



SAFE SYSTEM

from Agilysis

Adoption of the Safe System
Only Zero is acceptable





WHAT IS THE SAFE SYSTEM?

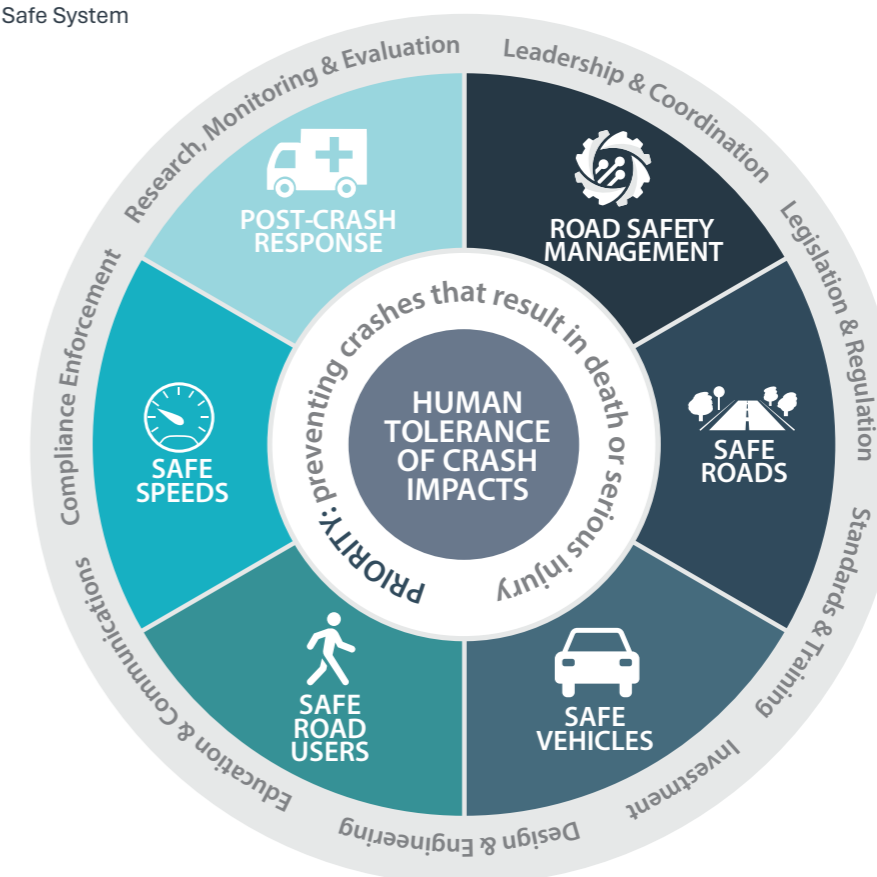
The Safe System approach is the best road safety solution out there. It is internationally endorsed for a reason – it is proven to be effective. Governments and highways authorities globally have committed to Safe System delivery as the roadmap to achieving Vision Zero and deliver on the many co-benefits it brings – from more active citizens and liveable streets to more efficient and safe mobility, where people genuinely feel safe and are free from unacceptable levels of risk¹.

Before this pioneering and evidence-led concept gathered momentum in the 1990s, approaches devised to improve road safety performance were often reactive, unsystematic, and based on an outdated and fatal assumption that the people who use roads everyday are the problem.

Times have changed, and it's time to embrace the opportunities afforded by a better understanding of how and why collisions occur and generate such a high burden of injury. It is quite frankly unethical to continue to accept this burden, as is choosing not to play a key role in combating poor road safety performance.

The principles and levers which underpin the Safe System represent a very different route to the traditional approach, which was based on narrow assumptions. These principles inform everything that needs to be done to alleviate the burden of injury; where road safety management is proactive, systematic, and based on the evidence – giving everyone a part to play and a shared vision of what their road transport system can be when people and their safety are at its centre:

Figure 1 - The Safe System



Source: Agilysis, 2023, building on models from Canadian Council of Motor Transport Administrators, 2016; Loughborough University, 2017; New Zealand Transport Agency, 2019; Commonwealth of Australia, 2022

¹ World Health Organisation (2021) Global Plan for the Decade of Action for Road Safety 2021-2030. Geneva

Figure 2 - Safe System Principles



People make mistakes

It is important that road users are compliant with the rules of the road, but many fatal or serious injuries are sustained because an error or lapse took place, and the road system could not protect those involved. It is almost impossible to eliminate all mistakes so instead, we need to build a system which combines to reduce their impact.

Humans are vulnerable to injury

We are not designed to withstand the forces involved in road collisions. This is particularly true for vulnerable road users who are cycling, walking, riding a horse or motorcycle, as they don't have the protection offered by cars, vans, buses, or trucks. Even within vehicles, the human body is fragile, and this is particularly true for children and the elderly.

Death and serious injury are unacceptable

Road traffic injury is not and cannot be a tolerated by-product of mobility. The Safe System does not aim to just reduce deaths and serious injuries but to eliminate them, hence the Vision Zero goal.

Responsibility is shared

The Safe System isn't about victim blaming. Instead, there is a recognition that a combination of factors lead to death and serious injury and that responsibility is shared amongst those who design, maintain, operate, and use roads and vehicles to eliminate risk. We all have a part to play.

Approach is proactive

Rather than reacting to specific incidents and working in isolation to reduce casualty problems, the Safe System is proactive. It is about adopting a systematic approach to building a safe road system, proactively identifying, targeting, and treating potential risk.

Actions are systemic

It requires a combined approach to strengthen all aspects. The Safe System requires us to bring together Safe Speeds, Safe Roads, Safe Vehicles, Safe Road Users, and high-quality Post Collision Response to reduce the impact of collisions and eliminate the likelihood of death or serious injuries.

It is difficult to argue with these principles – we all know that mistakes can happen when we use the roads, even if we are trying our best to do the right things. Almost no-one heads out intending to be involved in a crash. Basic physics tells us that the human body is not able to cope, unharmed, from the energy generated by road collisions –

even with protective clothing and in-vehicle protection systems, our bodies are still vulnerable to injury. However, just because our bodies are fragile and mistakes happen all the time, we shouldn't accept death or serious injury. We all have the right to safe mobility.

Figure 3 - UN Decade of Action for Road Safety Global Plan



Source: <https://www.who.int/publications/m/item/global-plan-for-the-decade-of-action-for-road-safety-2021-2030>



WHY ADOPT THE SAFE SYSTEM TO ACHIEVE VISION ZERO?

Roads connect people and place, and for roads to work, they need to work safely. To really tackle the extent of how unsafe our networks continue to be for many people in our communities, it requires a collaborative approach. This inevitably involves all public, private, and third sector partners who have a role to play in delivery in some way. You are not alone; by adopting this way forward, you contribute to efforts currently underway and motivate others to play their part.

It is imperative to adopt the Safe System not only because it is proven to be the best model to guide us in achieving road networks free from serious and fatal injury – but to join others who are following in the footsteps of those

early pioneers (locally, regionally, and nationally); collectively we can leverage our influence and amplify the effects of those co-benefits of healthier communities, social cohesion, cleaner air, less congestion, and helping to tackle climate change.

Examples of regional and local leadership on Vision Zero, based on the Safe System, show us that we can be guided by the evidence and enhance safety on local roads². Adoption of the Safe System means we take the commitment to a shared Vision Zero goal to the next level, where practicable implementation can take place. In doing this, we take on a level of ownership that means we can address the large-scale levels of risk that are present.

Figure 4 - Kinetic energy increases risk



² ITF (2022), The Safe System Approach in Action. Research Report. OECD Publishing. Paris

SAFE SYSTEM LEVERS

Action is required across the Safe System and these actions should be supported in various ways, which we call ‘levers.’ Without design and engineering, there are no roads or vehicles; without legislation and regulation, there would be no established expectations around how they could be used; without research, monitoring, and evaluation, we would have no information around road safety performance on our network, or about the effectiveness of the interventions we deploy in eliminating death and serious injury.

The eight levers bring focus on what is being carried out, and where attention

is needed:

- Leadership and Co-ordination
- Legislation and Regulation
- Standards and Training
- Investment
- Design and Engineering
- Education and Communication
- Compliance and Enforcement
- Research, Monitoring and Evaluation



BUT WHAT ABOUT THE CRITICS?

The Safe System and the shared goal of Vision Zero are not without their critics³. They are, for some, deemed too hard, overly ambitious, unnecessarily cumbersome, highly unrealistic, distracting, and only useful as ‘theories’. Whilst such criticisms are often put forward as well-meaning notes of caution, these criticisms do not ring true, and importantly, they demonstrate how well the approach has disrupted the status quo that has fatefully led us to the stagnant levels of road safety performance we see today⁴. We can secure buy-in by being honest about the challenges, whilst recognising that critique of the Safe System approach is healthy. It helps to foster more efficient implementation for everyone.

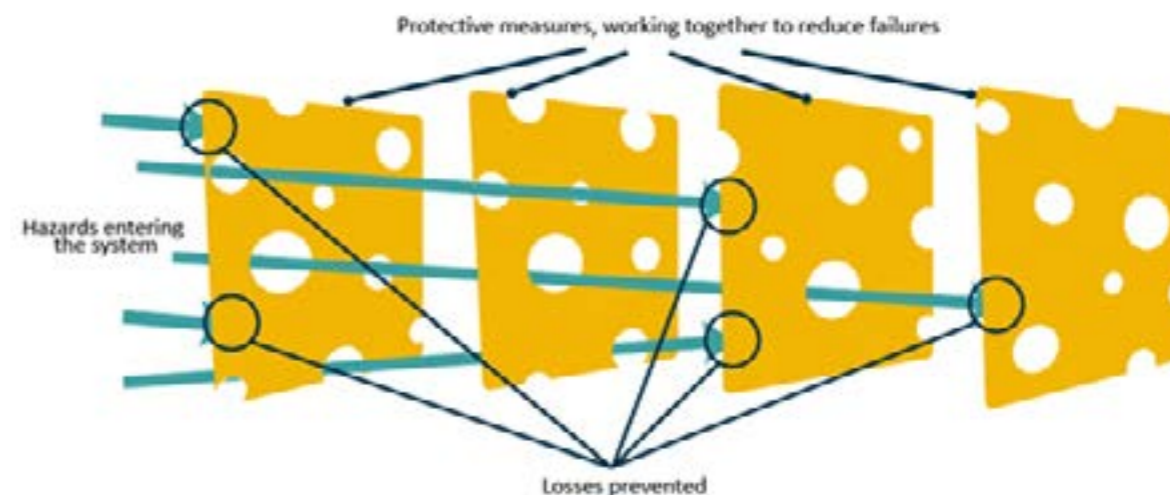
If Safe System implementation is too hard, then how come huge progress has been made internationally in building capacity that has resulted in safer roads? Success is everywhere if you look: just ask the Swedes, the Norwegians, the Dutch, the Australians, and many others across the globe who have committed, delivered, and who continue to deliver in this way. Norway consistently ranks as having amongst the safest roads in the world; Swedish research has been a primary driver of international road safety development; Dutch road design and active travel approaches are consistently cited as a benchmark of best practice.

For those who say it is too cumbersome and unrealistic, then how come even smaller countries and jurisdictions have taken up the mantle and delivered? Lithuania experienced a 50% reduction in road deaths between 2011 and 2021 thanks to new investments and the renewal of critical actions. We have included four case studies overleaf to

explain how others have implemented the approach.

It can be done. We know this because it is being delivered with astonishing results, even in the most unexpected of places. The question for us all is, do we want to contribute to and build capacity for all who use our local networks?

Figure 5 - Combining interventions to prevent fatal and serious crashes



³ Abebe, H., Hansson, S. O., Edvardsson Björnberg, K. 2022. Arguments against Vision Zero: A literature review. Forthcoming in Edvardsson Björnberg, K., Belin, M-Å., Tingvall, C., Hansson, S. O. (eds) The Vision Zero Handbook. Springer, New York.
⁴ See Agilysis (2021) GB Road Safety Performance Index: Restoring Momentum, Improving Local Authority Road Safety Performance over the Next Decade.



IS VISION ZERO A STEP TOO FAR?

The elimination of serious and fatal injury is about as ambitious as it gets but does this mean it is a step too far? Definitely not. Vision Zero is very much a journey. No-one expects the burden of injury on any road network to evaporate upon immediate adoption of the Safe System. If we all agree that no one should be killed or seriously injured as a result of collisions that occur on our roads, then we cannot at the same time believe that Vision Zero is a step too far – it is a moral, ethical and operational necessity to have a Vision Zero Goal as a shared objective. It can never be ethically acceptable that people suffer life-changing injuries or worse when simply using our roads. It is inevitable that people will make mistakes from time to time; it is immoral if we ignore this reality. For our roads to operate safely, unique responsibilities must sit with designers, operators, and managers. To expect road users to carry the primary burden for road safety performance is not in line with the Safe System.

By adopting Vision Zero, we encourage our partners and others to really deliver against interim targets and milestones, generate accountability, and bring safety to the heart of transport policy and public awareness. The more of us who sign up, the greater our chances of collective success. We can either lead

by example or follow more traditional courses of action. Many cities, regions, and countries are setting ambitious and challenging targets because they call everyone to action and focus efforts on the best interventions⁵. Only by taking the lead will things change.

⁵ PACTS (2010). Policy Briefing – a Vision for Road Safety: the role of road safety strategy and casualty reduction targets beyond 2010.

CASE STUDY 1

Case Study 1: Lithuanian improvements to national road safety performance

Country: Lithuania

Success: Recipient of European Transport Safety Council (ETSC) Road Safety Performance Index (PIN) Award for 2022 in recognition of major achievements in road safety over the last decade

Relevance: Case study demonstrates how comprehensive attention across the different components of the Safe System and the supporting levers can produce astonishing improvements in road safety performance.

Details: 8 core areas where actions were identified as the key drivers of success:

- **A long-term national road safety programme with a target of further reducing deaths by 50% by 2030, with Vision Zero by 2050.**
- In-depth collision investigation of all fatal vehicle crashes since 2019.
- The development of a new traffic collision information system designed to better capture accurate road death and injury statistics, incorporating data from hospitals.
- A nationwide programme since 2018 to audit pedestrian crossings and improve the level of safety.
- A substantial increase in cycling infrastructure in Vilnius, the capital city, from 40 km in 2015, to a target of 160 km by 2023.
- Average speed cameras introduced in 81 road sections since 2018. 400 fixed speed cameras also introduced.
- Zero-tolerance blood alcohol concentration limits for professional and novice drivers, and 0.4 g/l for all others.
- An alcohol-interlock programme for drink-driving offenders, as an alternative to a driving ban – in operation since 2019.

Source: Carson, J., Jost, G., Meinerio M. (2022) *Ranking EU Progress on Road Safety: 16th Road Safety Performance Index Report*. European Transport Safety Council

CASE STUDY 2

Case Study 2: Continual success from 'Sustainable Safety'

Country: The Netherlands

Success: Ongoing success based on their holistic 'Sustainable Safety' approach to road safety management

Relevance: The success of Sustainable Safety since the 1990s has established many of its core priorities and actions as synonymous with what good Safe System practice looks like today across the globe. The approach cemented the power of strategic action on road safety as the way forward – a dramatic shift away from decades of siloed operations.

Details: Sustainable Safety in The Netherlands has specifically brought together and galvanised leadership and governance; stakeholder engagement and partnership working; urban and transport planning; funding; political and corporate decision making; as well as knowledge sharing and promotion as key pillars of success:

- **Establishment of robust institutional governance and strategy:** To support large scale interventions such 30km/h zones, municipal, provincial, and national stakeholders were sought out for buy-in to such interventions. After key agreements had been secured, comprehensive guidelines and recommendations were produced through collaboration of all partners. This work help set a precedent for ongoing support for shared responsibility, which now manifests in continued demonstration projects and proactive measurement of safety performance indicators as part of wider transport strategies.
- **Strengthening parts of the system together:** Lowering speeds to within levels of peoples' limited tolerance to collision forces was quickly identified as something that required action to better determine road function and categorisation. An equal focus on what road users expect and on what the road transport system requires of its users has been a core tenant of efforts to strengthen different parts of the system, for roads that are self-explaining and where interaction is intuitively and safe.
- **Prevention of exposure to excessively large forces:** A focus on active travel and appropriately safe infrastructure to support more active choices and modal shift has been a cornerstone of how authorities in The Netherlands adhere to the imperatives of Vision Zero. This recognises that the system is only as strong as its weakest part and the innate safety of those most susceptible to collision forces. This means proactively reducing conflicts between motorised and non-motorised users, as well as preventing large differences in speed, mass, and direction where modes shared road space.

Source: SWOV (2018) *Sustainable Safety 3rd Edition – The Advanced Vision for 2018-2030*. The Hague, Institute for Road Safety Research.

CASE STUDY 3

Case Study 3: Safe System Assessments for project delivery

Country: New Zealand

Success: Development of a robust Safe System road auditing methodology

Relevance: Demonstration of how the principles of the Safe System can be embedded into assessment protocols for improved auditing processes at the national and regional level.

New Zealand's national transport authority, Waka Kotahi New Zealand Transport Agency, and Auckland Transport have played a leading role alongside others in Australasia (notably Austroads) in developing auditing processes that reflect the imperatives of the Safe System.

Embedding Safe System Assessments into New Zealand's road safety audit guidance was a key activity under the Road to Zero Action Plan 2020-22, with Auckland Transport having taken steps to incorporate Safe System assessments into Enterprise Project Management Frameworks.

The development of these assessments shows how regional and national leadership efforts can positively influence one another, contributing to more uniform and valuable delivery of road infrastructure projects that are safe and grounded in the most up-to-date thinking.



Source: Waka Kotahi New Zealand Transport Agency

Source: Waka Kotahi New Zealand Transport Agency (2019) *Road to Zero: New Zealand's Road Safety Strategy 2020-2030*. Wellington

Austroads (2016) *Safe System Assessment Framework*. Austroads. Sydney

CASE STUDY 4

Case Study 4: Exemplary improvements to urban road safety performance

Country: Norway

Success: No vulnerable road user fatalities in Oslo for a year

Relevance: Demonstration of how the challenges of addressing urban safety can be overcome through a Safe System approach

- In 2019, 85% of serious injuries in Oslo occurred for vulnerable road users (pedestrians, cyclists, and motorcyclists).
- Norway implemented Vision Zero nationwide in 2002, 5 years after Sweden.
- In 2020, Norway recorded the world's safest roads in terms of road deaths per vehicle kilometres travelled for the fifth year in a row.
- **No vulnerable road users lost their lives in the city for an entire year.**
- National regulations on vehicle safety, speed limits, and highway design provide a foundation for Oslo's efforts.
- Norway acknowledged that to increase walking and cycling, these activities need to feel safe (as well as be safe). In 2013, an ambitious new cycling strategy was developed to make streets safer and to make them feel safer. It led to strong political support, with investment in street improvements, bike lanes, and public transit funded by Oslo's many toll roads.



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View of the street Åkebergveien in Oslo, Norway. Parking was removed to make room for a temporary bike lane going uphill before the street was rebuilt.

Source: Belin, M.; Hartmann, A.; Svolsbru, M.; Turner, B. & Griffith, M.S.; *Applying a Safe System Approach Across the Globe*, Public Roads – Winter 2022, Vol. 85 No. 4, (US Federal Highways Administration, 2022)



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