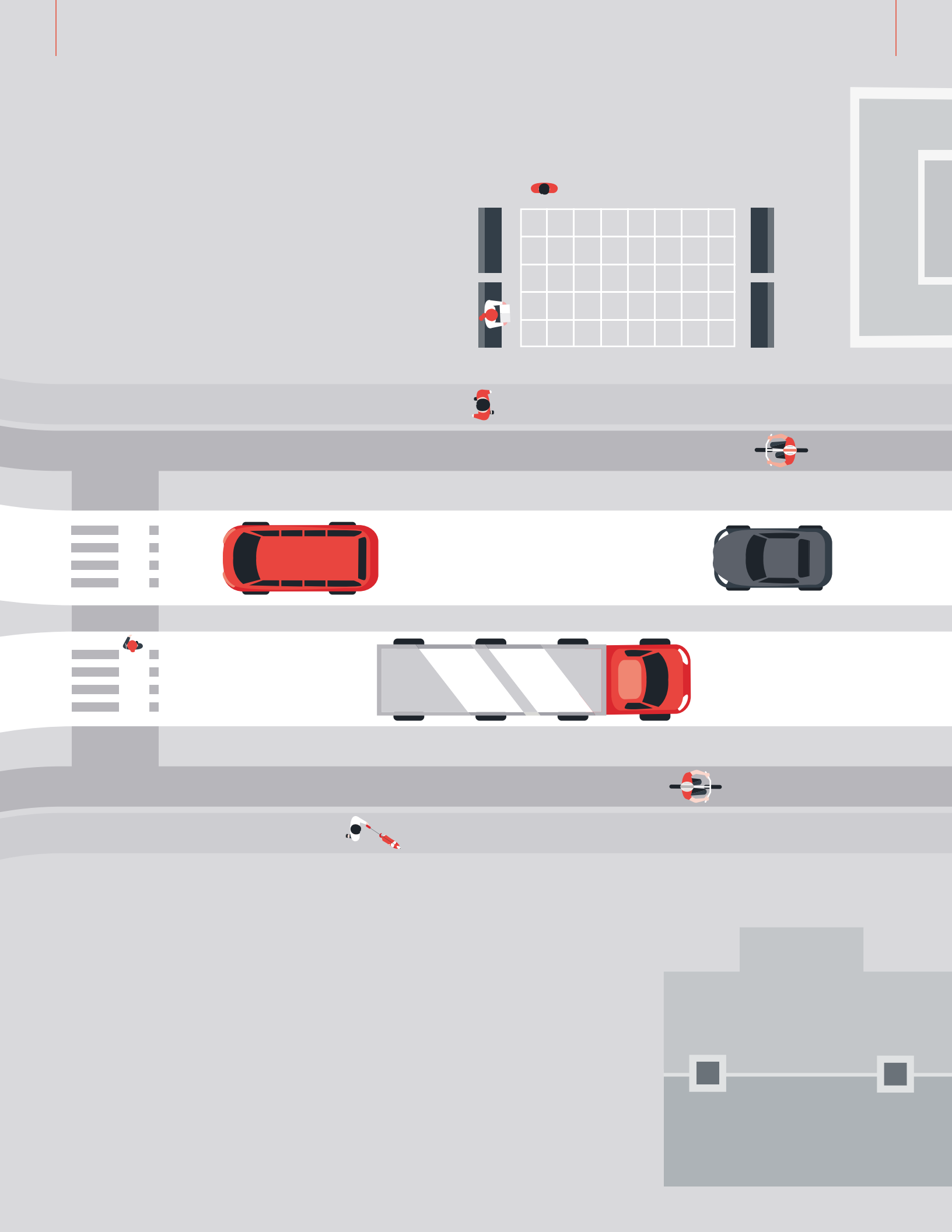




VISION ZERO

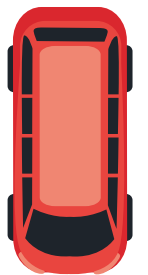
*Setting a higher
standard for
road safety*

wsp





Zero = the only acceptable number of deaths and serious injuries in our worldwide road transportation system.



Foreword



David McAlister, Global Director of Transport & Infrastructure

Providing effective road safety throughout the world is a 21st-century imperative. Alarming numbers underline the need for a new approach: More than 1.35 million people die on the world's roads each year from traffic crashes; another 20 to 50 million are seriously injured.¹

No society should accept fatalities and serious injuries as inevitable consequences of mobility.

All road traffic deaths are tragic. Under Vision Zero, acceptance of even one road fatality or serious injury is not an option. Whose death would be acceptable... a mother, a father, a sister, a brother, or a friend? This is the key question Vision Zero asks to drive forward diverse stakeholder support and efforts toward the greatest positive global impact.

Today, road traffic fatalities and injuries represent a major global public health issue; road crashes are impacting economies, costing countries throughout the world an estimated 3 percent of gross domestic product. Some may argue that any improvement in road safety, regardless of the approach, would be a good start in countries with a high number of road fatalities. But meaningful, long-term localized outcomes—vital to social wellbeing and optimal productivity in all countries—require collaborative and continuous work toward the ultimate objective of zero road traffic fatalities and serious injuries.

As we continue to advise clients with our best ideas for a better tomorrow, WSP will help towns, cities and countries reduce deaths and serious injuries on the world's roads today.

Putting Vision Zero into practice demands a departure from traditional thinking about road safety, which has focused on perfecting human behavior. Instead of asking individuals to adapt to the road transport system, and thus assume complete responsibility for road safety, Vision Zero challenges system designers to adapt, as contextually needed, the road transport system to advance safety for all road users. This shared responsibility, with primary emphasis on system designers, underpins the Safe System approach.

Vision Zero also demands buy-in and continuous collaboration from a diverse group of people in public service and private industry who influence the design and function of the road transport system. Ultimate success requires broad stakeholder commitment to Vision Zero thinking and long-term implementation.

On a governmental level, public policy must also be aligned with Vision Zero. Sweden adopted Vision Zero in 1997, and has since reduced by approximately 50 percent the number of road fatalities. Similar Safe System initiatives in countries around the world have contributed significantly to road safety progress.

A timely opportunity exists for Vision Zero to make widespread impact, as 75 percent of the world's urban infrastructure that is projected to exist in 2050 has yet to be built. WSP will continue to work with cities, states, provinces and countries to develop and implement future-ready transport infrastructure designed to bolster economies and build sustainable societies.

By setting challenging and achievable objectives, monitoring project results and sharing proven practices, we will positively impact communities that have

yet to realize Vision Zero's lifesaving potential. Vision Zero does not intend to overturn traditional methods that have worked; rather, the idea is to build from past and present successes to expand the Vision Zero practice framework.

At WSP, we look forward to further integrating Vision Zero into road infrastructure projects around the globe. With our diverse technical expertise and experience in planning, designing and maintaining transport infrastructure, strengthened by our global scope and localized presence, we stand ready to help begin or continue your Vision Zero journey.

Thank you for taking the time to learn more about Vision Zero and our projects that advance Vision Zero in communities throughout the world.

If you are interested in speaking with us about working together, please contact the WSP team at: vision-zero@wsp.com.

¹ Numbers/percentages included throughout this foreword are sourced from the World Health Organization, the World Resources Institute, and the European Transport Safety Council.

What is Vision Zero?

Vision Zero is a concept that embraces a transformative mindset and approach to making all roads safe.

Uncompromising Objective

Vision Zero refuses to accept that fatalities and serious injuries are inevitable consequences of mobility on the world's roads.

Vision Zero aims to create a worldwide road traffic system where no human being is killed or seriously injured.





More than 1.35 million people die on the world's roads each year.¹



More than half of road traffic deaths involve vulnerable road users (pedestrians, cyclists and motorcyclists).²



Another 20 million to 50 million people are seriously injured each year on the world's roads.



Road traffic injuries are the leading cause of death among people aged between 5 and 29 years old.

¹The numbers relating to fatalities and serious injuries are estimates from the World Health Organization (WHO).

²Vulnerable road users are those road users most at risk in traffic, as they do not have an outside shield to protect them from the force of impact in a crash.

The risk of dying in a road traffic crash depends on where you live.³

Road traffic fatalities per 100,000 population

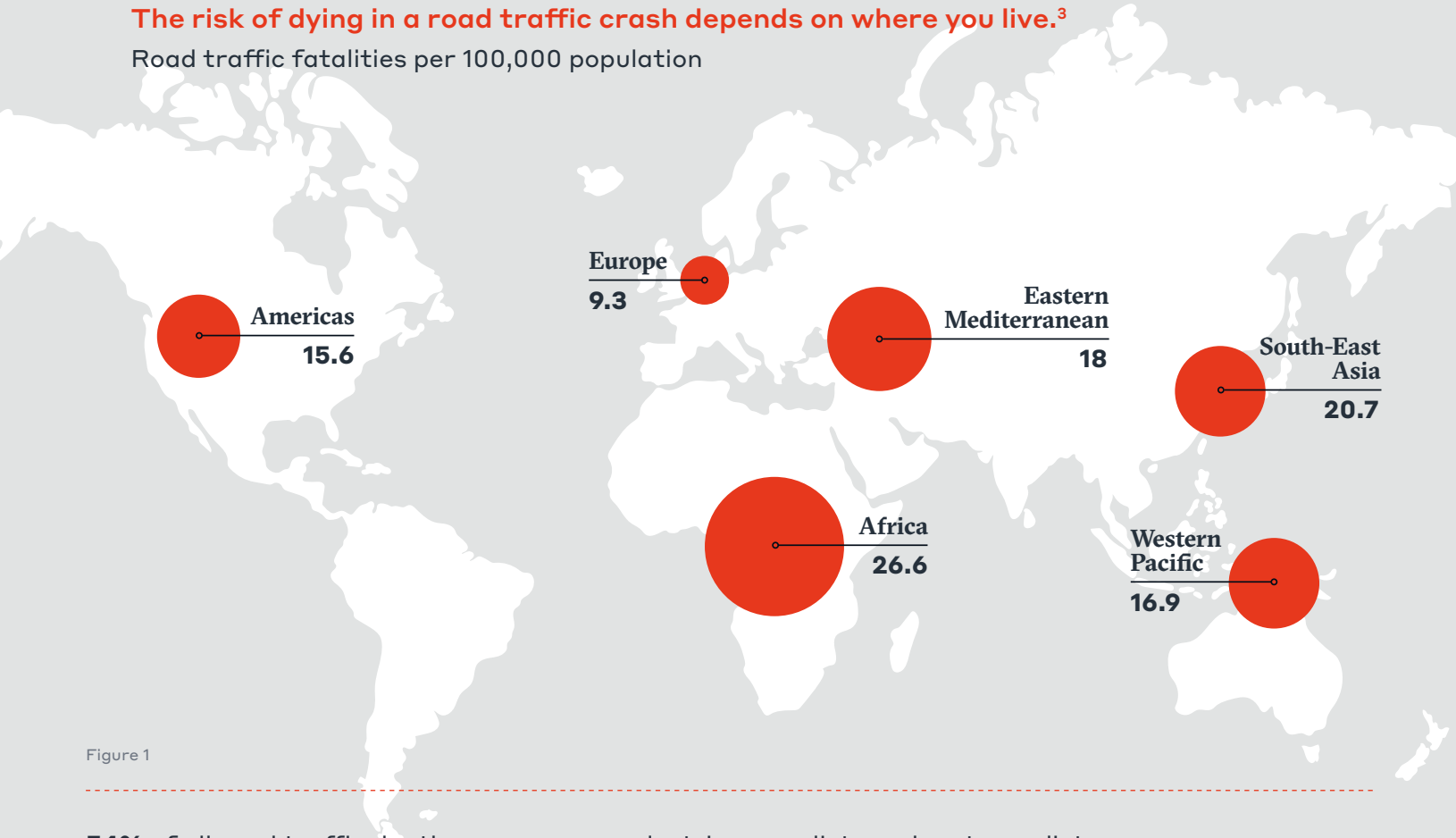


Figure 1

54% of all road traffic deaths are among pedestrians, cyclists and motorcyclists

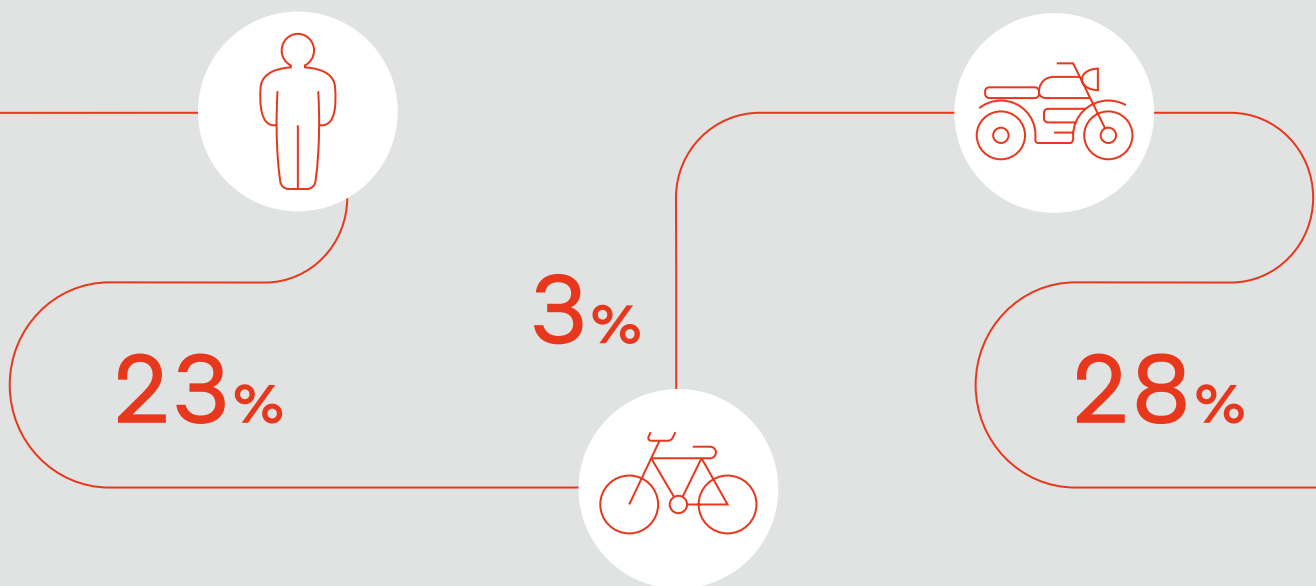


Figure 2

³Figures 1, 2 and 3 show rates and percentages from the World Health Organization's Global Status report on Road Safety, 2018. Figure 4 shows rates from the 2015 report.

Although low- and middle-income countries have 60% of the world's vehicles, they record 93% of the world's road traffic deaths.

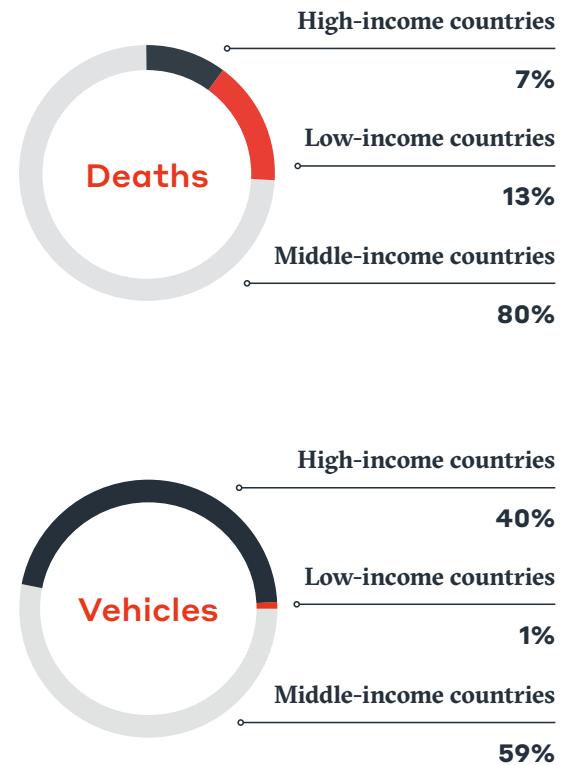


Figure 3

Low-income countries have the highest road traffic death rates.

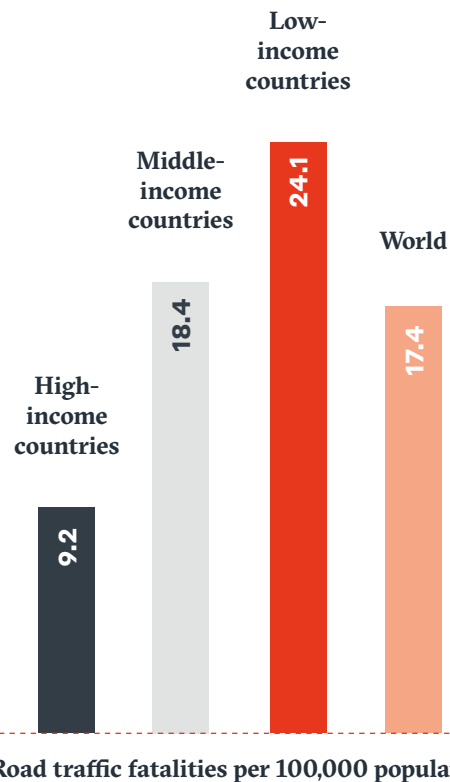


Figure 4

Country income status was determined based on data from the World Development indicators database, World Bank, March 2015. Data relate to 2013, whereby low-income = ≤ US\$ 1,045 per capita; middle income = US\$ 1,046 to US\$ 12,745; high income = ≥ US\$ 12,746.

Paradigm Shift

	Traditional/Prevailing	Vision Zero
Issue	Preventing all crashes	Preventing fatalities and serious injuries
Premise	Deaths are inevitable	Deaths are preventable
Focus	Perfecting human behavior	Designing a road system that accounts for human error
Responsibility	Individual road users	Shared: road users and system designers

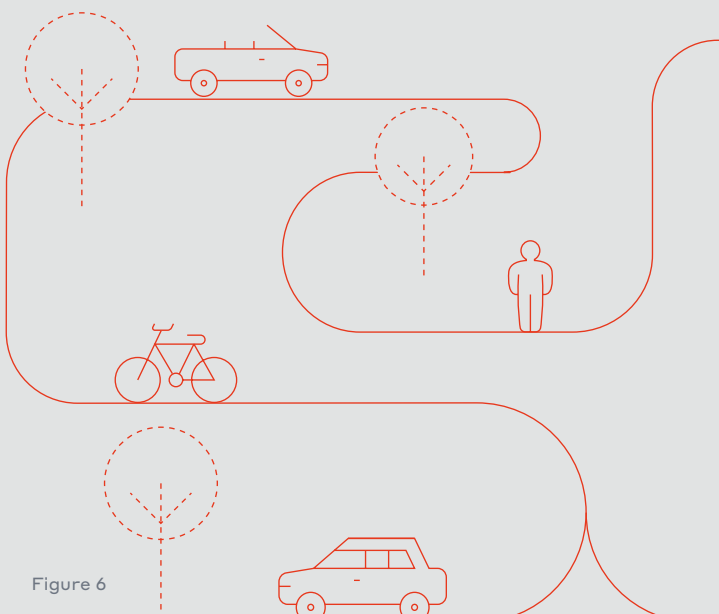
Figure 5

System designers are people who, in their professional work, influence the planning, design, operation and maintenance of the road transportation system. This diverse group includes policymakers, politicians/government officials, planners, engineers and road designers, vehicle manufacturers, and trauma and hospital care providers, plus any other provider and enforcer of the road transport system. Each contributes important knowledge and expertise to help make and keep roads safe.

Holistic Approach

As long as we travel, we will never be able to prevent all crashes, because people will always make mistakes and misjudgments. If we try to create a system that relies on perfect human behavior, we will never succeed in reaching a minimum number of fatalities and severe injuries. Most crashes do not cause fatalities or serious injuries, thus a broad crash focus does not consider all the essential factors that affect the safety of our worldwide road system.

Vision Zero views road safety in the context of the entire road system, seeking to prevent crashes that are likely to result in fatalities and serious injuries. Vision Zero also seeks to reduce the negative impact when crashes do occur. From an infrastructure standpoint, underpinning road safety means addressing the impact of speed and designing roads holistically to account for the needs of all road users.



The Safe System approach: accommodating human error

The Safe System approach to road safety ensures that in a crash impact energy remains below the thresholds likely to result in death or serious injury. It goes beyond establishing speed limits to managing interactions between the environment, infrastructure and physical vulnerability. Within this approach, speed limits are a complementary intervention to creating safer roads, roadsides and vehicles that together work to accommodate driver error. All parts of the system need to be strengthened—roads, roadsides, speed restrictions and vehicles—so that if one part of the system fails, other parts will still protect any person who is involved in a crash.

Source: Adapted from the World Health Organization's Global Status Report on Road Safety, 2015

Figure 6

New Perspective

The United Nations has set a target of halving the number of global deaths and injuries from road traffic crashes between 2010 and 2020. This target is listed under goal No. 3—Ensure healthy lives and promote well-being for all at all ages—which is among the 17 UN Sustainable Development Goals. The European Union (EU) has adopted the Vision Zero approach and set a target of reducing fatalities by half between 2010 and 2020.

Several international organizations, including the World Health Organization (WHO), World Resources Institute (WRI), and the Organisation for Economic Co-operation and Development (OECD) have endorsed the Safe System approach to road safety.

Vision Zero in Sweden, Safe System in Australia and New Zealand, and Sustainable Safety in the Netherlands are interrelated approaches that view road safety from the same foundational principle: Human error is inevitable but traffic fatalities and serious injuries are not.⁴

Vision Zero builds on past and present successes to expand the framework of best road safety practices according to the Safe System model. Traditional approaches to road safety put the onus on individual road users to ensure their own safety. The Vision Zero paradigm is based on shared responsibility among road system stakeholders. Road users and system designers are responsible for the existence of a Safe System. While road users should always follow traffic laws and regulations, such as wearing seatbelts and obeying speed limits, system designers should take further measures, as needed, to prevent deaths and serious injuries from occurring. Vision Zero assigns the greatest responsibility to the system designers, to continuously ensure that roads—urban and rural—are safe for travel. >

Shared Responsibility

System designers are ultimately responsible for the design, operation and use of the road transport system and are thereby responsible for the level of safety within the entire system.

Road users are responsible for following the rules for using the road transport system set by the system designers.

If the road users fail to obey these rules due to a lack of knowledge, acceptance or ability, or if injuries do occur, the system designers are required to take the necessary further steps to counteract people being killed or seriously injured.

Figure 7

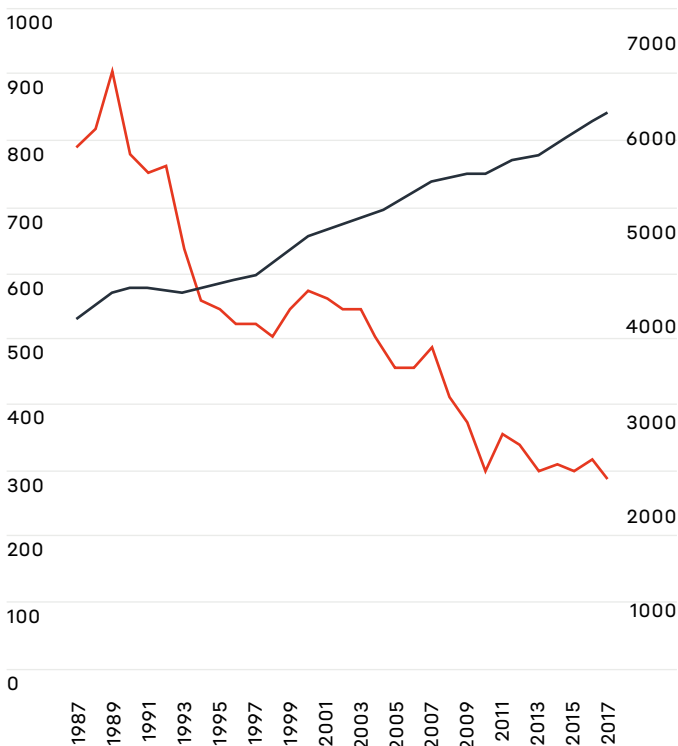
Source: Adapted from the Swedish Transport Administration

Safe Roads Support Increased Mobility

Safe System road practices do not compromise mobility. On the contrary, increased mobility actually depends on effective road safety.

Sweden and Australia demonstrate that when Safe System road practices are in place it is possible to decrease the number of fatalities despite an increase in the number of motor vehicles.⁵

Fatalities in road traffic and Motor Vehicles in use⁶ in Sweden 1987-2017

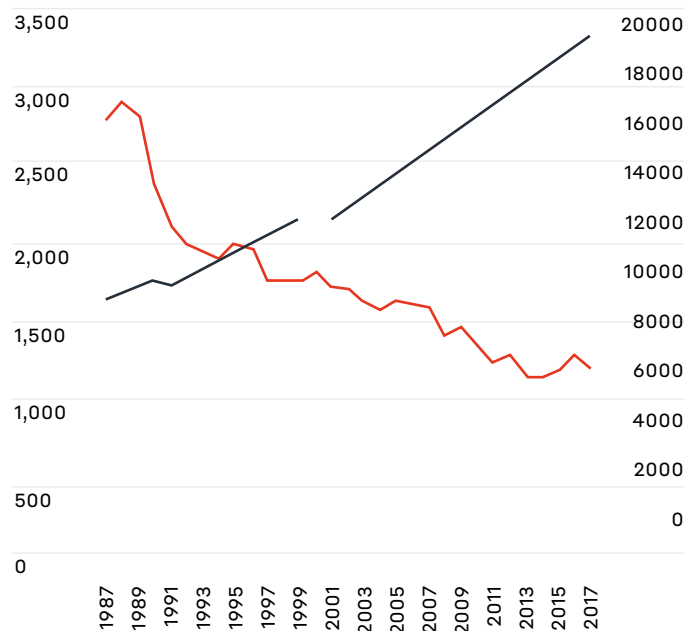


Fatalities Motor Vehicles (1,000)

Figure 8A

Source: Swedish Transport Administration

Road Deaths and Registered Motor Vehicles in Australia 1987-2017



Road Deaths - Australia Motor Vehicles (per 1,000)

Figure 8B - Australia adopted the Safe System approach in the early 2000s.

Source: Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2017, Road trauma Australia 2016 statistical summary, BITRE, Canberra ACT.

⁵ Passenger vehicles, light commercial vehicles, heavy vehicles (including trucks and buses), motorcycles and heavy mopeds.

⁶ "In use" in the Sweden has the same status as "registered" in Australia.

The Swedish Parliament adopted Vision Zero in 1997.

Sweden has one of the world's lowest traffic-related fatality rates.

Sweden continues its journey toward eliminating fatalities and serious injuries in the road transport system.

The Journey

- Aligning policy with evidence-based practice is essential to move forward.
- Integral to the process of creating a Safe System is collaboration among system designers at different levels of government and private industry. Decision-makers must commit to Vision Zero and work together to ensure that recommended practices are applied to their community's road system.
- Monitoring and evaluation of performance is essential. Before-and-after studies and ongoing reviews of road safety policies, strategies, operation and performance are powerful tools to support this effort. Systematic sharing of proven practices is also critical to advance Vision Zero's progress in cities and countries around the world.

Inspired by Vision Zero, European countries are increasingly improving road safety. Among them are Portugal and Spain, which have reduced the number of fatalities by 60-plus percent between 2001 and 2017.⁷

Among the cities, large and small, that have begun their Vision Zero journeys are: New York and Orlando in the United States; Mexico City in Mexico; Blackpool, Liverpool and London in England; Edinburgh in Scotland; and Montreal and Quebec City in Canada.

According to the US-based organization Vision Zero Network, a Vision Zero city is one that meets the following minimum criteria:

- A clear goal of eliminating traffic fatalities and severe injuries has been set.
- The Mayor has publicly, officially committed to Vision Zero.
- A Vision Zero plan or strategy is in place, or the Mayor has committed to doing so with a clear time frame.
- Key city departments (including police, transportation and public health) are engaged. >

Vision Zero Can Make a Difference Throughout the World

Road fatalities per 100,000 inhabitants

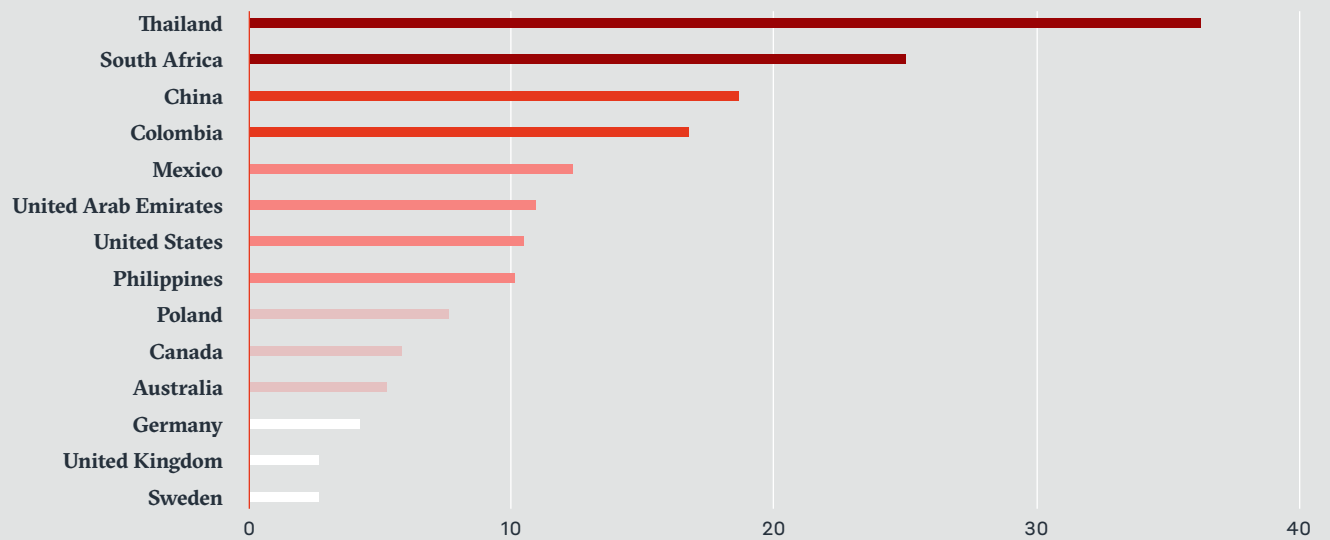
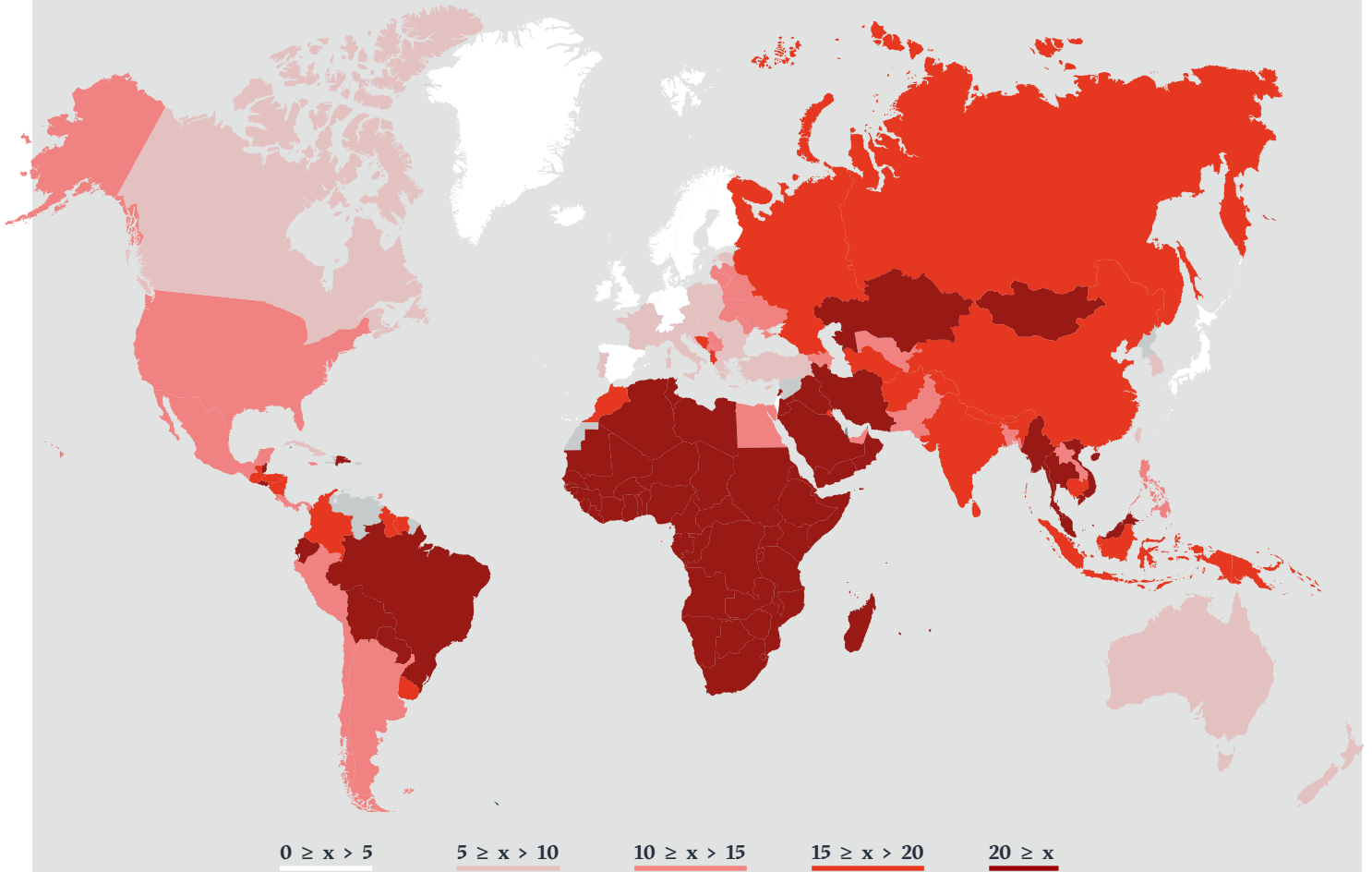
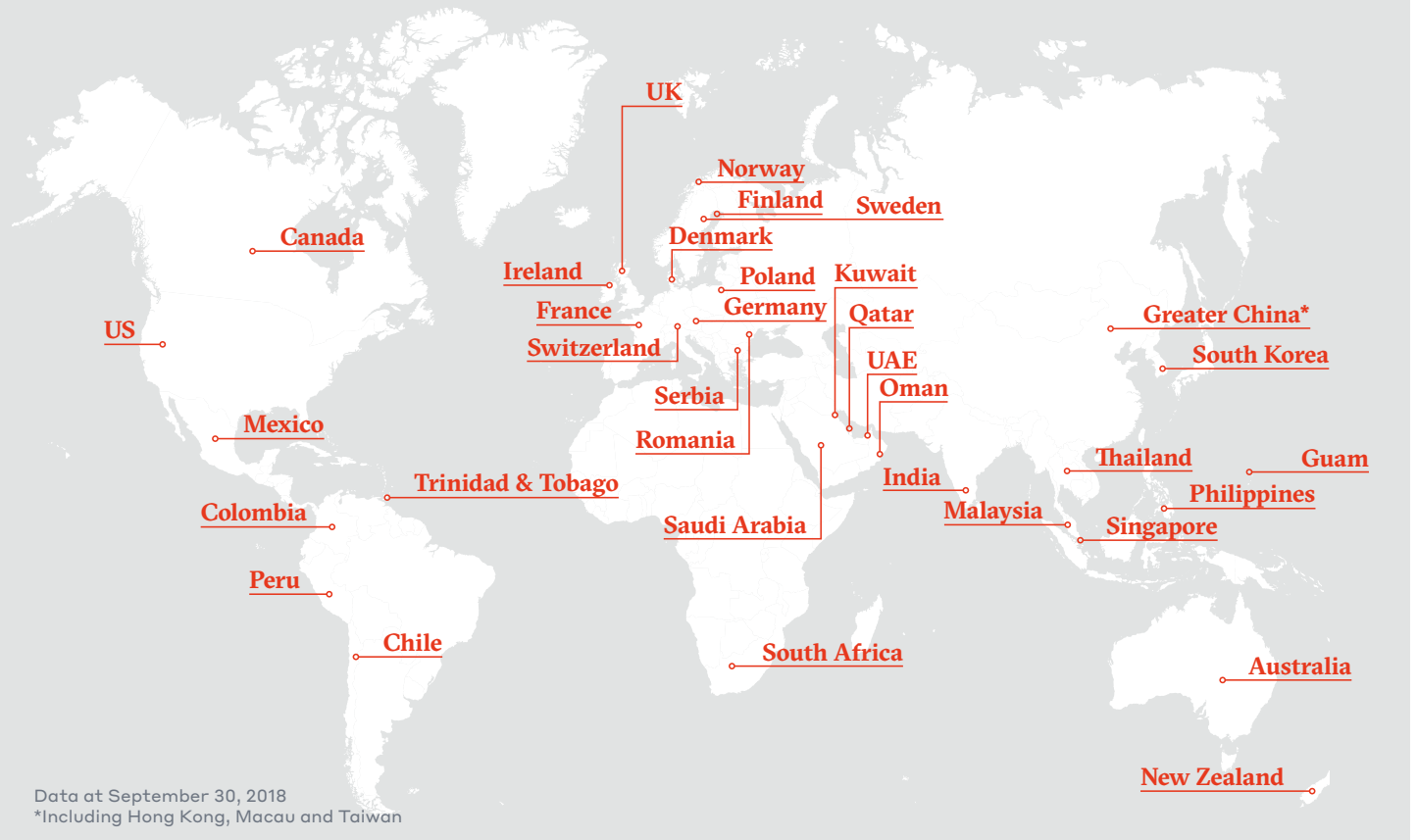


Figure 9 - Adapted from WHO 2013



Geographical Reach: a close-to-client WSP perspective strengthened by an international understanding

WSP can leverage the collaborative capability between our local specialists and international experts to advance Vision Zero efforts throughout the world—everywhere they are underway, anywhere they are planned.



Case Studies

Here is a look at how WSP is advancing Vision Zero in communities throughout the world. Projects focus on action plans, audits, urban planning, speed management, and designing safe rural and urban roads and streets.

1

Toward a Vision Zero Action Plan

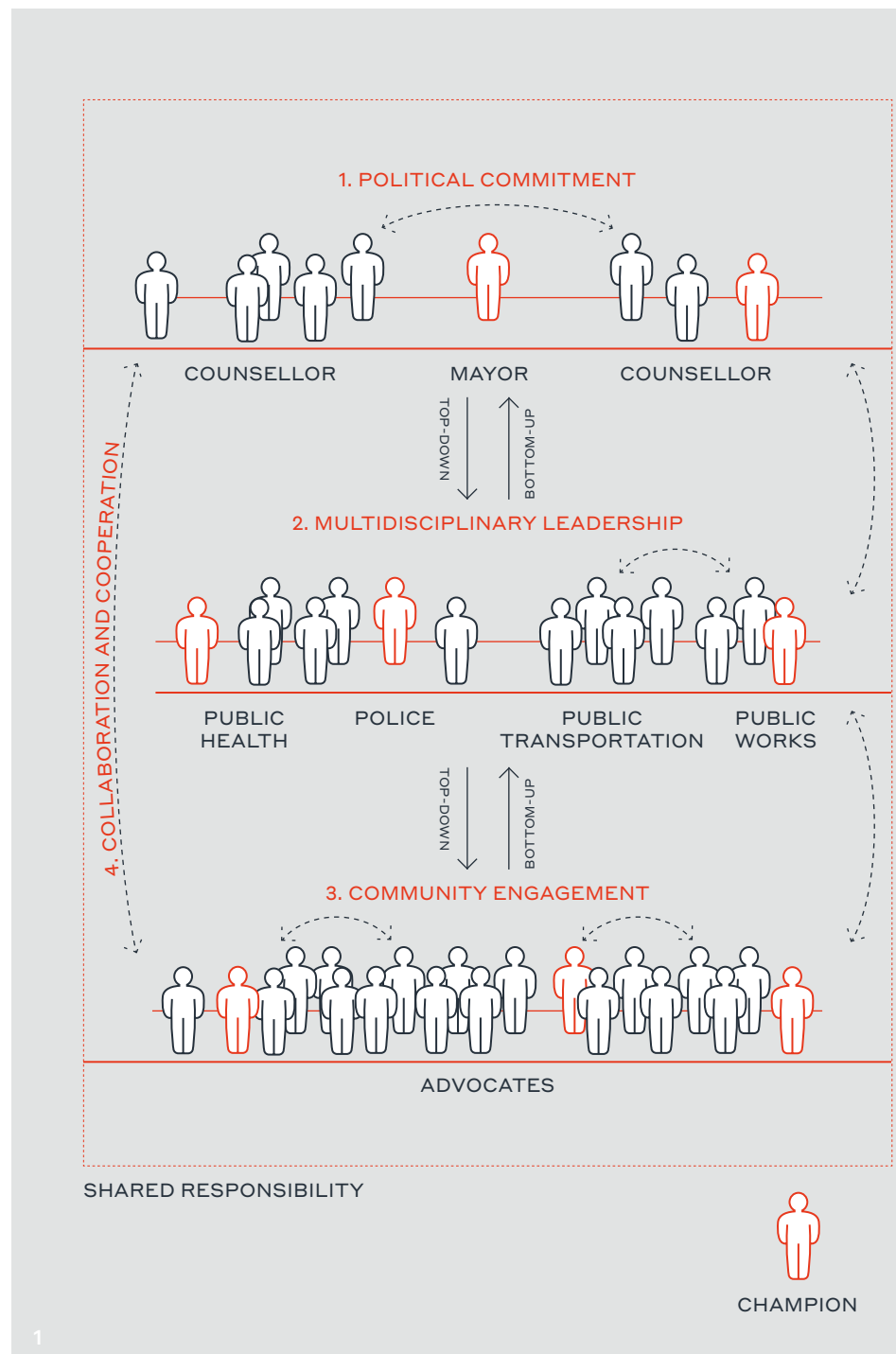
LOCATION
CANADA

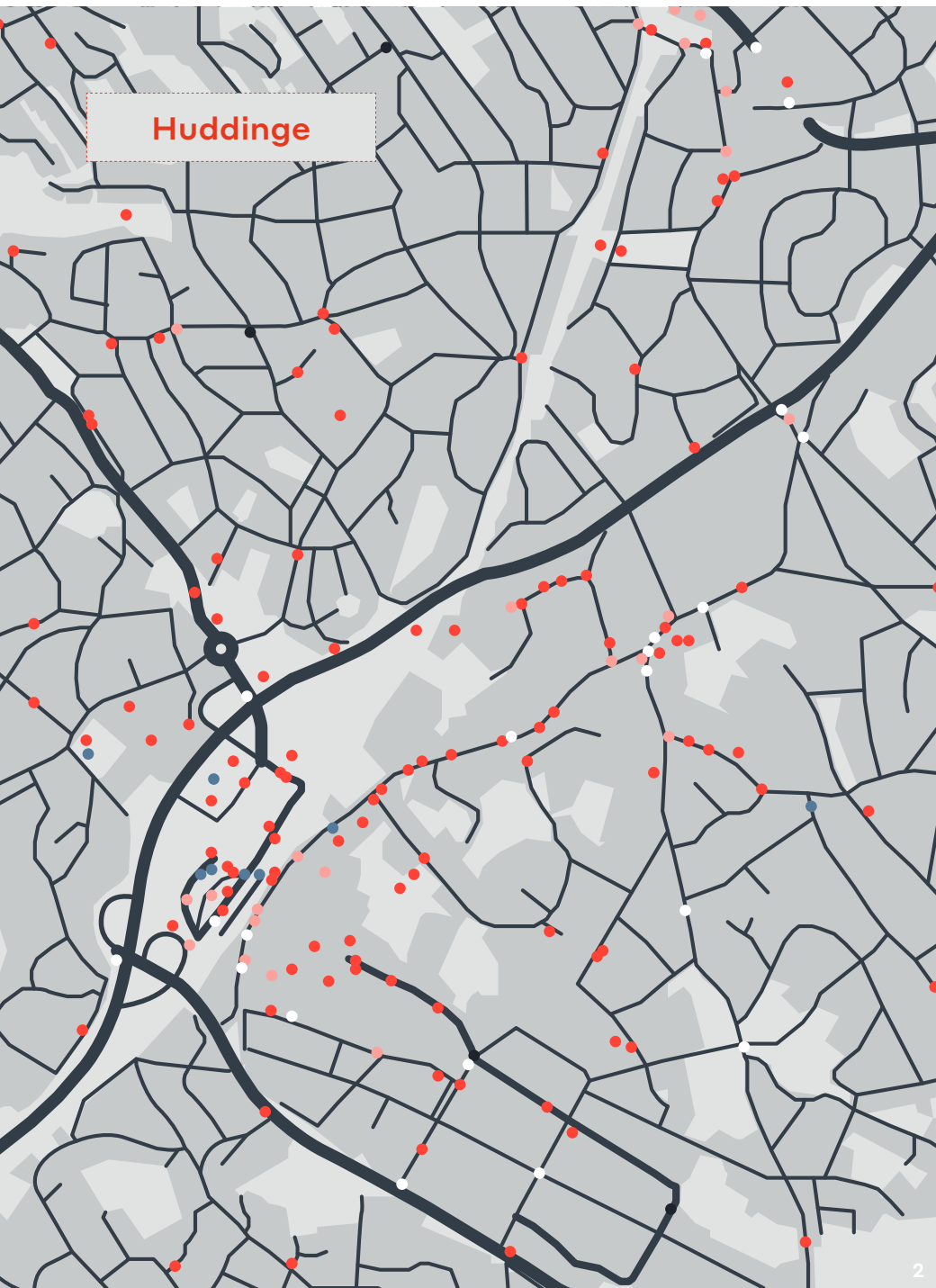
CLIENT
CITY OF MONTREAL

The project started in 2016 as a technical study to assess where the City of Montreal was standing in comparison with Vision Zero cities in North America. Three months into the study, the Mayor publicly announced Montreal was adopting Vision Zero. The conclusion of the study supported the decision to embrace Vision Zero with achievable, yet challenging targets.

The technical study was comprised of three parts. First, a synthesis of the required components of Vision Zero was made based on a literature review and 10 case studies. Second, the current situation in the city of Montreal was established through meetings with key stakeholders (including the public health department, police department and public transportation agency), leading to a safety evaluation of Montreal's road network for each component of Vision Zero previously identified. Third, recommendations were made by comparing the results of the first two parts of the study, which, in collaboration with City staff, were then prioritized according to current opportunities in the city.

Once the technical study was completed, WSP supported the City toward the development of a Vision Zero Action Plan for Montreal.





2

Road Safety Strategy and Action Plan for Huddinge

LOCATION
SWEDEN

CLIENT
HUDDINGE MUNICIPALITY

Huddinge, a suburban municipality south of Stockholm with about 100,000 residents, needed a road safety strategy and an action plan in order to plan and manage road safety work—and thus fulfill its commitment to Vision Zero. Huddinge's traffic plan states an objective to increase sustainable travel, such as walking, cycling and public transport. Bringing about a road infrastructure environment that supports walking and cycling required a special initiative to implement road safety treatments for vulnerable road users.

WSP worked together with Huddinge Municipality regarding the road safety strategy and action plan. The strategy includes an analysis of the current situation and the establishment of road safety targets and measures.

WSP's advice was based on road safety research and Vision Zero best practices, plus local statistics regarding road traffic injuries and fatalities. Based on this data, the targets in the strategy focus on vulnerable road users, especially children, moped drivers (who are mostly teenagers) and elderly people. The action plan maps and prioritizes actions based on the location of schools and other places the young and elderly often visit, the safety of pedestrian and bike crossings, and speed regulations.



3 Direction Zero

LOCATION
AUSTRALIA

CLIENT
EASTERN METROPOLITAN
REGIONAL COUNCIL

Perth's Eastern Region contains a mix of transport infrastructure along with major commercial, industrial and residential activities that generate large amounts of traffic.

WSP provided assistance and advice to the Eastern Metropolitan Regional Council to prepare and subsequently update their 2015-2018 Regional Road Safety Plan.

The development of the Regional Road Safety Plan was an identified action from the Regional Integrated Transport Strategy 2014-2016, and the plan is consistent with other strategic documents such as Western Australia's Towards Zero Road Safety Strategy 2008-2020, the national Road Safety Strategy 2011-2020, and the Main Roads WA Road Safety Strategy 2011-2015: The Road Towards Zero.

Work included defining the region's vision to "support, assist and advocate for the development of a fatality and serious injury free road network in Perth's Eastern Region" as well as setting objectives, priorities and outcomes, with a number of stated key performance indicators. Key focus areas of the plan included actions relating to safe roads and roadsides, safe speeds, safe road use and safe vehicles as well as road safety planning and governance.

4

Road Safety Strategy and Action Plan

LOCATION
REPUBLIC OF KIRIBATI

CLIENT
MINISTRY OF PUBLIC WORKS AND
UTILITIES, GOVERNMENT OF KIRIBATI

WSP's Australian road safety specialists reviewed all relevant background information with respect to previous work undertaken in order to identify and develop a set of practical recommendations that could be incorporated into the Government of Kiribati's overarching Road Safety Strategy and the development of a 2015-2017 Road Safety Action Plan (RSAP).

The consultancy services were required to progress existing work that had been undertaken in order to finalize the draft National Road Safety Strategy (NRSS) as well as to modify the supporting draft RSAP to better target and provide realistic actions over the first 12-24 months of the Strategy. As such, the RSAP needed to include clear and specific implementation programs, reflecting local capacity and available resources.

Client guidance included the need to focus on four major issues and an additional three elements. The seven areas identified were: leadership and capacity building; speed management; public transport (mini-bus) passenger safety; road safety school education; vehicle registration and driver licensing; the development of a crash data system; and drinking and driving.

The image shows a new footpath being constructed as part of the upgrade to the road network.





5

E18 Norrtälje-Kapellskär

LOCATION
SWEDEN

CLIENT
SWEDISH TRANSPORT ADMINISTRATION

The E18 between Norrtälje and Kapellskär is one of the main heavy vehicle routes connecting Norway, Sweden, Finland and the Baltic States. It is the only remaining section of the highway between Oslo (Norway) and the port in Kapellskär that has not been upgraded to freeway standard.

While road safety issues currently exist, especially when ships depart or arrive at the port in Kapellskär, the existing traffic volumes do not warrant the design and construction of a freeway-standard road. The new highway will consist of an innovative 2+1 design with two lanes in one direction and one lane in the other, alternating every few kilometres (and separated by a safety barrier).

The project will be delivered through a design-build contract wherein WSP assumes the client's role as supervisors and technical experts for all disciplines. As part of this undertaking, WSP provided advice and support to the Swedish Transport Administration—recommending which results from the audits should bring about changes in the design (from concept design until early operating). WSP also recommended the most effective design.

The image shows the road during the construction of the 2+1 design.

6

E45 Dorotea

LOCATION
SWEDEN

CLIENT
SWEDISH ROAD ADMINISTRATION

In the small town of Dorotea, the E45 serves not only as the main corridor for long-distance (interregional) traffic but also as the primary commercial and retail street of the town. While traffic volumes are not particularly high, there is a high percentage of long and heavy vehicles. In addition, the main street is narrow and passes close to schools and shops. As such, it is not considered a safe or pleasant environment for vulnerable road users. Safety problems associated with this road are not limited to the town site itself; they also exist when approaching the urban area from both directions.

WSP is carrying out the detailed design for the project, which involves creating safer conditions for cyclists and pedestrians when travelling along and crossing the E45 in Dorotea.

As the E45 belongs to the Trans-European Transport Network, a mandatory independent road safety audit must be conducted during the detailed design phase. The audit is being carried out by authorized WSP staff working in a different office in Sweden from the design team to provide an independent audit.

The recommendations in the audit include: providing safer conditions for vulnerable road users such as a different location for a pedestrian crossing; modifying intersection designs to better accommodate local traffic; incorporating safer railings; and highlighting the town border for approaching traffic.

The image shows the current road running through the town with the school in the background (left).

7

E6 Freeway Interchange Rebbelberga

LOCATION
SWEDEN

CLIENT
SWEDISH TRANSPORT ADMINISTRATION

The E6 in the southeast of Sweden is one of the main heavy vehicle routes connecting Denmark, Sweden and Norway. The Rebbelberga interchange, close to Ängelholm, needed upgrading due to insufficient capacity. The new interchange includes a grade-separated roundabout above the freeway, replacing the old interchange that had included one bridge.

WSP carried out all design phases and monitored the project during the construction phase.

As the E6 is a part of the Trans-European Transport Network, the project included a road safety audit process which started with a road safety impact assessment. The impact assessment was conducted by WSP professionals from a separate location in Sweden to provide an independent assessment.

New knowledge from a WSP-conducted research project regarding interchanges and grade-separated roundabouts informed the assessment process, thereby supporting a new design and road safety improvement.

In the road safety impact assessment, WSP recommended a design for the roundabout with an embankment that would prevent cars from driving into the middle (a hole, where the straight bridge had previously existed) and down to the freeway below. The new design includes landscaping that is not only aesthetically pleasing but also clearly indicates the roundabout.

The image shows the overlaying roundabout in the freeway at the Rebbelberga intersection after construction.



8

Redevelopment of Barkarby

LOCATION
SWEDEN

CLIENT
JÄRFÄLLA MUNICIPALITY

The Barkarby shopping district, close to a new city development for 50,000 inhabitants, is currently planned for car travel. The existing layout—with unclear, confusing and unsafe street design for all road users—makes it difficult for residents from nearby urban areas to go shopping by bicycle or bus, or as pedestrians.

The project involved two phases. In the first phase, WSP carried out a feasibility study focused on treatments to enhance road safety, improving bus access and solving the traffic jams in the busiest areas. To improve safety and accessibility for all road users, WSP sketched a design that included several roundabouts, changing one car lane to a bicycle lane, and minor changes in the street layout. Microsimulation modelling showed that, despite one less lane, accessibility for cars and buses would increase thanks to the roundabouts. A win-win situation.

As property owners had expressed an interest in pursuing residential developments, phase two involved preparation for a master plan. Toward this end, WSP created a new layout that will make it possible to transform the shopping area into a livable city, step by step, with improved road safety.

The image shows a potentially dangerous scenario for pedestrians when crossing the multi-lane street and the lack of cycling facilities.



2

Armour Road Complete Street Plan

LOCATION
UNITED STATES

CLIENT
CITY OF NORTH KANSAS CITY, MISSOURI

Armour Road is a destination street in North Kansas City passing through the historic downtown, providing connections to schools, parks, community centers and stores.

The purpose of the project was to provide a balanced roadway for all transportation modes and improve safety for users of all ages and abilities. Throughout the planning process, WSP performed a robust public involvement campaign utilizing innovative techniques such as a “pop-up” demonstration on the street. This effort led to broad public buy-in for the concept design that WSP produced. The design reallocates street space from motor vehicle driving lanes to create protected bicycle lanes and add-on street parking; provides additional safe pedestrian crossings; creates high-quality public spaces; and improves transit stops—all with minimal impact to motor vehicle operations.

WSP used a data-driven approach to identify the improvements that would encourage slower vehicle speed and bring about the greatest reduction in the number of crashes resulting in deaths and serious injuries.

With significant momentum to implement the plan recommendations, the City Council unanimously adopted the plan and selected WSP to provide final design and construction inspection services.

The image shows the “pop-up” protected bicycle lane demonstration that was staged as part of the public engagement process in the planning phase.



10

Safe Bus Stops for Children

LOCATION
SWEDEN

CLIENT
VÄRMDÖ MUNICIPALITY

The Värmdö municipality, situated in the Stockholm archipelago, has a growing population in the countryside villages. The municipality, which incurs an extra expense to provide school buses, wanted to know if it is possible for the children to use public transport instead.

This project entailed creating methods for inventory, evaluation and classification of public bus stops. After developing safety criteria, WSP performed an on-site inventory with a Geographic Information System (GIS) tool that WSP developed for this purpose. Road safety when walking along the road, the possibility for pedestrians to safely cross the road, and the safety at the stops were all evaluated and classified as good, acceptable or insufficient for children of different ages.

The project was delivered, in addition to a report and tables, in the form of a GIS database where the municipality can add attributes or change the content if conditions change.

The classification method is now used by the municipality administration when developing school travel road designs and actions that need to be taken to improve safety at public bus stops. The classification of the bus stops ensures all children are treated equally, regardless of their social and economic status.

The image shows a bus stop that is "good" for children who are waiting, as the waiting area is separated from the running traffic by a curbstone and the bus stop width; but the quality is "insufficient" for crossing the road (high-speed traffic and inadequate sight length).

11

Long-Term Regional Cycling Strategies

LOCATION
AUSTRALIA

CLIENT
DEPARTMENT OF TRANSPORT
(WESTERN AUSTRALIA)

In 2017, WSP was commissioned to develop long-term cycling strategies for the Bunbury–Wellington, Leeuwin–Naturaliste, Warren–Blackwood and Greater Geraldton subregions. The projects, which are ongoing, have involved collaboration with local governments, regional development commissions and other government and non-government stakeholders. The resulting strategies set out a number of long-term, aspirational cycling routes aimed at improving quality of life in regional areas, with a strong focus on identifying interregional connections and cycle-tourism opportunities.

In developing these strategies, extensive consultation was undertaken with key stakeholders and the local community. The consultation has helped refine the overarching aims and objectives of the strategy, as well as clarify the community's expectations in terms of where key routes are most needed and the requirements of different user groups.

To inform the planning process, WSP undertook a thorough desktop review of existing cycling routes, existing cycling demand and historical crash data.

A key component of these projects has been the development of a clear and coherent route hierarchy. The route hierarchy is based on the "8 to 80" design philosophy—meaning that all future cycling routes should be suitable for people from 8 through to 80 years old. It is based on the idea that if you plan a cycling network which meets the needs of these people then it is likely to be suitable for cyclists of all ages and abilities.



10



12



12

Christchurch Cycle Network Planning

LOCATION
NEW ZEALAND

CLIENT
CHRISTCHURCH CITY COUNCIL

WSP was appointed to undertake planning, community consultation, design and delivery for a number of city-wide Major Cycleway Routes (MCRs) throughout Christchurch City. Over a two-year period, our team was responsible for delivering the planning and design aspects of over NZ\$150 million of capital investment in new cycleways.

As part of this project, WSP undertook a Safety Audit Network Functionality (SANF) review of major cycleway routes throughout Christchurch. This process involved combining a safety audit with an assessment to understand the influence that facility type has on a person's tendency to cycle.

The project received a "biking to the future" award from the New Zealand Transport Agency at the 2016 National Walking and Cycle Conference.

One of the major takeaways of this project was the power of photomontage cross-sections. Visualizations (like that shown) were key to informing the public how the project will impact their neighbourhood, and instrumental in gaining community support.



13

13 E22 2+1 Rural Road

LOCATION
SWEDEN

CLIENT
SWEDISH TRANSPORT ADMINISTRATION

E22 is a 14-kilometre-long road with high volumes of heavy vehicles travelling to and from a nearby port. The road is the only option for slow farming vehicles and cyclists, and it passes close to a school in one town.

The new highway will have a 2+1 design with a barrier in the middle (as seen in the image) and new grade-separated interchanges. In addition to the highway, the project involves alternative roads for slow vehicles, paths for cyclists and pedestrians, and connecting roads. Vulnerable road users and local traffic will be able to cross under or over the highway. In the town, there will be much less traffic, especially from heavy vehicles and thus better possibilities to implement traffic-calming treatments.

WSP has developed both the early-planning and the draft-design documents.

As the E22 is a part of the Trans-European Transport Network, the early planning included a road safety impact assessment. WSP also conducted the mandatory road safety audit for the draft-design stage.

14

New Jersey Complete Streets Design Guide

LOCATION
UNITED STATES

CLIENT
NEW JERSEY DEPARTMENT
OF TRANSPORTATION

Complete Streets are designed to meet the needs of all users, promoting communities where people can travel safely and where walking, biking and riding transit are promoted by street and community design. Building on prior work preparing and implementing statewide training programs on Complete Streets, the New Jersey Complete Streets Design Guide presents treatments and techniques for designing “complete streets” in a variety of settings. The goal is to enhance a street’s safety, mobility, access and vitality by informing all projects that impact the public right-of-way, including the construction of new streets and improvements to existing streets.

Although New Jersey is not a Vision Zero state, much of the guidance provided in the New Jersey Complete Streets Design Guide aligns with the goals and objectives of Vision Zero. Guidance is aimed toward creating a safer environment for all street users, with a focus on vulnerable users, including people walking, biking, and those with mobility challenges. In great part, the focus is on designs that will help eliminate crashes that cause fatalities and serious injuries in our transportation system.

The WSP team included a multidisciplinary group of experts who provided detailed guidance in each subject area. Our industry-leading visualization specialists developed three-dimensional renderings of Complete Streets design concepts and elements. The team developed a group of common street typologies in New Jersey and demonstrated how various Complete Streets treatments could be applied within those contexts.

15

Bloor Street Bikeway Pilot

LOCATION
CANADA

CLIENT
CITY OF TORONTO

The City of Toronto initiated a pilot project for cycling facilities on a 2.4-kilometre segment of Bloor Street in 2015.

Some of the challenges involved in this project included the narrow width of the roadway, frequent intersections and a high density of commercial, residential and cultural land uses. The goal of the pilot project was to provide an improved cycling environment without undertaking any roadway reconstruction work.

WSP was retained to help the City engage the community, develop a suitable design and support the City through the Council approval process.

Drawing on input received from the community, fieldwork and an analysis of safety implications and appropriate countermeasures, WSP recommended a context-sensitive design option that included a bike lane protected by parked vehicles on one side of the street, and a buffered bike lane (separated by bollards) on the other. Working with City staff, WSP identified where parking, loading zones and turn lanes should be located on each block in order to minimize risks for all road users. This approach helped strike a balance between creating a more comfortable cycling experience and maintaining adequate levels of parking as well as mitigating negative traffic implications.



16

Coromandel Motorcycle Loop

LOCATION
NEW ZEALAND

CLIENT
NZ TRANSPORT AGENCY

The Coromandel Peninsula is located on the North Island of New Zealand to the east of Auckland. It has a road network that is popular with motorcyclists due to the number of curves and the possibility of undertaking loop rides in the area.

The Coromandel loops have a high number of motorcycle crashes with 44% resulting in fatal or serious injuries on the northern loop and 36% on the southern loop. This compares with 18% overall on the rural state highway network in New Zealand.

Typical key contributory factors for motorcycle crashes on the two routes are loss of control on bends, speed and poor handling, and road factors.

WSP (along with its client and input from Mackie Research) undertook two studies, one that looked at the northern loop and the other at the southern loop. Three key focus areas were identified: keeping riders on their motorcycles; ensuring hazards are removed, reduced or protected in case riders crash; and considering measures to reduce emergency response times. The outcome was a series of recommendations to improve road safety for motorcyclists. These included perceptual countermeasures using pavement markings and the development of systems—such as improved cell phone coverage and rescue helicopter landing pads—to reduce the elapsed time from the occurrence of an incident to medical assistance being provided.

17

West Coast Drive Cycleway

LOCATION
AUSTRALIA

CLIENT
DEPARTMENT OF TRANSPORT
(WESTERN AUSTRALIA)

In 2016 WSP was commissioned to develop concept designs for a new cycleway along West Coast Drive—a scenic north-south route along the Indian Ocean in the northern suburbs of Perth, Western Australia. The objectives of the project included improving the area's livability and vibrancy by encouraging more people to choose active modes of transport.

The design process involved the identification of a range of Local Area Traffic Management (LATM) measures aimed at reducing average vehicle speeds and traffic volumes, making conditions safer for vulnerable road users. The preferred design involved the separation of motor vehicles, pedestrians and cyclists, and incorporated a number of changes to on-street parking, bus stops and pedestrian crossing facilities. Achieving favourable urban design outcomes was also a key driver of this project.

West Coast Drive Cycleway demonstrated WSP's ability to work collaboratively with government agencies and advocacy groups, balancing the needs of different users. An important aspect of this project was the preparation of several architectural visualizations which helped communicate the proposed designs to key stakeholders.

18

Vasagatan

LOCATION
SWEDEN

CLIENT
CITY OF STOCKHOLM TRAFFIC
ADMINISTRATION

Vasagatan is one of the main streets in downtown Stockholm, where there are many hotels, office buildings, restaurants and the Central Station with commuter and long-distance trains and buses. The street is also a commuter path for cyclists. To encourage cycling, the City decided to increase the accessibility for cyclists. Enhanced road safety was also a target.

Property owners in the area were eager to improve accessibility for both pedestrians and cyclists, as well as increase the street's attractiveness; they offered to contribute to the funding of a more comprehensive redesign than the city's budget allowed, with better-quality materials, wider sidewalks and more trees.

WSP mobilized an experienced multidisciplinary team of street designers, landscape architects, and urban and traffic planners, including cycling and road safety experts, to present two alternative layouts for the street: a "good enough" option within the city's budget; and a higher-end alternative that required the additional funding from the property owners. WSP used Light Detection and Ranging (LiDAR) technology, virtual reality and sketching to create perspectives that presented the designs to politicians and property owners when preparing funding decisions. The City and the property owners decided to create the higher-end alternative, with construction planned to start in 2019.



16

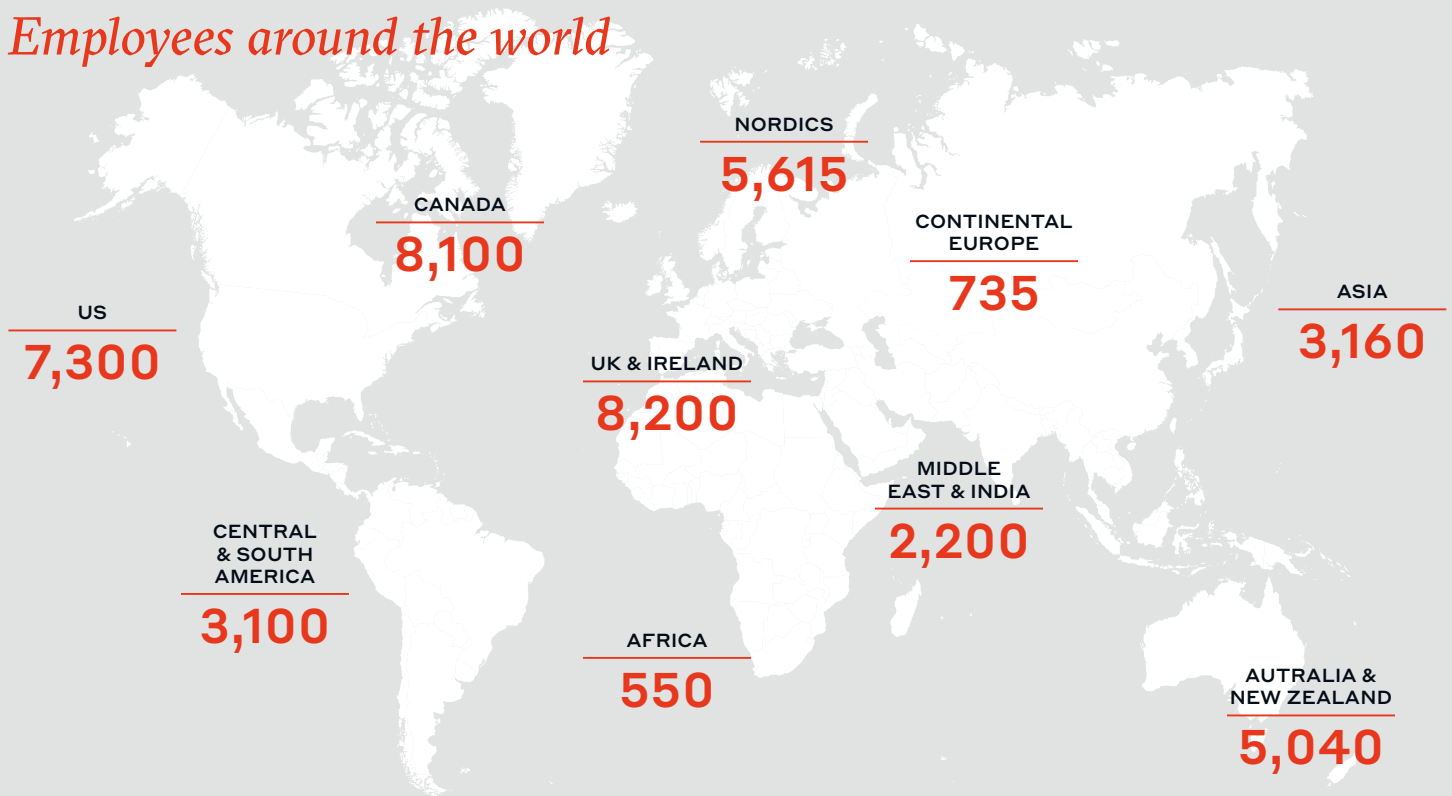


17



18

Employees around the world



Figures on September 30, 2018

About WSP

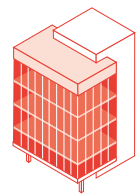
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44,000

EMPLOYEES



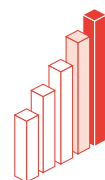
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OFFICES



40

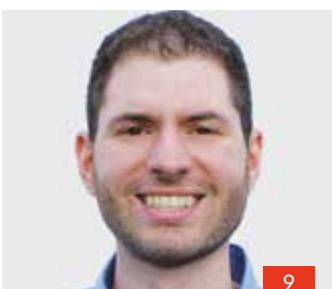
COUNTRIES



6.9B

2017 REVENUES

Key Contacts



1

Karin Hassner

karin.hassner@wsp.com
Sweden

2

Elin Delvéus

elin.delveus@wsp.com
Sweden

3

Tim Selby

tim.selby@wsp.com
Australia

4

James Pearse

james.pearse@wsp.com
Australia

5

Fergus Tate

fergus.tate@wsp.com
New Zealand

6

Adam Bell

adam.bell@wsp.com
Canada

7

Samantha Leger

samantha.leger@wsp.com
Canada

8

Christopher Jandoli

christopher.jandoli@wsp.com
United States

9

Daniel Turner

daniel.turner@wsp.com
United States

10

Lucy Wickham

lucy.wickham@wsp.com
United Kingdom



Can we trace horizons,
hold true to our ambitions,
*and hold ourselves
accountable?*

What if we can?



WSP Global Inc.
1600, René-Lévesque Blvd. W.
16th Floor
Montreal, Quebec
Canada
H3H 1P9

wsp.com

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