	4.7	Implementation of traffic management systems aimed at ensuring right of way for emergency services	on an annual basis	MZ SR, MDV SR	MV SR, IZS, PHaZZ, road administrators
Science and research	**4.8**	Analysis of the readiness of road infrastructure and its components for the wider introduction of autonomous vehicles in the Slovak Republic	2025	MDV SR	MIRRI SR, road administrators, scientific and research institutions
	4.9	Support for research, development and testing of automated vehicles and their effects on road safety	on an annual basis	MDV SR	MH SR, MIRRI SR, scientific and research institutions

Sphere	No. of measure	Measure	Deadline	Responsible entities	Cooperating entities
Area of action No. 5: POST-ACCIDENT CARE					
Awareness -raising	**5.1**	Awareness-raising activities on first aid in road accidents	on an annual basis	MDV SR, MZ SR	SKVZA, SČK, ÚVZ SR
	5.2	Awareness-raising activities on the provision of assistance, counselling and follow-up care to road accident victims and other affected persons.	on an annual basis	MZ SR, SKP	
Legislation	**5.3**	Introduction of the MAIS3+ classification for determining the severity of injury in a road accident	2023	MZ SR	healthcare providers, IZS
	5.4	Introduction of the MAIS3+ classification in the statistical reporting of injury severity in road accidents	2024	MV SR	
	5.5	Putting in place the necessary measures to streamline procedures for removing obstacles to road traffic	2025	MDV SR, MV SR	ASOS

List of abbreviations:

ASOS	Association of Slovak Towing Services
DDI	Children's Traffic Park
EU	European Union
IZS	Integrated Rescue System
MDV SR	Ministry of Transport and Construction of the Slovak Republic
MH SR	Ministry of Economy of the Slovak Republic
MIRRI SR	Ministry of Investments, Regional Development and Informatization of the Slovak Republic
MPRV SR	Ministry of Agriculture and Rural Development of the Slovak Republic
MŠVVaŠ SR	Ministry of Education, Science, Research and Sport of the Slovak Republic
MV SR	Ministry of Interior of the Slovak Republic
MZ SR	Ministry of Health of the Slovak Republic
MŽP SR	Ministry of Environment of the Slovak Republic
PHaZZ	Presidium of the Fire and Rescue Corps
SČK	Slovak Red Cross
SKP	Slovak Chamber of Psychologists
SKSI	Slovak Chamber of Civil Engineers
SKVZA	Slovak Chamber of Driving School Training Centres
SR	Slovak Republic
ŠOP SR	State Nature Conservation of the Slovak Republic
TS TK	Technical inspection service
ÚMS	Union of Towns and Cities of Slovakia
ÚVZ SR	Public Health Authority of the Slovak Republic
VÚC	higher territorial unit (self-governing region)
ZMOS	Association of Towns and Municipalities of Slovakia
ŽSR	Railways of the Slovak Republic

5.4 MONITORING SYSTEM FOR THE IMPLEMENTATION OF THE STRATEGY MEASURES

Monitoring and evaluation of the implementation of the medium-term strategic objectives of this strategy and the measures of the Action Plan for the Implementation of Measures of the National Road Safety Strategy of the Slovak Republic 2021 – 2030 is carried out by the responsible entities on an annual basis in the form of submitting a ***report on the implementation of the measures of the strategy*** for the relevant entity for the period of the previous calendar year, in compliance with the following requirements:

a) The entities submit reports on the implementation of the measures of the strategy to the strategy implementation manager and coordinator in electronic form;

b) The entities submit a report on the implementation of those measures of the strategy which have been determined by the strategy and have been scheduled for the period of the calendar year for which the information on the implementation of the measures of the strategy is being prepared for the meeting of the Government of the Slovak Republic, as well as the measures of the strategy with an annual deadline for their implementation;

c) The entities submit a report on the implementation of the measures of the strategy to the strategy implementation manager and coordinator in an appropriate textual scope, taking care to ensure that the report on the implementation of the individual measures of the strategy is factual, complete and specific;

d) In the report on the implementation of the measures of the strategy, the entities ensure that the implementation of individual measures of the strategy is linked to the measurable indicators, and for each measure they also assess its implementation through the relevant measurable indicator(s);

e) If for objective reasons the entity has not implemented a specific measure in a given calendar year, for which information on the implementation of the measures of the strategy is prepared for the Government of the Slovak Republic, this fact shall be stated in the report, including a justification of the reason and an updated date when the measure will be fulfilled

Each year, on the basis of the submitted reports on the implementation of the strategy measures, the strategy implementation manager and coordinator shall prepare the material ***„Information on the Implementation of Measures of the National Road Safety Strategy of the Slovak Republic 2021 - 2030 for 20xx"***, which shall be submitted as an informative material to the Government of the Slovak Republic by 30 June of the calendar year at the latest.

5.5 PREVENTION OF RISKS AFFECTING THE ACHIEVEMENT OF THE STRATEGY OBJECTIVES

A ***SWOT analysis*** - an assessment of strengths, weaknesses, opportunities and threats to the achievement of the strategy's objectives and the implementation of the strategy's measures – is considered to be an appropriate analytical method for identifying potential risks to the fulfilment of the strategy's strategic objectives.

Based on the results of this analysis, it will be necessary to guide the implementation of systemic actions.

TAB. 9 SWOT ANALYSIS

Strengths	Weaknesses
• support and prioritisation of the topic by the EU and international organisations, • a relatively stable downward trend in the basic statistical indicators of road accidents in the previous Decade of Action, • a relatively stable cross-cutting department supporting the development of transport and its safety, • professional experience and practical examples from past Decades of Action, • experience of inter-ministerial cooperation in the implementation of preventive activities, • increasing interest of private and third sector entities to participate in improving road safety.	• long-term underfunding of prevention activities by ministries, • a relatively fragmented and opaque road safety management model, • a relatively weak organisational position of the road safety authority (unit) and its limited capacity to coordinate other entities in the process, • long-term understaffing of the road safety authority (unit), • insufficient cooperation at the level of higher territorial units and municipalities in the implementation of preventive activities in the regions, • the long-term absence of a national media campaign for road safety, • varying levels of quality in the teaching of traffic education in schools, • the insufficient number of children's traffic parks in the country and the associated difficulty for pupils to access practical training in them, • weaker interest of the national media to promote road safety issues under favourable conditions for public authorities as a service of general interest, • declining interest in organising voluntary preventive activities, • the absence of a number of statistical indicators on road safety in the country.
Opportunities	**Threats**
• deepening inter-ministerial cooperation, • strengthening cooperation at regional level, • enhancing international cooperation at EU level, • active membership of the Slovak Republic in European and international road safety organisations, • active use of EU funding and involvement of the Slovak Republic in EU grant programmes to improve road safety, • revising and modernising the curriculum for applicants for driving licences, • more intensive involvement of driving schools in the organisation of preventive activities, • revising and modernising the traffic education system in schools, • upgrading, expanding and supporting the network of children's traffic parks in the country, • implementation of national prevention campaigns through the media, • greater use of research and scientific knowledge in practice.	• prioritisation of other national policies at the expense of road safety policy, • reducing the State budget's available resources for individual ministries, • reducing the number of civil servant posts in individual ministries, • reintroduction of measures related to the spread of COVID-19 and related restrictions on the organisation of mass prevention activities for the public, • an increase in the number of registered motor vehicles in the Slovak Republic, • underestimation/ trivialisation of road hazards by the general public, • the possible disappearance of a number of existing children's traffic parks in the country due to the rising costs of operating them.

6.
CONCLUSION

The road transport sector represents an important integrating element in the daily life of the majority of the population, whose activity significantly transcends the territory of the Slovak Republic and creates its international character. The possibility of free movement of people, goods and services through the transport infrastructure creates the prerequisites for raising the standard of living of the inhabitants of the Slovak Republic and facilitates the development of their economic, social, educational and societal activities. In this context, therefore, the main effort of all stakeholders is to create a transport space whose qualitative and quantitative parameters are aimed at a safe and at the same time fast, comfortable, economical and environmentally friendly movement on the route between the source and the destination of interest. Functioning within the European transport area, of which the Slovak Republic is an integral part, establishes a common responsibility of the EU Member States for the implementation of measures aimed at the highest possible increase in the level of road safety .

Issued by
MINISTRY OF TRANSPORT AND CONSTRUCTION
OF THE SLOVAK REPUBLIC
2022

MINISTRY
OF TRANSPORT
AND CONSTRUCTION
OF THE SLOVAK REPUBLIC

ISBN 978-80-973509-5-6