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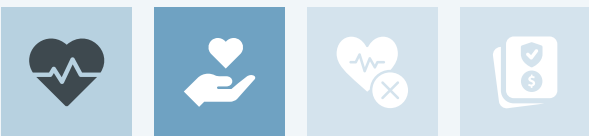
# Driving Health Forward: The Critical Link Between Transport and Wellbeing



## KEY FINDINGS



- Transport impacts people’s mental and physical health both positively and negatively, and in direct and indirect ways. However, these health impacts tend to be distributed inequitably across populations, regions and transport modes.
- In conventional (i.e., car-dominated) transport systems, the harmful impacts on health and equity tend to outweigh the potential benefits. These impacts affect wellbeing directly (through road crashes and air and noise pollution) and indirectly (through poorer physical and mental health).
- The human and financial costs of fossil fuel-based transport, in terms of poor physical and mental health and wellbeing, are unsustainable.
- The most severe health-related impacts of transport are road crashes and air pollution.
- People with disabilities – including physical (e.g., problems walking), sensory (vision and hearing) and cognitive (long-term learning difficulties or recent cognitive decline) – often face major limitations and difficulties when travelling.
- Health framing is critical for justifying interventions and gaining public and political support, yet it remains insufficiently applied in transport policy.
- Advancing the integration of health into urban and transport planning requires institutional reforms that foster inter-sectoral collaboration, build cross-sectoral alliances, and facilitate stronger engagement between health professionals and the political sphere.



## Benefits of transport for health

- The main purpose of transport is to provide access to potentially beneficial services and destinations and to socio-economic opportunities that generally improve wellbeing.
- Being able to travel outside the home is important in preventing social isolation, which can increase mortality by 29%.
- Public transport provides access to the benefits of travel without personal car use. It enables access to opportunities to many people that cannot walk or cycle, particularly if they are carrying goods. However, just 52% of the urban population globally had convenient access to public transport in 2022.
- Access to travel options is much more restricted in low- and middle-income countries and for some user groups, such as people with disabilities.
- Transit-oriented development approaches, as well as compact mixed-used cities, use proximity planning to improve access to healthcare services, encourage walking and cycling, and mitigate the negative health impacts of vehicle emissions.

## KEY FINDINGS

- Travel brings opportunities for physical activity, whether during the entire journey (as with walking or cycling) or as part of a journey (such as travel to and from public or collective transport).
- Evidence suggests that active travel can provide the same health and wellbeing benefits as formal sports or exercise, contributing to healthier lifestyles by becoming part of daily life.
- People who commute by active travel modes have been found to have better subjective wellbeing than those who commute by car.
- Travel to and from public transport supports physical activity and can provide benefits to health and wellbeing.
- Attractive environments provide considerable benefits for mental wellbeing, whether people are travelling through them on their journey or have them as the intended destination.



## Harms to health provoked by transport

- Traffic noise caused by vehicles with internal combustion engines is a widespread problem across all regions, although data from low- and middle-income countries are limited.
- Noise from roads, trains, and airplanes disrupts wellbeing in several ways, including by directly causing annoyance and disturbance that is associated with poorer mental wellbeing.
- In 2023, transport contributed 15.9% of global greenhouse gas emissions and 21.9% of carbon dioxide (CO<sub>2</sub>) emissions. It was the second largest sector for greenhouse gas emissions after the power industry, and the second fastest-growing sector for emissions between 2015 and 2023.
- Road transport contributed three-quarters (74%) of transport greenhouse gas emissions in 2023.
- Due to record-high temperatures, 2024 was the first year that the average annual global temperature likely surpassed the international target of limiting global warming to 1.5 degrees Celsius.
- Between 1990 and 2023, heat-related mortality for people older than 65 years increased 167%.
- Transport infrastructure, as well as the speed and/or volume of traffic, can limit people's ability to cross a road, reducing access to goods, services, and people and resulting in community severance.
- Road building and traffic can create physical barriers to walking and cycling, weaken social networks that are essential for good health and wellbeing, and affect the wellbeing of people with pre-existing chronic diseases.
- Many aspects of travel itself – as well as a lack of affordable, accessible, safe and reliable transport options – cause stress and anxiety that can greatly impair wellbeing, potentially leading to journeys not made and to social isolation.
- Poor people, particularly women, in low- and middle-income countries may have a two-hour walk or more each way to and from work, as public transport may be unaffordable or non-existent.
- Congestion is an often-cited adverse impact of travel on wellbeing, particularly for people sitting in motor vehicles that are moving slowly, if at all. Traffic delays have been found to reduce productivity; increase stress, anger and mental workload; and exacerbate obesity due to prolonged physical inactivity.
- Congestion adds to local air pollution and vehicle emissions, while also causing negative health impacts on people living, walking or cycling nearby.
- There is good evidence that building new roads and widening existing roads does not provide a long-term solution to congestion, as these interventions generate traffic and induce demand.
- Ambient air pollution increases the risk of cardiovascular and respiratory diseases and was responsible for 8.1 million premature deaths in 2021 (61% of them linked to fossil fuel combustion).
- Transport accounted for 6% of air pollution in 2019, linking it to 500,000 air pollution-related premature deaths.
- Air pollution was the second leading cause of death for children under five years in 2021.
- Road freight traffic produces large amounts of air pollution, with strong age-related inequities based on exposure levels. Air travel is also a major contributor to air pollution.
- Concentrations of particulate matter and nitrogen oxides (NOx) tend to mirror the traffic volumes along road networks in cities.

## KEY FINDINGS



- Air quality is generally worse in cities in low- and middle-income countries.
- Cyclists potentially inhale higher doses of pollutants, as they breathe more rapidly and deeply; however, studies have found that even in highly polluted environments, the benefits of physical activity outweigh the increased exposure to air pollution, except on the worst-affected days.
- Road runoff is an additional source of travel-related contamination, as heavy metals and other pollutants from vehicles make their way from the road into the environment.
- In cities, the replacement of greenery with pavement has increased the urban heat island effect, contributing to reduced wellbeing and increased mortality, especially during heatwaves.
- The use of streets for parking can impact wellbeing by impairing visual amenities and restricting lines of sight, increasing people's risks when crossing roads.
- Escalating heat exposure poses a major threat to maternal and neonatal health.
- Time spent being sedentary, such as when travelling by private motor vehicle, reduces time spent being physically active. In 2022, one in eight people worldwide were living with obesity – including 890 million adults and 160 million children and young people – and even more were living with overweight.
- Longitudinal studies have shown that people who shift their commuting mode from cars to active travel (walking and/or cycling) lose weight, whereas those who change from active travel to car commuting gain weight.
- Road traffic crashes killed 1.19 million people in 2021, with large disparities by region. The highest per capita road fatalities by region were in Africa (18.8 fatalities per 100,000 people, above the global average of 15 deaths per 100,000 people), although small island developing states as a sub-group had 21 fatalities per 100,000 people.
- As of 2021, low- and middle-income countries were home to 60% of the world's motor vehicles but suffered around 90% of road traffic fatalities.
- More than half of road deaths globally in 2021 occurred among "vulnerable" road users, comprising motorcycle riders (32%), pedestrians (20%) and cyclists (5%).
- Pedestrians accounted for 32% of reported road fatalities in low-income countries in 2021.
- Globally, road traffic injuries were the leading cause of death for children and young adults aged 5-29 years as of 2021.
- Exposure on roads is greater in low- and middle-income countries because many pedestrians have no other existing or affordable transport options and must walk long distances and/or at night, when poor lighting often increases the hazard.
- In addition to fatal crash outcomes, an estimated 50 million people annually suffered life-changing injuries on the world's roads as of 2021.
- Death and injury on the world's roads led to estimated annual costs of USD 3.6 trillion in 2021, or the equivalent of 3.7% of global gross domestic product (GDP). In low- and middle-income countries, the cost of road crashes approached 5% of GDP.

## KEY FINDINGS

- In these countries and in rural areas, the consequences of a road crash are often exacerbated by limited access to roadside care, including a lack of emergency services and vehicles to transport injured people.
- The main factors contributing to road crashes are a lack of access to safe public transport, inadequate speed management, poor infrastructure, lack of relevant legislation, and poor road user behaviour, according to the WHO.



## Policy and investment developments

- Health considerations remain inadequately embedded in upstream urban and transport policy processes, despite a robust and growing body of empirical evidence and initiatives.
- Detailed targets and key performance indicators for several health pathways (such as access, activity and attractive environments) are often lacking, as are clear health rationales and anticipated health outcomes for proposed measures.
- The Avoid-Shift-Improve (A-S-I) framework is key to achieving safe, healthy and low-carbon transport for both passengers and freight.
- Transport policy can improve health and wellbeing through a broad set of instruments.
- Investments in transport infrastructure – particularly new infrastructure for walking, cycling and public transport networks – are linked to increased physical activity.
- Financial disincentives that have been shown to reduce car use include charges for fuel, parking, or road users, and incentives for alternative transport modes.
- Reallocating space from cars to pedestrians and cyclists, and to attractive green and blue spaces, can encourage physical activity, boost social interaction and reduce stress while contributing to climate change mitigation and resilience.
- Increasingly, calls to action for health emphasise the need for integrated strategies that combine urban planning and design with communication and co-creation. One approach is placemaking, a collaborative and community-driven method to design public spaces to promote health, social interaction and environmental sustainability.
- So-called soft measures – such as providing information on public transport and conducting awareness-raising campaigns – can support behavioural change towards walking, cycling and sustainable travel modes.
- The most impactful policies have been comprehensive packages that combine both incentives (carrots) and restrictions (sticks) and that target different scopes (societal, city-wide, route-based and individual).
- As of 2023, only around 15% of countries had national policies that support the safety of people walking and cycling. To address this challenge, international initiatives and frameworks have increasingly formalised and scaled health-promoting interventions.
- Efforts have been made to link the financial burdens that transport and mobility place on health and insurance systems, with the evidence-based solutions that will reduce these burdens.
- Including the health impacts of transport in economic appraisals, such as the Health Economic Assessment Tool (HEAT), is essential to boost recognition of these impacts in transport policy.
- The Global Plan for the Decade of Action for Road Safety 2021-2030 provides an overarching strategy for reducing road traffic deaths, with national governments and other road safety stakeholders adapting the plan to local needs.
- Importantly, the Global Plan details requirements for implementation, including the need for financing, legal frameworks, speed management, capacity development, a gender perspective in transport planning and adapting technologies to the safe system.
- The Global Ministerial Conference of Road Safety, held in Morocco in February 2025, and the associated Marrakech Declaration urged UN Member States and other actors to accelerate and scale up efforts to implement the Global Plan and associated Global Road Safety Performance Targets.
- The Marrakech Declaration also calls for minimum safety standards in vehicle design and infrastructure; multi-modal mobility and road safety education; and evidence-based interventions, especially in low- and middle-income countries.



## Context, challenges and opportunities

Transport impacts people’s mental and physical health both positively and negatively, and in direct and indirect ways. However, these health impacts tend to be distributed inequitably across populations, regions and transport modes. Harms and benefits in the transport-health realm can be categorised as the “3 A’s and the 9 C’s” (Box 1), as elaborated in this section.<sup>1</sup>

In conventional (i.e., car-dominated) transport systems, the harmful impacts on health and equity tend to outweigh the potential benefits. These impacts affect wellbeing directly (through road crashes and air and noise pollution) and indirectly (through poorer physical and mental health). In regions where cars are seen as the norm, the benefits of transport, particularly access, generally accrue to more affluent groups, whereas the harms are borne mainly by more vulnerable and disadvantaged groups, including the young, the old, women, those from minority ethnic groups, those with disabilities, and those living in poverty and lower socio-economic groups.<sup>2</sup> In rural and other areas that have limited or no public transport, car ownership by poor households can be a type of “fuel poverty”.<sup>3</sup> Health status also affects a person’s ability to travel.<sup>4</sup>

### Box 1. The 3 A’s and 9 C’s of transport and health

The Transport and Health Science Group has used the concept of the benefits (3 A’s) and harms (9 C’s) of transport and health as a framework for measuring impacts, based on major indicators. The list of indicators is not exhaustive but includes those with sufficient data to enable outlining of global or regional trends.

#### The benefits of transport for health - the 3 A’s:

- ▶ **Access** (access to employment, education, people, services, goods, green and blue spaces, and other opportunities for recreation as well as social connectedness): For example, access to public transport and multi-modal transport systems.
- ▶ **Activity** (active travel): People walking and cycling
- ▶ **Attractive environments** (both public and private spaces): Planning and proximity of public spaces

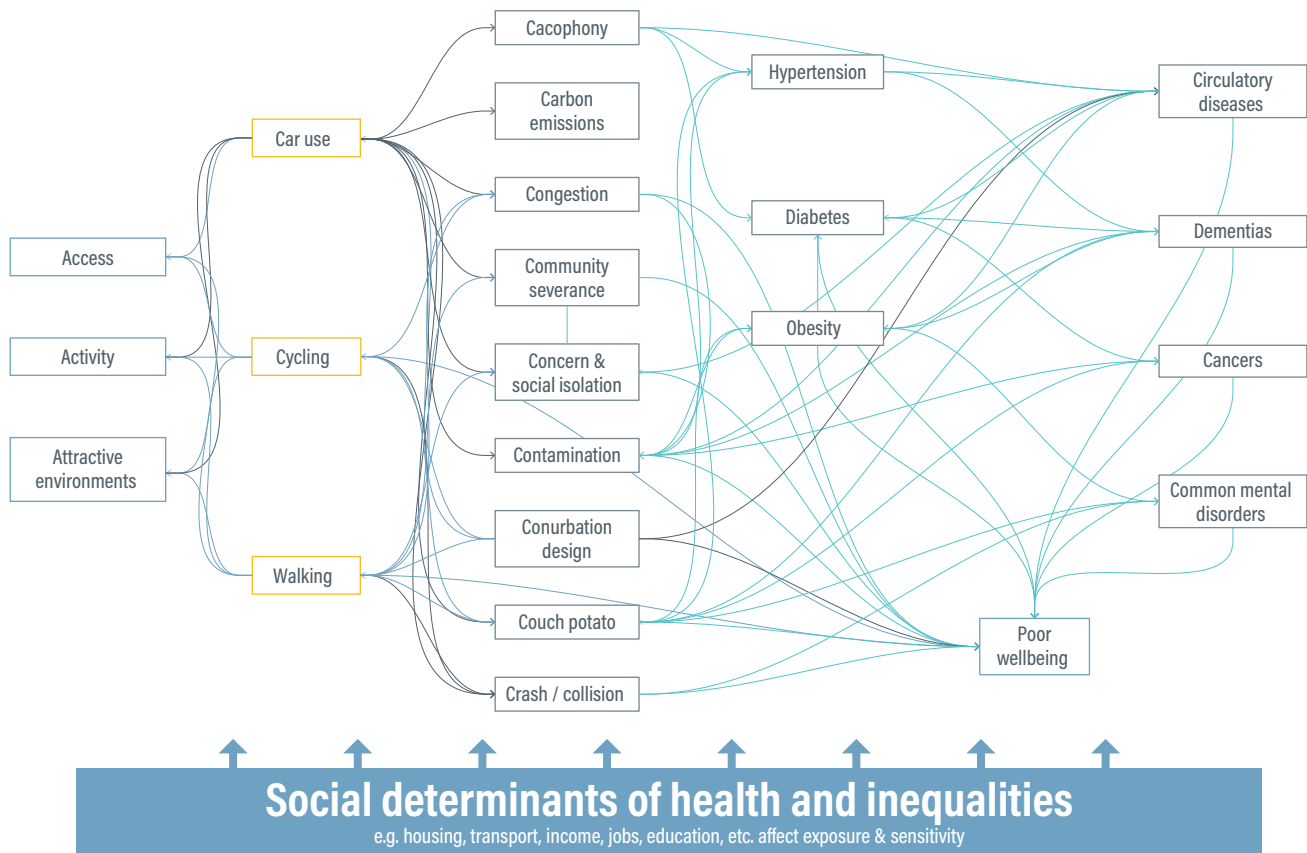
#### The harms to health provoked by transport - the 9 C’s:

- ▶ **Cacophony** (transport-related noise): People’s exposure to traffic noise
- ▶ **Carbon emissions** (impacting global climate change): Greenhouse gas emissions and contribution by transport mode
- ▶ **Community severance** (the barrier effect of transport and busy roads)
- ▶ **Concern** (stress and anxiety caused by transport)
- ▶ **Congestion** (pollution and noise, stress and anxiety): Delays for commuters
- ▶ **Contamination** (harm from ingestion): Air pollution (such as particulate matter)
- ▶ **Conurbation disruption** (sprawl causing long distances and fragmentation): Heat island effect
- ▶ **Couch potatoes** (sedentary lifestyles): Limited or lack of physical activity
- ▶ **Crashes and casualties** (traffic injuries and road safety): Road fatalities and injuries

Source: See endnote 1 for this section.

The health impacts from freight transport and personal travel, particularly the harms caused to other people, typically depend on the specific transport mode (and the design and weight of the vehicle), rather than on what is being carried (Figure 1).<sup>5</sup> In addition, people involved in freight transport, particularly drivers of heavy-goods vehicles, face occupational health issues (not covered in this section).<sup>6</sup>

**FIGURE 1.** The links between the benefits (3 A's) and harms (9 C's) of road transport by travel mode: car use, cycling and walking



**Note:** The arrows indicate common consequences but not the relative importance of different sequelae nor of the health effects of different modes. Public transport is omitted from the figure as it causes less air and noise pollution and community severance than private car use but more than walking and cycling; and often provides some physical activity but less than walking or cycling do.

**Source:** See endnote 5 for this section.

**The human and financial costs of fossil fuel-based transport, in terms of poor physical and mental health and wellbeing, are unsustainable.** Facilitating a shift to more sustainable transport modes reduces inequities as well as greenhouse gas and other emissions, benefiting the health and wellbeing of people and the environment.

**The most severe health-related impacts of transport are road crashes and air pollution.** People in low- and middle-income countries – particularly those who are walking, cycling, and taking collective transport (public transport and informal transport) – face the strongest impacts from unsafe, polluted roads. Globally, 1.19 million people died on roads in 2021, and air pollution caused 8.1 million deaths; in 2019, transport was responsible for an estimated 6% of air pollution.<sup>7</sup>

**People with disabilities – including physical (e.g., problems walking), sensory (vision and hearing) and cognitive (long-term learning difficulties or recent cognitive decline) –**

**often face major limitations and difficulties when travelling.** This has substantial negative impacts on wellbeing, both from journeys not made because of the constraints of inadequate transport options and from the difficulties and anxieties experienced when planning and executing a journey.<sup>8</sup>

**Health framing is critical for justifying interventions and gaining public and political support, yet it remains insufficiently applied in transport policy. Advancing the integration of health into urban and transport planning requires institutional reforms that foster inter-sectoral collaboration, build cross-sectoral alliances, and facilitate stronger engagement between health professionals and the political sphere.**<sup>9</sup> The limited integration of health and transport is attributed to different interpretations of health and evidence across sectors, difficulties in translating research into policy, fragmented decision making in government departments, competing policy agendas and short-term political cycles.<sup>10</sup>

<sup>i</sup> Well-being is closely connected to mental health. The World Health Organization (WHO) defines wellbeing as “a positive state experienced by individuals and societies. Similar to health, it is a resource for daily life and is determined by social, economic and environmental conditions.” It encompasses quality of life as well as the ability of people to contribute to the world. WHO (2021), Health Promotion Glossary of Terms 2021, <https://www.who.int/publications/i/item/9789240038349>.

## Benefits of transport for health: the 3 A's

### Access

The main purpose of transport is to provide access to potentially beneficial services and destinations and to socio-economic opportunities that generally improve wellbeing. Being able to travel outside the home is important in preventing social isolation, which can increase mortality by 29%.<sup>11</sup> Beneficial travel destinations include education, services, shops, leisure, and social contacts and networks, including work, friends, family and acquaintances. Although some jobs can harm health or wellbeing, being unemployed is generally worse for wellbeing, as insufficient income is a major contributor to poor health and wellbeing and premature death.<sup>12</sup> (See 1.2 *Advancing the Right to Mobility for Sustainable and Inclusive Societies*, and 4.2 *Integrated Transport Planning*.)

- ▶ Globally, 41% of people live within one-kilometre walking distance of a healthcare facility and 44% live within a one-kilometre radius of an educational facility.<sup>13</sup>
- ▶ Just 33% of people live within a one-kilometre radius of both health and educational facilities.<sup>14</sup>

Public transport provides access to the benefits of travel without personal car use. It enables access to opportunities to many people that cannot walk or cycle, particularly if they are carrying goods. However, just 52% of the urban population globally had convenient access to public transport in 2022.<sup>15</sup> In many low- and middle-income countries, informal public transport – including motorcycle taxis and private minibuses and microbuses – provides mobility options and thus access to services and socio-economic opportunities for millions.<sup>16</sup> By replacing private car use, public transport reduces the adverse impacts of car users on other people. Safe, accessible and affordable public transport is central to improving health and equity. (See 4.5 *Public Transport* and 4.6 *Informal Transport*.)

Access to travel options is much more restricted in low- and middle-income countries and for some user groups, such as people with disabilities.<sup>17</sup> In 2022, only 30% of the urban population (both able-bodied and people with disabilities) in low-income countries and 43% in middle-income countries had convenient access to public transport, on average, compared with 78% in high-income countries.<sup>18</sup>

- ▶ In South Africa, people with disabilities travel between 27% and 66% less than their able-bodied, adult counterparts.<sup>19</sup>
- ▶ In Australia, the share of people with disabilities who are able to use all forms of public transport with no difficulty fell from 66% in 2018 to 63% in 2022.<sup>20</sup>

- ▶ A survey in South Africa found that the main reasons people chose to use bus rapid transit were safety from crime as well as cost savings.<sup>21</sup>
- ▶ In Medellín (Colombia), poorer households and those in informal settlements live farther from public transport stops than do other household groups, despite the city's extensive investment in public transport (including cable cars) to promote access and reduce inequity.<sup>22</sup>

Transit-oriented development approaches, as well as compact mixed-used cities, use proximity planning to improve access to healthcare services, encourage walking and cycling, and mitigate the negative health impacts of vehicle emissions.<sup>23</sup> In 15-, 20-, or 45-minute cities, residents can access essential services including housing, work, commerce, health care, education and entertainment on foot or by bicycle within no more than 15, 20, or 45 minutes, respectively. (See 1.2 *Advancing the Right to Mobility for Sustainable and Inclusive Societies*, and 4.2 *Integrated Transport Planning*.)

- ▶ Cities that have implemented such approaches – recognising that public transport, walking and cycling can greatly reduce transport emissions and create vibrant urban spaces – include Arlington (United States), Curitiba (Brazil), Denver (United States), Hong Kong (China), Melbourne (Australia), Seoul (Republic of Korea) and Stockholm (Sweden).<sup>24</sup>
- ▶ In Bogotá (Colombia), neighbourhood zones known as Care Blocks cluster essential care services – such as childcare, training, health, legal aid and recreation – within a 20-minute walk of residents; these highly accessible services help women by greatly reducing their unpaid care burden.

### Activity

Travel brings opportunities for physical activity, whether during the entire journey (as with walking or cycling) or as part of a journey (such as travel to and from public or collective transport).<sup>25</sup> Evidence suggests that active travel can provide the same health and wellbeing benefits as formal sports or exercise, contributing to healthier lifestyles by becoming part of daily life.<sup>26</sup> Physical and mental health benefits of active travel include reductions in the likelihood of developing or dying from certain diseases and their severity – such as depression, obesity, diabetes, hypertension, circulatory diseases (particularly heart attacks and stroke), dementia and various types of cancer (Figure 2).<sup>27</sup>

- ▶ Walking and cycling for travel can provide sufficient physical activity to meet current recommendations for 150 minutes per week of moderate intensity activity.<sup>28</sup>
- ▶ A survey in seven European countries found that cycling and walking were associated with better mental health and wellbeing.<sup>29</sup>

**FIGURE 2.** Health benefits of walking and cycling**WALKING AND CYCLING****IMPROVES:**

cognitive function



weight status



bone and functional health



sleep quality



muscular and cardio-respiratory fitness



mental health

**REDUCES:**

all-cause mortality



hypertension



cancers



feelings of anxiety and depression



hip fractures



metabolic syndrome



cardiovascular mortality



type 2 diabetes



risk of dementia

Source: See endnote 28 for this section.

- ▶ Even in highly polluted cities such as Beijing (China), the benefits of physical activity outweigh the harms from air pollution exposure, except on the most highly polluted days.<sup>30</sup>

**People who commute by active travel modes have been found to have better subjective wellbeing than those who commute by car.**<sup>31</sup> A Scottish Longitudinal Study between 2001 and 2018 showed that commuting by bicycle or on foot had lower risks for all-cause mortality, hospitalisation, cardiovascular diseases, cancer and mental health problems.<sup>32</sup>

Active travel can reduce the lifecycle carbon emissions from transport, especially when it substitutes for motor vehicle use rather than being used for additional trips (see 4.3 Walking and 4.4 Cycling).<sup>33</sup> It is also more flexible (providing door-to-door access without timetables), more affordable and generally more age-independent than other travel modes. Active travel has fewer adverse impacts on other people's wellbeing and health and provides more overall societal benefits than costs (e.g., less need for healthcare services, lower costs to build and maintain cycling infrastructure versus general road infrastructure). Designing urban areas for active travel contributes to more liveable, cohesive cities.

**Travel to and from public transport supports physical activity and can provide benefits to health and wellbeing.**<sup>34</sup>

However, public transport's impact on wellbeing vary, with some studies finding that it has more adverse effects than car use (for example, if time-consuming commutes by public transport reduce leisure time and work-family balance), and other studies finding that its wellbeing impacts are somewhere between those for active travel and car use.<sup>35</sup>

- ▶ Public transport often entails walking or cycling to and/or from train stations and bus and tram stops and is thus less sedentary than door-to-door car use.<sup>36</sup>
- ▶ For older people in the United Kingdom, frequent bus use helped delay reductions in walking speed, which is predictive of long-term health and mortality.<sup>37</sup>

## Attractive environments

**Attractive environments provide considerable benefits for mental wellbeing, whether people are travelling through them on their journey or have them as the intended destination.**<sup>38</sup> These include, in particular, “blue” spaces (rivers, sea, lakes, ponds) and “green” spaces (parks, countryside, urban planted spaces, including street vegetation). People tend to walk more often and farther in attractive green and blue environments and to gain more health benefits from exposure to nature.<sup>39</sup>

- ▶ Research shows that spending around 15 minutes per day in nature can greatly improve health and wellbeing.<sup>40</sup>
- ▶ In cities, living near green spaces is associated with lower probabilities of cardiovascular disease, obesity, diabetes, and asthma in adults, and lower risks of obesity and myopia in children.<sup>41</sup>

## Harms to health provoked by transport: the 9 C’s

### Cacophony (transport-related noise)

**Traffic noise caused by vehicles with internal combustion engines is a widespread problem across all regions, although data from low- and middle-income countries are limited.**

- ▶ In western Europe, around 1 million healthy life years were lost from traffic-related noise in 2011.<sup>42</sup>
- ▶ A 2023 report noted that at least 20% of European Union (EU) residents are exposed to harmful levels of traffic noise, as are the majority of cyclists in Ho Chi Minh City (Viet Nam), and public transit users in New York City (United States).<sup>43</sup>
- ▶ In Hong Kong (China), exposure to excessive noise was found to be higher among poorer residents.<sup>44</sup>

**Noise from roads, trains, and airplanes disrupts wellbeing in several ways, including by directly causing annoyance and disturbance that is associated with poorer mental wellbeing.**<sup>45</sup> Disturbed sleep from noise affects mental wellbeing and also increases the risk of developing obesity.<sup>46</sup> Transport noise can affect concentration, interfering with work and with children’s educational attainment (a key predictor of adult health).<sup>47</sup> Noise increases blood pressure and the risk of non-communicable diseases such as hypertension and circulatory diseases, heart disease and strokes.<sup>48</sup> Noise also contributes to diseases including breast cancer, dementia, heart failure and tinnitus.<sup>49</sup> Most studies suggest that the impacts of noise are independent from air pollution impacts, despite potential confounding factors.<sup>50</sup>

- ▶ Children exposed to higher levels of aircraft noise in the Netherlands, Spain and the United Kingdom had lower reading comprehension skills, independent of other relevant factors.<sup>51</sup>
- ▶ In Europe, around 12,000 premature deaths and 48,000 new cases of coronary heart disease annually were attributable to traffic noise exposure as of 2022.<sup>52</sup> More than 100 million European residents were exposed to noise pollution from transport (mainly road traffic) that year, despite policies and regulations targeting motor vehicle sound levels and aircraft noise management.<sup>53</sup>
- ▶ Studies in Africa found that the effects of noise on health included noise-induced hearing loss or hearing impairment, irritations, and inhibition of speech intelligibility, as well as other impacts such as cardiovascular diseases, tinnitus, sleep disturbances and adverse social behaviour.<sup>54</sup>

### Carbon emissions (impacting global climate change)

**In 2023, transport contributed 15.9% of global greenhouse gas emissions and 21.9% of carbon dioxide (CO<sub>2</sub>) emissions.**<sup>55</sup> It was the second largest sector for greenhouse gas emissions after the power industry, and the second fastest-growing sector for emissions between 2015 and 2023.<sup>56</sup> Road transport contributed three-quarters (74%) of transport greenhouse gas emissions in 2023.<sup>57</sup>

**Due to record-high temperatures, 2024 was the first year that the average annual global temperature likely surpassed the international target of limiting global warming to 1.5 degrees Celsius.**<sup>58</sup> (See 1.1 10 Years On: Paris Agreement and SDGs Reflections Ahead of the UN Decade of Sustainable Transport.) **Between 1990 and 2023, heat-related mortality for people older than 65 years increased 167%.**<sup>59</sup> These trends make it critical to prioritise and facilitate low-emission transport options for both freight and people.

- ▶ For freight transport, maritime transport was found to be the most sustainable mode from a life-cycle perspective, and air travel the least.<sup>60</sup> Both road and air freight transport cause much greater noise and air pollution than rail transport.<sup>61</sup> (See 4.1 Freight Transport and Logistics, 4.7 Rail, 4.9 Aviation and 4.10 Maritime Transport.)
- ▶ For passenger transport, walking, cycling, public transport and rail are more environmentally friendly than other modes due to lower energy demand and lower carbon intensity per kilometre travelled than cars.<sup>62</sup> (See 4.3 Walking, 4.4 Cycling, 4.5 Public Transport and 4.7 Rail.)

## **Community severance (the barrier effect of transport and busy roads)**

**Transport infrastructure, as well as the speed and/or volume of traffic, can limit people's ability to cross a road, reducing access to goods, services, and people and resulting in community severance.**<sup>63</sup> The Street Mobility and Network Accessibility Project in England (2014-2016) defined transport-related community severance as the “negative impact of the presence of transport infrastructure or motorised traffic on the perceptions, behaviour, and wellbeing of people who use the surrounding areas or need to make trips along or across that infrastructure or traffic flow.”<sup>64</sup>

**Road building and traffic can create physical barriers to walking and cycling, weaken social networks that are essential for good health and wellbeing, and affect the wellbeing of people with pre-existing chronic diseases.**<sup>65</sup> In low- and middle-income countries, road building often results in wider roads for pedestrians to cross, usually with little or poor-quality pedestrian infrastructure, even where walking is the main travel mode. Too few pedestrian crossings and insufficient time allowed at signalised crossings can worsen the disruptions to healthy living. Pedestrians face barriers both from improved road surfaces (which encourage speeding) and from poor road surfaces, including mud.<sup>21</sup> Perceptions of traffic speed and volume are adversely associated with wellbeing.<sup>66</sup>

- ▶ A review of community severance in Africa found that urbanisation, motorisation and population growth were outpacing access to transport and the provision of multi-modal infrastructure; problems included congestion and poor enforcement of speed limits in lower-traffic, high-speed areas.<sup>67</sup>
- ▶ After a new motorway was built in Dakar (Senegal), 81% of people surveyed reported that visits to other people were “rare”, compared to only 26% before construction.<sup>68</sup>
- ▶ In a UK study, the negative impact of motorised road traffic on neighbourhoods, social interactions and local economies resulted in a loss of at least 1.6% of gross domestic product (GDP) as of 2022.<sup>69</sup>
- ▶ In Brazil, Ireland, South Africa, Switzerland, and the United Kingdom, the large majority of people aged 65 and older walk more slowly than the 1.2 metres per second used to determine signalised crossing timings.<sup>70</sup>

## **Concern (stress and anxiety)**

**Many aspects of travel itself - as well as a lack of affordable, accessible, safe and reliable transport options - cause stress and anxiety that can greatly impair wellbeing, potentially leading to journeys not made and to social isolation.**<sup>71</sup> Tripping (such as over uneven pavements) can cause injuries or death, and older people who have suffered a fall may

restrict their activities and lose independence.<sup>72</sup> Fear of injury or crime, including “stranger danger”, also impairs wellbeing and can lead to social isolation, even where perceptions of fear are disproportionate to actual risks.<sup>73</sup> In addition, traffic noise contributes to stress, and gender-based violence in the street or on public transport is a real concern.<sup>74</sup>

- ▶ The absence of reliable and affordable transport can create situations of “transport poverty” for low-income residents, marginalised groups, people with disabilities, and people in underserved rural, remote or urban areas.<sup>75</sup> This limits their access to essential services and employment opportunities and bars them from fully participating in society, perpetuating cycles of poverty and exclusion.
- ▶ Globally, the most important enabler of a high modal share for cycling continues to be the presence of good-quality paved roads and safe cycling infrastructure, particularly with features that separate cyclists from vehicle traffic.<sup>76</sup>

**Poor people, particularly women, in low- and middle-income countries may have a two-hour walk or more each way to and from work, as public transport may be unaffordable or non-existent.** This can result in substantial adverse impacts on mental wellbeing as well as opportunity costs of the time unavailable for domestic and family responsibilities or personal time.

- ▶ Most travel surveys focus mainly on journey-to-work trips and record only the primary mode of transport, typically excluding journeys shorter than 500 metres.<sup>77</sup> Thus, these surveys capture only around one-quarter of the actual walking that takes place because they tend to under-represent the walking done by public transport users and to overlook many short but essential trips made by young people, older adults, women and people with disabilities.<sup>78</sup>
- ▶ In all regions, women feel less safe than men when walking alone at night where they live. For the period 2020-2022, this difference was 9 percentage points in Sub-Saharan Africa and 18 percentage points in Northern Africa and Western Asia.<sup>79</sup> Among regions, women and men in Latin America and the Caribbean felt the least safe walking alone in their neighbourhood after dark (37-52% safe).<sup>80</sup>
- ▶ In Africa, walking is the primary mode of transport, with 78% of people travelling on foot every day to access health care, education, shops, jobs and public transport as of 2022.<sup>81</sup> On average, people in Africa spent 56 minutes per day walking or cycling for transport in 2022, with women showing 29% higher rates of engagement in these forms of transport than men.<sup>82</sup>



## Congestion

Congestion is an often-cited adverse impact of travel on wellbeing, particularly for people sitting in motor vehicles that are moving slowly, if at all. Traffic delays have been found to reduce productivity; increase stress, anger and mental workload; and exacerbate obesity due to prolonged physical inactivity.<sup>83</sup> Congestion adds to local air pollution and vehicle emissions, while also causing negative health impacts on people living, walking or cycling nearby.<sup>84</sup> When evaluating proposed road projects, many countries include the costs of drivers' time but tend to undervalue the time of pedestrians and cyclists. (See 4.8 Road Transport and Module 3 Regional Overviews.)

- ▶ A study in Dar es Salaam (Tanzania) reported traffic delays of 30-60 minutes when comparing journey times (in practice) with free-flow situations.<sup>85</sup>
- ▶ A study in Tunisia estimated the cost of congestion at USD 13.2 million (TND 42 million), depending on how time was valued and once externalities were internalised (such as the impacts of road transport on health).<sup>86</sup> Of this total, USD 8.8 million (TND 28 million) was for congestion externalities and USD 7.5 million (TND 24 million) was for social losses (injuries and fatalities).<sup>87</sup>
- ▶ In a congested road condition, carbon monoxide exhaust increases four-fold, hydrocarbons three-fold and nitrogen oxides two-fold compared to uncongested conditions.<sup>88</sup>

There is good evidence that building new roads and widening existing roads does not provide a long-term solution to congestion, as these interventions generate traffic and induce demand.<sup>89</sup> Such infrastructure changes shift bottlenecks to the start and end of the new/wider road. They also release suppressed demand for car use among people who may have been discouraged from driving due to the congestion, until a new steady-state equilibrium is reached. Effective ways to reduce congestion and its negative economic, social and environmental impacts include reducing the need to travel and providing high-quality, non-car options such as walking, cycling and public transport.<sup>90</sup> (See the Avoid-Shift-Improve framework in 4.2 Integrated Transport Planning.)

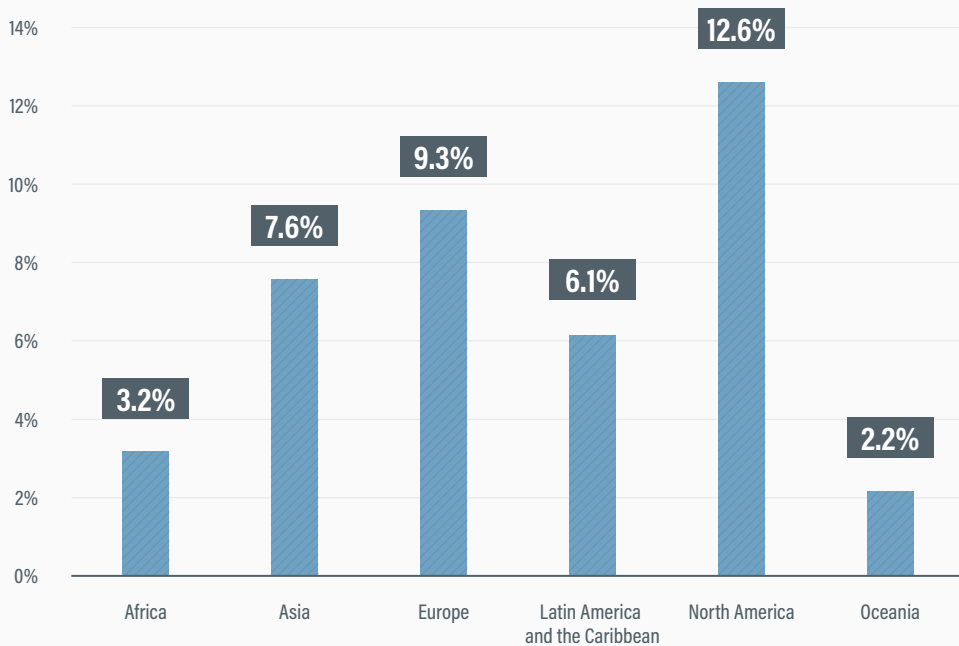
Regions with the most built-up road networks tend to show the highest levels of private motorisation and congestion. As of 2024, three of the world's ten most congested cities were in the United States, which also had the world's highest private motorisation rate at 822 vehicles per 1,000 people, compared to the global average of 219 vehicles per 1,000 people.<sup>91</sup>

## Contamination

Travel-related contamination includes both air pollution and road runoff. Air pollution is a complex mixture of gases and particulate matter, including fine particles with an aerodynamic diameter of 2.5 or smaller. In the human body, air pollutants first interact with the lungs but can have impacts on nearly all

**FIGURE 3.** Contribution of transport to air pollution in 2019

Average contribution of transport to air pollution per region, 2019



2019 estimates show that transport is responsible for 6% of air pollution, making it responsible for half million of air pollution-related premature deaths. However, the extent of this contribution varies significantly amongst regions, ranging from 12.6% in North America, to only 2% in Oceania.

organs, including the heart, brain and reproductive system.<sup>92</sup>

**Ambient air pollution increases the risk of cardiovascular and respiratory diseases and was responsible for 8.1 million premature deaths in 2021 (61% of them linked to fossil fuel combustion).<sup>93</sup> Transport accounted for 6% of air pollution in 2019, linking it to 500,000 air pollution-related premature deaths.<sup>94</sup> Air pollution was the second leading cause of death for children under five years in 2021.<sup>95</sup> In 2021, transport's contribution to air pollution ranged from 12.6% in North America, to 9% in Europe, 8% in Asia, 6.1% in Latin America and the Caribbean, 3.2% in Africa and only 2% in Oceania (Figure 3).<sup>96</sup>**

**Road freight traffic produces large amounts of air pollution, with strong age-related inequities based on exposure levels.<sup>97</sup> Air travel is also a major contributor to air pollution, both from the aircraft itself and (even more so, for some pollutants) from travel to and from airports.<sup>98</sup>**

**Concentrations of particulate matter and nitrogen oxides (NO<sub>x</sub>) tend to mirror the traffic volumes along road networks in cities.<sup>99</sup> Ozone remains more common in rural areas because of transport of emitted pollutants that react with sunlight.<sup>100</sup>**

- ▶ Particulate matter causes and exacerbates asthma and

circulatory diseases (particularly heart disease and strokes) as well as lung cancer (although to a much lesser extent than smoking).<sup>101</sup>

- ▶ NO<sub>x</sub> exacerbates asthma.<sup>102</sup> In 2023, the death from asthma of a nine-year-old girl who lived along a major arterial road in London (United Kingdom) was the first death formally ascribed by a coroner to air pollution.<sup>103</sup>
- ▶ In addition to increasing mortality and hospital admission rates, air pollution results in time off school or work, impacting education and income especially among racial and ethnic minorities.<sup>104</sup>

**Air quality is generally worse in cities in low- and middle-income countries.** As of 2021, 7.3 billion people worldwide – 80% of them in low- and middle-income countries – were exposed to annual particulate matter (PM<sub>2.5</sub>) levels above the World Health Organization's (WHO) threshold.<sup>105</sup>

- ▶ Globally, 716 million people living on less than USD 1.90 day were exposed to harmful air pollution levels (from transport and other sources) as of 2021, particularly in Sub-Saharan Africa.<sup>106</sup> Air pollution was the second largest cause of death in Africa in 2022.<sup>107</sup>
- ▶ In South Asia, transport-related air pollution is a leading contributor to public health issues such as wheezing among children, chronic obstructive pulmonary disease,



respiratory infections, heart attacks, strokes, and lung cancer, while imposing substantial economic burdens on affected populations.<sup>108</sup> In India, air pollution is linked to a higher disease burden than tobacco use.<sup>109</sup>

**Cyclists potentially inhale higher doses of pollutants, as they breathe more rapidly and deeply; however, studies have found that even in highly polluted environments, the benefits of physical activity outweigh the increased exposure to air pollution, except on the worst-affected days.**<sup>110</sup> In general, pollutant concentrations are higher inside vehicles than outside them; lower near pavements and by roadsides; and even lower on traffic-free routes and farther from roadways.<sup>111</sup>

**Road runoff is an additional source of travel-related contamination, as heavy metals and other pollutants from vehicles make their way from the road into the environment.** After being deposited on road surfaces, vehicle pollutants – including fuel, oils, particulate matter, microplastics and carcinogenic polycyclic aromatic hydrocarbons – can be re-suspended into the air (exacerbating air pollution) and washed off by rain into water sources (affecting drinking water and agricultural produce).<sup>112</sup> This contamination mainly affects physical health, but it can also impact wellbeing both through the impact of disease on quality of life and through concerns about exposure to pollution.

### Conurbation disruption (sprawl causing long distances and fragmentation)

**In cities, the replacement of greenery with pavement has increased the urban heat island effect, contributing to reduced wellbeing and increased mortality, especially during heatwaves.**<sup>113</sup> As the built environment in cities expands faster than urban populations, the decline in urban density exacerbates this effect.<sup>114</sup> Heat islands are concentrations of structures such as buildings, roads, and other infrastructure that absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies, creating "islands" of higher temperatures relative to outlying areas. The impact is especially high in cities in East Asia, South Asia, and Sub-Saharan Africa, home to an estimated 220 million people in 2020.<sup>115</sup>

**The use of streets for parking can impact wellbeing by impairing visual amenities and restricting lines of sight, increasing people's risks when crossing roads.** In addition, research has shown that in densely built and heavily occupied areas, high concentrations of parked vehicles can modify solar absorption and surface temperatures, due to specific thermal and radiative properties of vehicles.<sup>116</sup>

**Escalating heat exposure poses a major threat to maternal and neonatal health, increasing the risks of pre-term birth, stillbirths, congenital anomalies, gestational diabetes mellitus and general obstetric complications.**<sup>117</sup>

## Couch potatoes (sedentary lifestyles)

Time spent being sedentary, such as when travelling by private motor vehicle, reduces time spent being physically active. In 2022, one in eight people worldwide were living with obesity - including 890 million adults and 160 million children and young people - and even more were living with overweight.<sup>118</sup> Physical inactivity increases the risks of developing and dying from certain diseases.<sup>8</sup>

Longitudinal studies have shown that people who shift their commuting mode from cars to active travel (walking and/or cycling) lose weight, whereas those who change from active travel to car commuting gain weight, with predictable consequences on obesity rates.<sup>119</sup> Public transport users fall between active and sedentary commuters, as they often walk or cycle to and from public transport stops or stations.<sup>120</sup>

## Crashes and casualties (traffic injuries and road safety)

Road traffic crashes killed 1.19 million people in 2021, with large disparities by region (Figure 4).<sup>121</sup> The highest per capita road fatalities by region were in Africa (18.8 fatalities per 100,000 people, above the global average of 15 deaths per

100,000 people), although small island developing states as a sub-group had 21 fatalities per 100,000 people.<sup>122</sup> As of 2021, low- and middle-income countries were home to 60% of the world's motor vehicles but suffered around 90% of road traffic fatalities.<sup>123</sup>

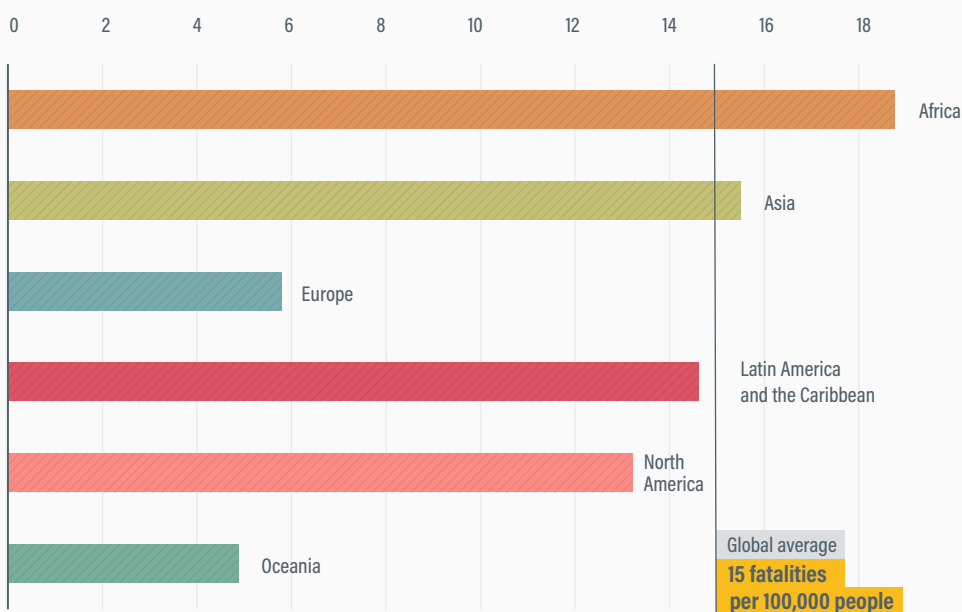
More than half of road deaths globally in 2021 occurred among "vulnerable" road users, comprising motorcycle riders (32%), pedestrians (20%) and cyclists (5%).<sup>124</sup> Pedestrians accounted for 32% of reported road fatalities in low-income countries in 2021.<sup>125</sup> Globally, road traffic injuries were the leading cause of death for children and young adults aged 5-29 years as of 2021.<sup>126</sup>

Exposure on roads is greater in low- and middle-income countries because many pedestrians have no other existing or affordable transport options and must walk long distances and/or at night, when poor lighting often increases the hazard. Additionally, some people work on or near roads, selling goods to drivers.<sup>127</sup> In many countries the lack of pedestrian infrastructure exacerbates the risk of putting pedestrians in the path of motor vehicles.<sup>128</sup>

- Freight and construction vehicles kill and injure a disproportionate number of pedestrians and cyclists,

FIGURE 4. Road traffic casualties per 100,000 people, by region, 2021

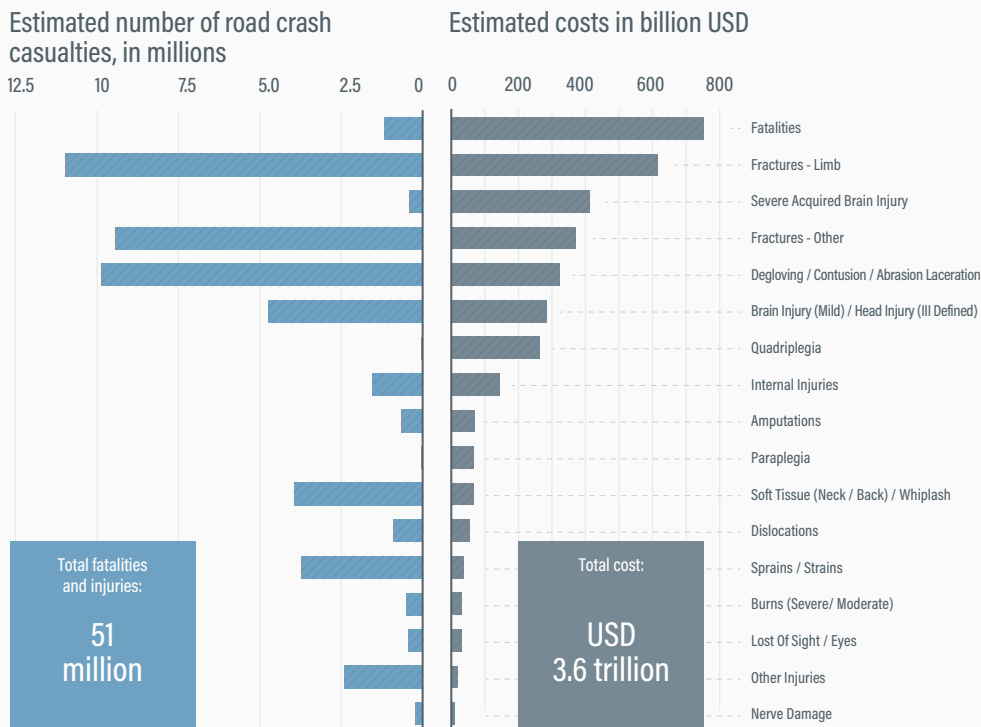
Road casualties per 100,000 people in 2021



Road traffic crashes killed 1.19 million people in 2021, with significant disparities by region. The highest per capita road fatalities were recorded in Africa with 18.8 fatalities per 100,000 people, above the global average of 15 deaths per 100,000 people.

Source: See endnote 121 for this section.

**FIGURE 5. The human impact of road traffic injuries**



**\$**

As of 2021, the total cost of death and injury on the world's roads was an estimated USD 3.6 trillion a year, or the equivalent of 3.7% of global GDP.

In low- and middle-income countries, the cost of road crashes approached 5% of GDP. In these countries and in rural areas worldwide, the consequences of a road crash are often exacerbated by the paucity of roadside or other emergency care, including a lack of emergency services and vehicles to transport injured people.

Source: See endnote 133 for this section.

both because of a greater likelihood of collision (due to difficulties seeing vulnerable travellers) and because of the far greater consequences (as the shape and mass of the vehicles cause more extensive injuries).<sup>129</sup>

- ▶ In Africa, only 3% of roads used by pedestrians had formal sidewalks as of 2021, leaving people with little choice but to walk on the roadway itself.<sup>130</sup>

**In addition to fatal crash outcomes, an estimated 50 million people annually suffered life-changing injuries on the world's roads as of 2021.**<sup>131</sup> This includes 20 million people with limb and other fractures, more than 5 million people with brain injuries, and more than 2 million people with amputations and spinal and internal injuries.<sup>132</sup>

**Death and injury on the world's roads led to estimated annual costs of USD 3.6 trillion in 2021, or the equivalent of 3.7% of global gross domestic product (GDP) (Figure 5).**<sup>133</sup> **In low- and middle-income countries, the cost of road crashes approached 5% of GDP.**<sup>134</sup> **In these countries and in rural areas, the consequences of a road crash are often exacerbated by limited access to roadside care, including a lack of emergency services and vehicles to transport injured people.**<sup>135</sup>

**The main factors contributing to road crashes are a lack of access to safe public transport, inadequate speed management, poor infrastructure, lack of relevant legislation, and poor road user behaviour, according to the WHO.**<sup>136</sup>

- ▶ As of 2023, only 58 countries met the WHO's best practice for speed management.<sup>137</sup>
- ▶ Only 21-23% of assessed road infrastructure worldwide as of 2023 met the three-star or better performance standards for pedestrians, cyclists and motorcyclists agreed by United Nations Member States.<sup>138</sup>
- ▶ Most countries lack legislation specifying standards for core vehicle safety equipment.<sup>139</sup>
- ▶ As of 2023, 52 countries met WHO best practice in relation to drink driving and 54 countries in relation to motorcycle helmets; 12-47% of drivers reported not using seatbelts, and 29-52% reported using handheld phones.<sup>140</sup>
- ▶ Utility vehicles used for informal transport in Africa and South America often carry large numbers of passengers – many standing unprotected and unsupported on open platforms – resulting in high risks of collisions and serious and fatal injuries.<sup>141</sup>

- ▶ In Africa, the factors that increase community severance also contribute to increased risks of road traffic injuries, particularly for vulnerable road users, who have higher case fatality rates.<sup>21</sup> This is exacerbated in low- and middle-income countries, where public transport is limited and walking is often the only option.

## Policy and investment developments

**Health considerations remain inadequately embedded in upstream urban and transport policy processes, despite a robust and growing body of empirical evidence and initiatives.**<sup>142</sup> Detailed targets and key performance indicators for several health pathways (such as access, activity and attractive environments) are often lacking, as are clear health rationales and anticipated health outcomes for proposed measures. The Avoid-Shift-Improve (A-S-I) framework is key to achieving safe, healthy and low-carbon transport for both passengers and freight. (See 4.2 Integrated Transport Planning.)

- ▶ A recent assessment found that Sustainable Urban Mobility Plans (SUMPs) focus mainly on mitigating the harmful effects of transport (such as air pollution and injuries) rather than positioning transport as a pro-active driver of health promotion.<sup>143</sup>
- ▶ One framework to support public health agencies working on transport, health and equity outlines three central elements – determinants of travel, context of travel and outcomes of travel – that are affected by cross-cutting components including health equity, interventions and policies, and the macro-level socio-environmental context.<sup>144</sup>

**Transport policy can improve health and wellbeing through a broad set of instruments.** Importantly, policy influences both accessibility (the extent to which transport and land-use systems allow people to participate in specific activities) and how goods are being transported.<sup>145</sup> It also impacts transport volumes, modal split, technology, energy sources, efficiency of using vehicles, and driving behaviour, all of which have implications for health.

- ▶ Regulatory measures such as daytime running lights and speed limit zones (e.g., 30 kilometres per hour) help reduce crashes and casualties.<sup>146</sup>
- ▶ Emission standards for both passenger and freight vehicles can improve air quality, lowering the risk of diseases.
- ▶ Regulations such as restrictions on night-time deliveries and the use of quieter vehicle technologies can reduce transport-related noise exposure.<sup>147</sup>

- ▶ Regulatory measures that mandate improved visibility for heavy-goods vehicles, refuse trucks, and construction vehicles could reduce the disproportionate impact of large vehicles on vulnerable road users.
- ▶ Urban planning and design interventions across scales are instrumental in shaping travel behaviour and health outcomes.
- ▶ Integrated land-use and transport strategies – such as transit-oriented development and the compact or “15-minute city” planning approach (enabling most day-to-day trips to be made on foot or by bicycle) – could promote walking and cycling and reduce car use.<sup>148</sup>
- ▶ **Investments in transport infrastructure – particularly new infrastructure for walking, cycling and public transport networks – are linked to increased physical activity.**<sup>149</sup>

**Financial disincentives that have been shown to reduce car use include charges for fuel, parking, or road users, and incentives for alternative transport modes.**<sup>150</sup> In freight transport, financial disincentives include distance-based tolls for heavy-goods vehicles and differentiated charges based on emissions, which can incentivise cleaner technologies and mode shifts (e.g., from road to rail or inland waterways). Between 2003 and 2019, a link was found in the United States between rising fuel prices and greater use of public transport, walking and cycling – mainly in urban areas, as rural commuters often lack access to public transport networks.<sup>151</sup>

**Reallocating space from cars to pedestrians and cyclists, and to attractive green and blue spaces, can encourage physical activity, boost social interaction and reduce stress while contributing to climate change mitigation and resilience.** In low- and middle-income countries, road reallocation is important to provide adequate space to the majority of travellers who are not car users. Creating safe, attractive and socially engaging streets and public spaces – such as “living streets” and green corridors where walking, cycling, play and community interaction are prioritised – can improve wellbeing and health; they can also increase footfall, perceived safety, and the viability of local shops and businesses, as those visiting by non-car modes spend more in the local economy over time.<sup>152</sup> Green and blue infrastructure helps lower urban transport emissions, reduce urban temperatures, and decrease energy demand for cooling, while strengthening climate resilience by reducing heat and flood risks.

- ▶ Superblocks – a model for transforming public space in Barcelona (Spain) that scaled up small-scale initiatives to a network of pedestrian-oriented green hubs and squares – are being considered in Switzerland.<sup>153</sup>
- ▶ In 2020, Utrecht (Netherlands) restored the Catharijnesingel canal, which was filled in the 1970s to accommodate a 12-lane motorway.<sup>154</sup>

- ▶ The Indian cities of Chennai and Kochi are improving and expanding blue and green infrastructure, which can encourage walking and cycling and improve wellbeing.
- ▶ Strategies in many Middle Eastern cities, such as designing the built environment to provide shade and reduce heat islands, are key to enabling walking and cycling in increasingly hot climates.<sup>43</sup>

**Increasingly, calls to action for health emphasise the need for integrated strategies that combine urban planning and design with communication and co-creation.<sup>155</sup> One approach is placemaking, a collaborative and community-driven method to design public spaces to promote health, social interaction and environmental sustainability.**

- ▶ Through the Kool Routes to School programme in Santiago (Chile), children, schools and communities partnered with local government to improve the built environment around schools and enable walking and cycling to and from school.<sup>156</sup>
- ▶ In Viet Nam, the Star Rating for Schools partnership used a combination of big data, youth engagement and urban planning to prioritise and enhance the safety of active trips to school.<sup>157</sup>

**So-called soft measures – such as providing information on public transport and conducting awareness-raising campaigns – can support behavioural change towards walking, cycling and sustainable travel modes.** These interventions, which rely on information sharing, public education, and persuasion techniques, are most effective when combined with infrastructure interventions.<sup>158</sup> (See 4.5 Public Transport)

**The most impactful policies have been comprehensive packages that combine both incentives (carrots) and restrictions (sticks) and that target different scopes (societal, city-wide, route-based and individual).<sup>159</sup>** In an international review, packages integrating cycling infrastructure, pro-bicycle initiatives, supportive land-use planning and restrictions on car use were found to effectively increase bicycle uptake and use.<sup>160</sup>

- ▶ Evidence from the “mini-Hollands” programme in London (United Kingdom) showed that interventions that combine low-traffic neighbourhoods (which use various physical/virtual barriers to limit motor traffic in a linked set of local streets) with access to active mobility infrastructure greatly increase walking and cycling, reduce car ownership, and yield substantial health and economic benefits over time.<sup>161</sup>
- ▶ Paris (France) has implemented a range of measures to curb car use and prioritise walking, cycling, and public transport use, including pedestrianising the quayside along the Seine River, reducing car access to major streets, expanding urban green spaces, and lowering speed

limits to enhance safety and liveability. As of 2024, cycling overtook private car use in Central Paris to become the third most popular transport mode after walking and public transport use (see 4.4 Cycling).<sup>162</sup>

**As of 2023, only around 15% of countries had national policies that support the safety of people walking and cycling.<sup>163</sup> To address this challenge, international initiatives and frameworks have increasingly formalised and scaled health-promoting interventions (see 4.3 Walking and 4.4 Cycling).**

**Efforts have been made to link the financial burdens that transport and mobility place on health and insurance systems, with the evidence-based solutions that will reduce these burdens.<sup>164</sup>** This is enabling more active pursuit of the potential for sustainability-linked financing and impact investing to bridge the gap in investment in healthy and sustainable transport.

- ▶ The International Road Assessment Programme (iRAP) estimates that USD 1,500 billion in investment is required to meet the UN target for 75% of travel for all road users to meet the three-star or better standard, with every USD 1 invested bringing more than USD 8 of benefits.<sup>37</sup>
- ▶ The Global Road Safety Facility estimates that in low- and middle-income countries, USD 400-800 billion in additional road safety investments are required to meet the Sustainable Development Goal (SDG) target to halve road deaths and injuries by 2030.<sup>165</sup>

**Including the health impacts of transport in economic appraisals, such as the Health Economic Assessment Tool (HEAT), is essential to boost recognition of these impacts in transport policy.<sup>166</sup>** Comprehensive assessments that quantify and monetise transport costs and benefits to health (and health care) convey urgency by illustrating both the scale of the health losses imposed through transport, as well as the potential health gains from taking into account various transport pathways. Where feasible, assessment should include multiple health pathways and capture both mortality and morbidity outcomes, using local data and established methods.<sup>167</sup> (See Spotlight on Evolving the Economic Appraisals for Land Transport Investments.)

**The Global Plan for the Decade of Action for Road Safety 2021-2030 provides an overarching strategy for reducing road traffic deaths, with national governments and other road safety stakeholders adapting the plan to local needs.<sup>168</sup>**

The Global Plan is based on the safe system approach and recommends actions across five key areas: multi-modal transport and land-use planning, safe road infrastructure, vehicle safety, safe road use and post-crash response.<sup>169</sup> It was developed by the WHO and UN regional commissions in co-operation with the UN Road Safety Collaboration.

Importantly, the Global Plan details requirements for implementation, including the need for financing, legal frameworks, speed management, capacity development, a gender perspective in transport planning and adapting technologies to the safe system, with a focus on low- and middle-income countries. To support measurement, monitoring, and evaluation, it outlines the roles of various stakeholders (government, academia, civil society, youth, the private sector, funders and the United Nations) and provides 12 voluntary performance targets for all safe system action areas agreed by UN Member States. Vehicle safety, such as updating the cab designs of heavy-goods vehicles, should include consideration of both occupants and other road users.

**The Global Ministerial Conference of Road Safety, held in Morocco in February 2025, and the associated Marrakech Declaration urged UN Member States and other actors to accelerate and scale up efforts to implement the Global Plan and associated Global Road Safety Performance Targets.**<sup>170</sup> The Declaration calls for countries to make road safety a political priority and to ensure its integration into the sustainable transport agenda.<sup>171</sup> Member States are encouraged to make tangible national commitments that address financing, strategies for implementation and reporting, inter-ministerial co-ordination, and the adoption of comprehensive legislation addressing key risk factors.

**The Marrakech Declaration also calls for minimum safety standards in vehicle design and infrastructure; multi-modal mobility and road safety education; and evidence-based interventions, especially in low- and middle-income countries.** Needed measures to reduce road crashes and casualties in these countries include: improving the availability, affordability and safety of public transport; providing and maintaining adequate pedestrian and cycling infrastructure; enacting and enforcing legislation to reduce road dangers (such as speed limits and vehicle roadworthiness); and improving emergency healthcare and rehabilitation following road traffic collisions.

- ▶ Namibia has a compulsory Motor Vehicle Accident Fund that can provide finances for rehabilitation, although the availability of services is sparse outside the capital city.<sup>172</sup>
- ▶ In Latin America, the new Movernos Seguros initiative supports government initiatives to establish or enhance mandatory vehicle insurance that can be used to help prevent road crashes and provide comprehensive support systems for road crash victims.<sup>173</sup>
- ▶ A major World Bank programme in low- and middle-income countries is financing structural improvements to roads combined with education measures, such as slower speeds.<sup>174</sup>

## Partnerships in action

The Partnership for Active Travel and Health (PATH) has outlined six key measures to improve the safety and experience of walking and cycling, as part of the UN Decade of Action on Sustainable Transport (2026-2035). These are: adopting tools to measure user experience; implementing speed zones of 30 kilometres per hour in high-use areas; linking walking and cycling to climate, equity and health agendas; capacity building and training; commitments to investment and action; and setting targets for safe walking and cycling aligned with the UN Member State targets for 75% of travel to meet the three-star or better global standard or equivalent.<sup>175</sup>

The Streets for Life initiative, aligned with the UN SDGs, outlines a 2030 Manifesto aiming for every child and adolescent to have a safe and healthy journey to school. Key measures include default speed limits of 30 kilometres per hour on streets used by children, viable footpaths, protected at-grade crossings and ambitious targets for protected cycle lanes in every city.<sup>176</sup>

The Sustainable Mobility for All partnership – involving partners from global development agencies, government, industry and non-governmental organisations – focuses on four main policy goals associated with Universal Access, Efficiency, Safety and the Environmental Footprint of Mobility.<sup>177</sup> The consortium captures the policy priorities linked to SDG Target 3.6 (to halve road deaths and injuries) and Target 11.2 (to provide safe and sustainable transport systems for all) and the associated tools to support decision making for sustainable mobility.<sup>178</sup>

The Transport and Health Science Group provides recommendations including: reducing both car use and the need to travel (except short, local journeys); implementing “living streets”; improving public transport, particularly bus services suitable for trip-chaining (as needed by those with domestic/caring responsibilities); improving and maintaining safe and pleasant facilities for pedestrians and cyclists; and collecting data on passenger-trips instead of vehicle-kilometres.<sup>179</sup>

The World Health Organization leads a range of global efforts to address health in transport policies, including the Global Plan for the Decade of Action for Road Safety 2021-2030 and *Promoting Walking and Cycling: A Toolkit of Policy Options*.<sup>180</sup> The toolkit highlights the significant improvements in both physical and mental health from walking and cycling.

## 1.7

## DRIVING HEALTH FORWARD: THE CRITICAL LINK BETWEEN TRANSPORT AND WELLBEING

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