



Vision for safe and healthy mobility







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A word from the Board of Trustees

Brake's vision and campaign agenda rightly takes a 'vision zero' approach to achieving safe and healthy mobility.

This approach requires the charity to learn from, communicate and advocate for evidenced solutions, many relating to the design of our roads and vehicles, the standards of our driver regulatory systems and, crucially, government management and leadership - through targets, action plans, collision

investigation, standards-setting and reporting. We strive to seek out the solutions and examples of what works, both from academia and practitioners, and campaign for these solutions to be adopted widely, now.

The charity's time is rightly divided between providing victim support services and advocating for change to prevent collisions. Our victim support services keep us grounded in reality, in our understanding of the brutality of the epidemic and its devastating effect on families and communities. This reality drives what we do; emphasising the urgency of our work. It drives us to work in ways that are partnership-led, so collective voices of reason can be heard and effect the change needed.

Collectively, this approach is summarised in our values, outlined in this vision: to do the right thing, aim high and work together. The preparation of this vision and campaign agenda is a case in point – it has been prepared with the involvement and support of internationally renowned experts in the field of road safety, working alongside our dedicated Brake team of staff.

The Board of Trustees represents a range of interests and expertise relevant to Brake's work and commends this vision and campaign agenda wholeheartedly.

Richard Cuerden, trustee, on behalf of the Board





A word from the chief executive

There is a preventable epidemic on our roads, killing our next generation and causing life-long disabilities such as paralysis, serious head injury and amputation. Road crashes are the biggest global killer of people aged 5 to 29; 1.35 million deaths a year.

Vehicles kill in other ways too; their emissions contribute to global warming and poison the air we breathe. People are spending less, or no, time walking or cycling. Poisonous air and lack of daily exercise contribute to a range of illnesses and early death.²³

The cause of the epidemic is the global habit of driving cars, badly. Drivers fail to predict, see, or react to hazards, often when driving too fast, or when

overtaking, pulling out at a junction or reversing. There are many reasons why. Sometimes drivers are intoxicated by alcohol or drugs, are ill, or have poor eyesight. Sometimes they lack driving knowledge and skills because they are new drivers, or their skills have deteriorated. Often drivers who kill and maim are people who have simply lost concentration or been tempted to take a risk. They have accelerated, answered a phone call, or driven when tired.

The epidemic hits the poorest hardest. Most casualties occur in low- and middle-income nations, where there is rapid paving of roads, connecting rural areas. But as paved roads grow, so they are filled with traffic, without separate space being built for people cycling or walking. Some of the poorest people in the world are most likely to be killed or hurt and be affected by poisonous air because they live near busy roads without pavements or cycle paths, do not own a car, and do not have access to modern emergency services and hospital care. Comparatively wealthy people in rich nations are also affected however; deaths and injuries happen everywhere there are roads. In some of the richest nations, fear of vehicles encourages parents to move children by car, rather than allow them to move in active ways that enable health.

Wherever a death or serious injury occurs in the world, the effect on families is devastating. There is now global recognition that action must be taken from the top. The urgency of tackling the epidemic is recognised by the United Nations in its **Sustainable Development Goals,** the **Decade of Action for road safety** and the **New Urban Agenda**.

Thanks to the brilliance and innovation of town planners, vehicle designers and road engineers, design-led solutions have been developed that can deliver safe and healthy mobility. Leaders of our most progressive governments and cities are backing these solutions. The solutions recognise that: people and vehicles don't mix; the higher the speed, the higher the chance of harm; and that people deserve communities that are free from fear and pollution. We must move at speeds, and in ways, that are healthy and allow us to make mistakes without causing death or injury to ourselves or others.





A word from the chief executive (continued)

We must:

- support governments in setting targets, action plans and standards, and investigate and report on collisions;
- give people the separate space they need to walk, cycle, meet and play, away from motorised vehicles:
- design our vehicles so they stay below speed limits and in lane, and they can predict, detect and stop for hazards and cause less harm if they crash;
- design roads with limits that are appropriate for safety, and infrastructure such as crash barriers;
- give people trains and buses that connect them with cycle paths and footpaths; and
- exclude certain vehicles from certain roads at certain times, such as large lorries from city centres.

We can, even, hope for an entirely driverless future thanks to developments in vehicle technology; and, in the meantime, regulate and police drivers to help them to be safer – and punish offending drivers in robust and just ways.

The enormous economic burden of the epidemic, in medical, social and other costs, outweighs the cost of the solutions. It is unacceptable and unethical⁸ to let it continue, and it is the duty of every government to fix it, now. It is also everyone's duty, from the smallest community to the largest corporation, to call on governments for the changes we need, where we live, now, while also being part of the solution, doing everything we can to drive safer vehicles, be safer drivers, drive less or not at all, and influence and manage the choices of others too. We must work together to stop the carnage

Mary Williams OBE





Our vision

Everyone moves in a safe and healthy way, as part of our normal day.

Safe and healthy mobility is everyone's human right wherever we are; in cities, towns, villages or moving between places.

On short journeys, it is normal, safe and healthy to travel in active ways, such as walking and cycling.

On longer journeys, it is normal, safe and healthy to use transport we share with others and get to this transport actively, by walking or cycling.

Vehicles serve our needs and don't get in our way or poison the air we breathe. A death or serious injury on roads is a rare and unusual event.

Our values

Do the right thing – We champion proven solutions that: enable people to be safe and healthy; and enable care for road crash victims.

Reach high – We demand and expect ambitious change in light of the gravity of the atrocities.

Work together – We can all be part of the solution and we will work with everyone who shares our vision and values.



The preventable epidemic

There is a preventable epidemic on our roads.

Carnage - Road crashes are the biggest global killer of people aged 5 to 29: 1.35 million deaths a year. There are many more horrific injuries, causing disabilities such as paralysis, serious head injury and amputation.

Pollution and disease – Vehicle emissions contribute to global warming and poison the air we breathe. Too much use of cars means many people spend less or no time walking or cycling. Poisonous air and lack of daily exercise both contribute to a range of illnesses and early death. ^{10,11}

Unhappiness – When we have too many vehicles, we have less space for people. Too many, and fast, vehicles cause fear, stress and anxiety, social isolation and noise, and their emissions smell bad.

Inequality – Poor people are less likely to own cars and more likely to live near busy roads. They face a higher risk of being hit while trying to get about. They spend more time breathing dirty air and exposed to traffic noise.

Cost – Deaths and injuries from road crashes, and from illnesses related to air pollution and lack of physical activity, ¹² damage national and regional economies, particularly the loss of the economic contributions that would have been made by the people killed and injured. There is also the expense of emergency services, hospital care, the costs of caring for people with disabilities, and the costs of caring for dependants of working adults who have died or been disabled and cannot work.

The urgency of tackling the epidemic is recognised by the United Nations in its Sustainable Development Goals, 13 the Decade of Action for road safety, 14 and the New Urban Agenda. 15

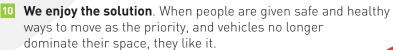
The epidemic is possible to solve in ways that will save money and deliver social and environmental benefits. It is unacceptable and unethical ¹⁶ to let the epidemic continue.



Our people principles

We believe achieving safe and healthy mobility means understanding people and their needs.

- 1 **We make mistakes**. The way we move must allow us to make mistakes without causing harm to ourselves or others. People and vehicles don't mix, and the higher the speed, the higher the chance of harm.¹⁷
- We need to be active, a little and often. Moving our bodies actively as part of our daily lives by walking and cycling means we are fitter, more disease-free, live longer and feel happier. 18
- **We have human needs**. We need to be free from fear of vehicles or attack. We need well-lit and clean spaces to move, meet, play and rest. We need clean air and access to shelter, water and toilets.
- We want life to be a rich experience. When walking and cycling, at our transport hubs, and in public places, we want to be able to meet and talk with each other, use our devices, or have things to see and do that are pleasant and interesting.
- **We like an easy option**. We choose to walk, cycle and use public transport when it is the obvious, easy choice.
- **We want to move at our own speed**. People who are walking and cycling want to go at their own speed. We don't want to feel held up or rushed. Drivers want to go at their own speed, often too fast for safety, and need help slowing down.
- **We are different, and equally deserving**. Everyone, including children, adults old and young, and people dealing with deprivation, disability and illness, needs safe and healthy mobility, wherever we live and wherever we are trying to go.
- **We are not defined by our transport**. We are not motorists, cyclists, pedestrians or bus users. We are people, who get around in different ways at different times.
- **We are passionate about mobility**. People want a chance to speak up about the ways they move and the challenges they face, and value being given a voice.







The cause of crashes

Most deaths and injuries on today's roads are caused by unsafe driver behaviour. Although it does happen, it is much rarer for something to go wrong with a vehicle.

Drivers cause deaths and injuries when we fail to predict, see, or react to hazards.
We do this when:

- driving too fast for the time we need to maintain control of our vehicles, think, slow and stop;
- manoeuvring when it isn't safe, such as when overtaking, pulling out at a junction or reversing.

Psychologists have found that driving safely, all the time, is a challenge for normal people. 19 We sometimes fail to predict, see or react to hazards because we:

Lack knowledge and skills. We are new drivers, or our knowledge and skills have deteriorated. Sometimes, we think our knowledge and skills are better than they are.

Lose focus. We want to focus on safety but are influenced more by other thoughts, feelings, people and things.

Are unfit. Poor health means we are unfit, ranging from poor eyesight to many diseases that can impair our mental or physical fitness to drive.

Are intoxicated, by alcohol or drugs.

Get tempted by the opportunity to take risks. We press the accelerator because we are in a rush, or check our phones to stay connected, or drive tired because we want to get home.

Have bad habits. We did something wrong before and we didn't crash. So, we do it again, and again.

There is much that can be done to try to help drivers be safer, and we must. Governments can better regulate drivers, with licensing and traffic rules, road policing and penalties that are robust and just. Businesses that move goods and people using roads can set policies and procedures to manage their drivers. Everyone who drives can try as hard as possible to drive as safely as possible; and influence their family and friends' behaviours as drivers too.

However, because of human nature, it is unrealistic that such measures will result in all drivers driving safely all the time. It is widely understood, therefore, that efforts to achieve safe drivers alone will not solve the epidemic and shouldn't be our main approach. We must concurrently work to improve transport in ways that mean drivers' mistakes can no longer cause death or serious harm and people are enabled to move in active ways and using public transport. This means a focus on design.

We must redesign our cities, towns and villages; our transport between places; and our vehicles.







Achieving safe and healthy mobility by design

The epidemic on our roads is not impossible to solve. Town planners, highway engineers and vehicle engineers have the solutions already that can give us safe and healthy mobility. They can achieve this through better design of our cities and towns, roads, public transport systems and vehicles.

Road safety professionals call this a Vision Zero approach, or a safe systems approach. 20,21 Public health professionals talk about Healthy Streets^{22,23} and Healthy Towns.²⁴

Safe and healthy cities, towns and villages

Our cities, towns and villages can be designed so the 'space between our buildings' is largely free of vehicles, with routes and space mainly for people to walk, cycle, play and meet.

Safe and healthy transport between places

Our roads between places can be designed to have lower speed limits, or to tolerate higher speeds (for example, there are crash barriers separating vehicles from oncoming vehicles). Our train and bus networks can be designed to connect with each other and with our cycle paths and footpaths.



Safe and healthy vehicles and drivers

Our vehicles can be designed with active safety systems that keep vehicles below speed limits (Intelligent Speed Assistance) and that predict and detect hazards and stop in time (Autonomous Emergency Braking). They can be designed with passive safety systems that mitigate damage caused to people when vehicles do crash, and with low or zero emissions. We can ban vehicles that are unsafe or polluting. We can encourage and fund innovation that may give us a driverless future, through connected and autonomous vehicles (CAVs). (Connected vehicles communicate with each other and with road infrastructure. Autonomous vehicles don't require drivers and may also communicate with each other and their surroundings.) While we are planning for a driverless future, we can, in the meantime, better regulate drivers, with more robust rules, traffic policing and just penalties.

Is it happening?

There is much to be done. But some leaders are showing the way. From Boston²⁵ to London.²⁶ governments and mayors are setting dates to achieve zero road deaths and injuries and no emissions from vehicles, with 2040 or 2050 common deadlines. They are starting to transform roads, the vehicles on them and public transport systems. They are sharing their knowledge with each other, such as Transport for London's Bus Safety Standard and its Healthy Streets toolkit.27 Even in some of the poorest nations, governments are waking up to the epidemic and starting to take steps, such as banning the most dangerous vehicles.





The world that progressive leaders, engineers and planners are trying to create

Below is painted a picture of the world that progressive leaders, engineers and planners are trying to create, in line with Brake's vision of safe and healthy mobility.

Safe and healthy cities, towns and villages

- The spaces between buildings prioritise people above vehicles. The space lets us move, rest and meet, play and be safe. We have unimpeded, well-lit, obstacle-free cycle paths and footpaths, with well-lit, well-maintained surfaces for efficient travel, getting us where we need to go, directly from homes and public transport hubs, walking or cycling at the speed we want to go at. We can stop, rest and meet each other in vehicle-free spaces, with pleasant, shaded, sheltered seating, places for children to play, and access to water and toilets. It is normal to walk and cycle for our short journeys, and many of us choose to walk and cycle longer journeys too, across our towns and cities.
- Public transport (such as trains, buses and trams) is accessible. We reach it easily by walking or cycling, and it arrives frequently, or can be hailed. It is fairly priced, clean, not overcrowded and disability-friendly. We can cycle to it; there is cycle storage on-board and at stops. If there is no cycle storage on board, we can easily cycle at the other end of our journey. It is possible we may still hail private taxis only for us, and to meet our needs in some situations, but our normal choice is to walk, cycle and use shared transport.
- Road infrastructure is intelligent. It connects and communicates with vehicles through vehicle-to-infrastructure (V2I) technology to enable safety, including keeping vehicles below speed limits of 20mph or lower. Road infrastructure gives priority to people walking and cycling at junctions and crossings.
- Less space is needed for roads and places to park, because we have changed the way we move, and have less need for privately owned cars and parking spaces for them. We have used this space to create places for people.

- Our walking and cycling paths, our public spaces and our road infrastructure are audited to meet internationally recognised, best practice **standards** based on the needs of people. Potholes and broken paving stones are a thing of the past.
- When planning new developments, or redeveloping an area of a city or town, we minimise the distance people need to travel to access amenities as well as building according to the above principles. We give people more mobility outcomes, partly by bringing amenities closer.
- Motorised vehicles are designed for the safety of people walking and cycling as well as occupants and travel below 20mph or lower; and are emission-free. They provide essential services efficiently, such as shared transport, moving our goods, emergency and social services. They are allowed only where they need to go.

Safe and healthy transport between places

- Public transport (trains and buses) between places is accessible. It is fairly priced and arrives when we need it, and gets us where we need to go, efficiently and on time. It can be used by people with disabilities and there are clean and comfortable seats for all of us.
- We can move between places by combining public transport, cycling and walking. When we get off a train or a bus, we can get on another train or bus, or easily cycle or walk, to where we want to go next; from the heart of our cities to small settlements far away. We can easily rent or lock up bicycles at transport hubs and carry them on public transport.
- We have long-distance, segregated routes for people. For some journeys between places, we can choose to do the whole journey just by cycling or with electrically assisted e-bikes. We have tarmacked cycle paths, segregated from roads, that connect towns to other towns.





- Our roads between places are built for safety, with features such as barriers that separate vehicles from other vehicles travelling in the other direction. Our roads wirelessly communicate with our vehicles, using V2I technology, helping vehicles do things like slow down when weather conditions become poor. Roads that cannot be fitted with safety features and V2I technology (because they are too narrow, or for other reasons) have much lower speed limits.
- Freight is carried efficiently, including using railways and boats, and ensuring lorries on our roads are designed for safety, the roads they travel on, and are loaded and routed to minimise distance travelled.

Safe and healthy vehicles and drivers

- Vehicles have highly capable crash prevention systems that include wireless communication with road infrastructure (V2I) and each other [vehicle-to-vehicle technology (V2V)]. Whether driverless or not, the systems keep vehicles below speed limits (Intelligent Speed Assistance) and in lane, detect hazards and emergency brake. Vehicles may travel in convoys (known as platooning) on some roads. They are protected from cyberattack.
- Some, many, or all of our vehicles are driverless, and drivers' safety is managed.

The way vehicles are designed means it is not possible to break speed limits. It is not possible to start driving if a driver is under the influence of alcohol or drugs, or if anyone in the vehicle is unrestrained. Vehicles will detect if driving is poor for any reason (such as tiredness), tell drivers to stop driving and inform authorities, including insurers, employers and enforcement agencies. Drivers are selected, trained, tested and re-tested to rigorous standards, giving them the best chance of behaving as carefully as a commercial pilot. Many people choose not to qualify as a driver and instead use public transport, active travel, or use vehicles they hail. Everyone is taught, from the age of three upwards, the importance of road safety.

- Vehicles pass stringent crash tests
 replicating the 'real world' crash scenarios
 that could involve those vehicles and testing
 their effect on adults and children, inside and
 outside vehicles. Restraint systems have
 advanced further, and vehicles only start if
 everyone is properly belted up. Any vehicle
 with a safety defect is not possible to drive.
- Vehicles are designed to be safe for the roads they travel upon. Vehicles designed for cities and towns are likely to be mainly small and light. Vehicles designed for our largest roads between places may be much bigger and heavier.
- Our vehicles are ultra low emission or zero emission, with accessible charging points, and are able to travel long distances without recharging. Components such as tyres, brakes and clutches produce minimal particulate emissions.
- Our vehicles record what happens in any crash (through event data recorders) and immediately, electronically, notify emergency services (known as e-call). This means we can reach crash victims faster, establish causes and solutions to stop crashes happening again, and punish and ban drivers.





Brake's Vision Zero campaign agenda

To achieve safe and healthy mobility by design, we need leadership from everyone.

Government

Government **must lead**, with joined-up agencies dedicated to working for Vision Zero and Healthy Streets.



Governments must set

- **Strategies** that prioritise a Vision Zero and Healthy Streets approach.
- **Targets**, for reductions in deaths and serious injuries. This includes a target date for bringing deaths and serious injuries to zero (some leaders have already chosen 2040), and milestone targets for reductions towards zero.
- Action plans, saying what they will do, and by when, to achieve Vision Zero and Healthy Streets.



Actions and investment

Governments must urgently fund the following actions within their action plans.

- The redesigning of cities, towns and villages, considering the space for people and the access allowed to vehicles.
- An integrated network of public transport, cycle paths and footpaths between places.
- Research and development of CAV technology in a way that progresses the safe design of today's vehicles, safe and healthy mobility and cybersecurity.
- Extensive, skilled and equipped road policing, capable of enforcing vehicle and driver regulations and surveillance of all vehicles on our roads, including the most modern vehicles.
- Education of people, including children through the school curriculum, but also everyone through media channels, through corporations, and other routes, about the Vision Zero and Healthy Streets solutions and why they are needed, so civil society can support and help deliver the change.
- First-class emergency services and hospital care for the injured, to give the best chance of survival and prevention of life-changing injuries such as paralysis or head injury.
- Victim-centred services, including comprehensive emotional and practical support for people bereaved or people with life-changing injuries and their families.
- Performance indicators, relating to steps they
 have taken and their outcomes, particularly
 relating to design-led solutions, but also
 efforts to manage driver behaviour through
 regulation and enforcement in particular.
- Collision investigation. Government must fund independent and scientific investigation of crashes to identify causation and develop further the solutions.





- **Standards**. Government must set the standards, particularly of our roads and vehicles. It must:
 - Update highway and town planning manuals in line with Vision Zero and the Healthy Streets approach.
 - Update vehicle safety regulations in line with proven vehicle safety technologies and ban dangerous vehicles.
 - Enable the auditing of vehicles, roads and town planning against best practice.
 - Have driver, and fleet operator, regulations, offences and penalties that are robust, just and demonstrative of the responsibility of driving and the gravity of road crime.
- Reporting. Government must monitor and report on progress towards targets and performance indicators to the public, annually. They must benchmark and share their successes with other countries.

Vehicle and road infrastructure manufacturers

Vehicle and road infrastructure manufacturers must lead. They must research and develop solutions relating to safety and emissions, share their solutions and support improvements to regulations governing them relating to safety and emissions.

Organisations responsible for movement of people or goods

Organisations responsible for movement of people or goods (such as operators or users of lorries and buses) must lead. They must have policies and procedures in place to manage their road risk. They must:

- Use the safest and least-polluting vehicles and maintain them to manufacturer guidelines.
- Route vehicles intelligently to reduce mileage, use the safest roads and avoid places where people live.

- Test, regularly assess and continually monitor drivers' capability and fitness to drive safely and fuel-efficiently in line with stringent health and safety rules.
- Monitor collisions and near-misses, report and investigate them for causation, and implement emerging solutions.
- Seek and support improvements to their regulatory frameworks, including supporting measures to restrict their access to roads they don't need to travel, at times they don't need to travel, in the interests of people.
- Enable staff to walk, cycle and use public transport wherever possible, to benefit their health and reduce risk posed to others.

Civil society must lead

- The insurance and legal industries can fund the work of NGOs and academics, provide vital data about crashes and causation, and also help lobby for Vision Zero and Healthy Streets.
- Academics must direct their attention, and seek funding for, research and development that drives us towards Vision Zero and the Healthy Streets approach.
- NGOs and trade associations representing safety, health, road users, and road and vehicle manufacturers, can work together to lobby for Vision Zero and Healthy Streets and spread awareness and support for this approach and encourage actions that enable this approach.
- People in the media eye, such as journalists, celebrities, faith leaders, etc. can help by supporting and spreading awareness about Vision Zero and Healthy Streets, and using appropriate language: for example, using the word crash (rather than accident), and talking about people who use different ways to get about (rather than defining people 'tribally', as motorists or cyclists).
- Communities and their political representatives, who know about the problems on their local roads better than anyone, can campaign for Vision Zero and Healthy Streets where they live.



- **Emergency service workers** can talk about the extent of the epidemic and support Vision Zero and Healthy Streets.
- Family doctors can identify, and report to the relevant licensing authority, drivers who are unsafe to drive for medical reasons.
- Driving instructors can spread the word about Vision Zero and Healthy Streets to their clients and share messaging about driver behaviour.
- **Schools** can help children, young people and parents to learn about Vision Zero and Healthy Streets, and the dangers children face, and help communities to campaign for change.

- Responsible adults can take steps to consider our own behaviour on roads and be limitations, and to look after dependants' road safety; particularly children, older people, and the ill and disabled.
- Road crash victims can tell their stories and help campaign for change, particularly through NGOs.
- **We can all** spend time telling our family and friends about Vision Zero and Healthy Streets and join community campaigns for change.





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