



Vaccines for Roads

FIFTH EDITION
iRAP'S BIG DATA TOOL
vaccinesforroads.org

Unlocking the potential of the world's largest road infrastructure safety database to explore the human and financial impact of road injury, how safe the world's roads are and provide the Business Case for Safer Roads.



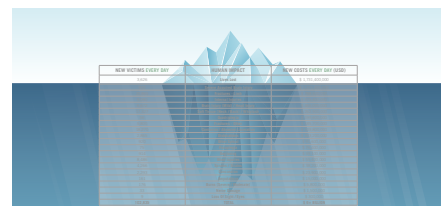
How safe are the world's roads?

Explore your region >



The human impact of road crash injuries

Personal stories >



The global impact of road crash injuries

100,000+ people per day >



Saving lives with safer roads: Case studies of success

Be inspired >



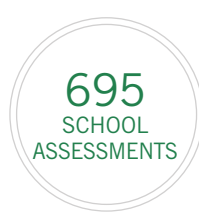
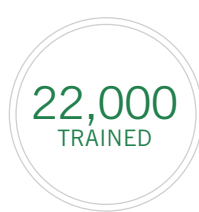
What is possible? The Business Case for Safer Roads

Examine the full potential >



Explore the Data

iRAP Big Data Tool >



A world free of high-risk roads #VaccinesForRoads #3StarorBetter

Because every life counts.

THE HUMAN IMPACT EVERY DAY

NEW VICTIMS EVERY DAY	HUMAN IMPACT	NEW COSTS EVERY DAY (USD)
3,626	Lives Lost	\$ 1,731,400,000
932	Severe Acquired Brain Injury	\$ 1,271,400,000
20,865	Fractures - Limb	\$ 788,500,000
9,090	Internal Injuries	\$ 575,400,000
6,672	Brain Injury (Mild) / Head Injury	\$ 465,000,000
17,327	Soft Tissue (Neck / Back) / Whiplash	\$ 262,900,000
56	Quadriplegia	\$ 199,600,000
5,800	Fractures - Other	\$ 185,700,000
18,270	Contusion / Abrasion Laceration	\$ 109,800,000
2,865	Dislocations	\$ 103,200,000
920	Other Spinal	\$ 91,600,000
75	Paraplegia	\$ 76,400,000
914	Degloving	\$ 59,100,000
8,486	Other Injuries	\$ 55,400,000
4,266	Sprains / Strains	\$ 38,200,000
2,293	Concussion	\$ 23,900,000
161	Amputations	\$ 15,000,000
176	Burns (Severe / Moderate)	\$ 5,800,000
33	Nerve Damage	\$ 1,500,000
9	Loss Of Sight / Eyes	\$ 300,000
102,835	TOTAL	\$ 6+ BILLION

THE GLOBAL VACCINES FOR ROADS



Unlocking the win-win potential to save 100 million deaths and serious injuries worldwide over 20 years.

iRAP's Big Data Tool, Vaccines for Roads V, shines a light on the human impact of road trauma and unlocks the potential of the world's largest road infrastructure safety database to explore how safe the world's roads are and provide the Business Case for 3-star or better roads for all road users worldwide. With knowledge of the human impact, current condition of the world's roads; the Business Case for Safer Roads and case studies of success, we have the moral imperative, the policy setting, funding mechanism and recipe for scale.

Local partnerships, global programme

The International Road Assessment Programme (iRAP) is an international, award-winning charity dedicated to creating a world free of high-risk roads. The iRAP tools are provided in a free-to-air environment for all to use and contribute to in a spirit of mutual benefit. Working in partnership with road authorities, mobility clubs, development banks, NGOs and research organisations, our combined impact extends across more than 100 countries to save lives and reduce serious injuries.

THE GLOBAL TARGETS

In recognition of the global road safety crisis, the United Nations Sustainable Development Goals include targets to halve the number of global deaths and injuries (target 3.6); invest in infrastructure to create growth and jobs (target 9.1); and ensure that transport is safe and sustainable (target 11.2).



UN Member States have now finalised 12 Global Road Safety Performance Targets

In April 2018, the UN General Assembly adopted a new Resolution on Improving Global Road Safety, and launched the UN Road Safety Fund to support catalytic action worldwide. The action will be focussed around the 12 Global Road Safety Performance Targets agreed by UN Member States in November 2017. Partners around the world are using their Road Assessment Programmes (RAPs) to target investment and optimise the life-saving potential of safer speeds and improved road engineering standards. The RAPs provide a well-established, evidence-based global standard for investment and global action to support the UN targets on a scale that matters.

TARGET 3
2030

Target 3: By 2030, all new roads achieve technical standards for all road users that take into account road safety, or meet a three star rating or better.

TARGET 4
2030

Target 4: By 2030, more than 75% of travel on existing roads is on roads that meet technical standards for all road users that take into account road safety.

Applying the iRAP Global Standard to meet Targets 3 and 4 by 2030...

450+
THOUSAND
lives will be saved a year

100
MILLION
deaths and serious injuries will be saved over 20 years

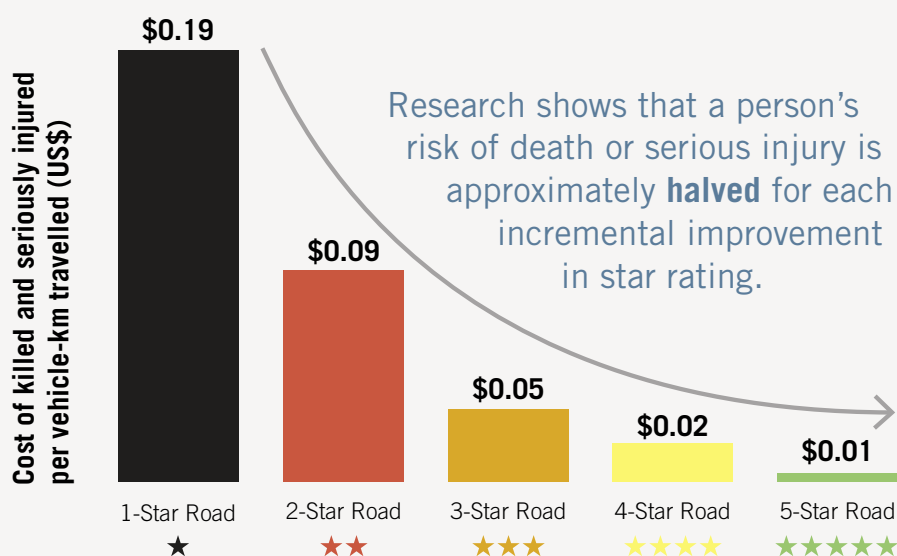
\$8
SAVINGS
for every
\$1
INVESTED

HOW SAFE ARE THE WORLD'S ROADS?

A 1-star road is the least safe and a 5-star road is the safest

Do you have a footpath? Is the road divided? Are the roadsides safe? Are the speeds appropriate? Star Rating and Investment Plan inspections create a rich source of data that provides an insight into why road trauma remains one of the world's leading public health challenges.

Based on evidence-based research, Star Ratings for pedestrians, cyclists, motorcyclists and vehicle occupants provide an objective measure of the likelihood of a crash occurring and its severity. 1-star is the least safe and 5-star is the safest.



Source: OECD (2016)

Ensuring more than 75% of travel is on 3-star or better roads for all road users by 2030 will save lives on a scale that matters.

A world free of high-risk roads SO WHERE ARE WE NOW?

A GLOBAL SNAPSHOT How roads rate and the road features that matter

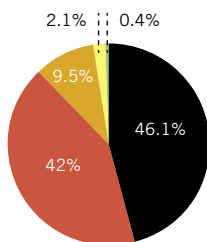
Road deaths and injuries are predictable and preventable. Head-on fatalities occur on undivided roads. Run-off road fatalities occur where the roadsides are unforgiving. Pedestrian fatalities occur where sidewalks are missing, safe crossing facilities don't exist or speeds are inappropriate.

vaccinesforroads.org summarises star rating and investment plan data and provides an interactive data analysis tool for reviewing how roads rate, as well as how road users fare on them globally and by country. The results are based on 400 million data points including roads in rural and urban areas and in low-, middle- and high-income countries.

The following charts present the road safety performance of the world's roads by road user group, along with the road features that elevate risk, to show the basic safety features missing from the world's roads.

See **vaccinesforroads.org** to explore more fully how safe the world's roads are by road type, road user group, traffic volumes, area type, road maintenance standards and by global region.

BASED ON 358,000KM OF ROADS ACROSS 54 COUNTRIES:



Road features elevating this risk



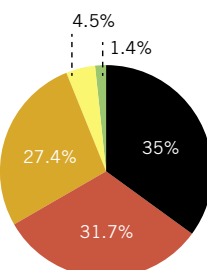
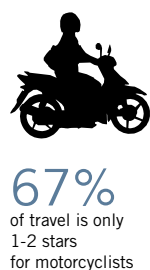
85%
of roads where pedestrians cross and traffic flows at 40km/h or more have **no formal footpaths or sidewalks**



92%
of roads where pedestrians cross and traffic flows at 40km/h or more have **no pedestrian crossing facilities**



22%
of pedestrian crossings are **poorly signed or maintained**



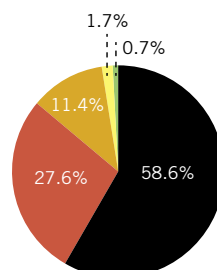
Road features elevating this risk



99%
of roads have **no motorcycle lane**



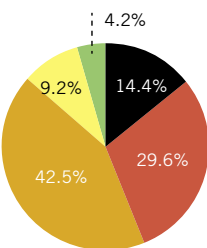
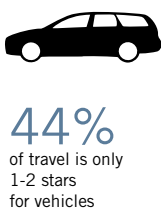
86%
of travel is only
1-2 stars
for bicyclists



Road features elevating this risk



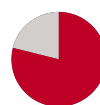
91%
of roads have **no bicycle lane**



Road features elevating this risk



81%
of roads where traffic flows at 80km/h or more **are undivided**



79%
of roads where traffic flows at 80km/h or more **have dangerous roadsides**



73%
of intersections where traffic flows at 60km/h or more **have no safe turning provision**

★ 1-star ★★ 2-star ★★★ 3-star ★★★★ 4-star ★★★★★ 5-star

POLICY LEADERSHIP

3-STAR OR BETTER TARGET FOR ALL ROAD USERS BY 2030



ALL new roads 3-Star or Better



>75% of travel on existing roads 3-star or better

By setting ambitious and achievable policy targets using the global star rating standard, countries are creating a legacy of safer roads for future generations.

NATIONAL GOVERNMENT LEADERSHIP



Australia: 90% of travel on national highways and 80% of travel on state highways 3-star or better by 2020



Brazil: ARTESP target for new road concession projects to achieve 3-star or better performance



Chile: Autopista Central toll road upgrade to meet minimum 3-star standard



China: Five year Road Safety Plan requires national implementation of road assessments and rapid treatment of high-risk road sections



Malaysia: 75% of travel on 3-star or better high volume roads by 2020



Netherlands: No 1 or 2-star national roads by 2020



New Zealand: 4-star roads of national significance; Wellington Gateway toll roads to be a minimum 4-star standard



Saudi Arabia: 70% of highways 3-star or better by 2022 and 100% 3-star or better by 2030



Sweden: 75% of network equivalent to 3-star or better by 2020 and near 100% by 2025



Thailand: All new roads to achieve a 3-star or better standard



United Kingdom: 90% of travel on 3-star or better strategic road network by 2020, and 4 and 5-star motorways

INTERNATIONAL INSTITUTIONAL LEADERSHIP



Asian Development Bank: Recommendation for 4-star roads for pedestrians and cyclists in linear settlements, 4-star for vehicles on roads carrying 50,000 vehicles or more, and 3-star or better for all other road projects.



UNESCAP: Ensure that new roads of the Asian Highway network are 3-star or better for all road users and that more than 75% of travel on existing roads is 3-star or better for all road users



Millennium Challenge Corporation: Eliminating 1 and 2-star roads in Moldova, Philippines, El Salvador, Cote d'Ivoire, Nepal and Senegal

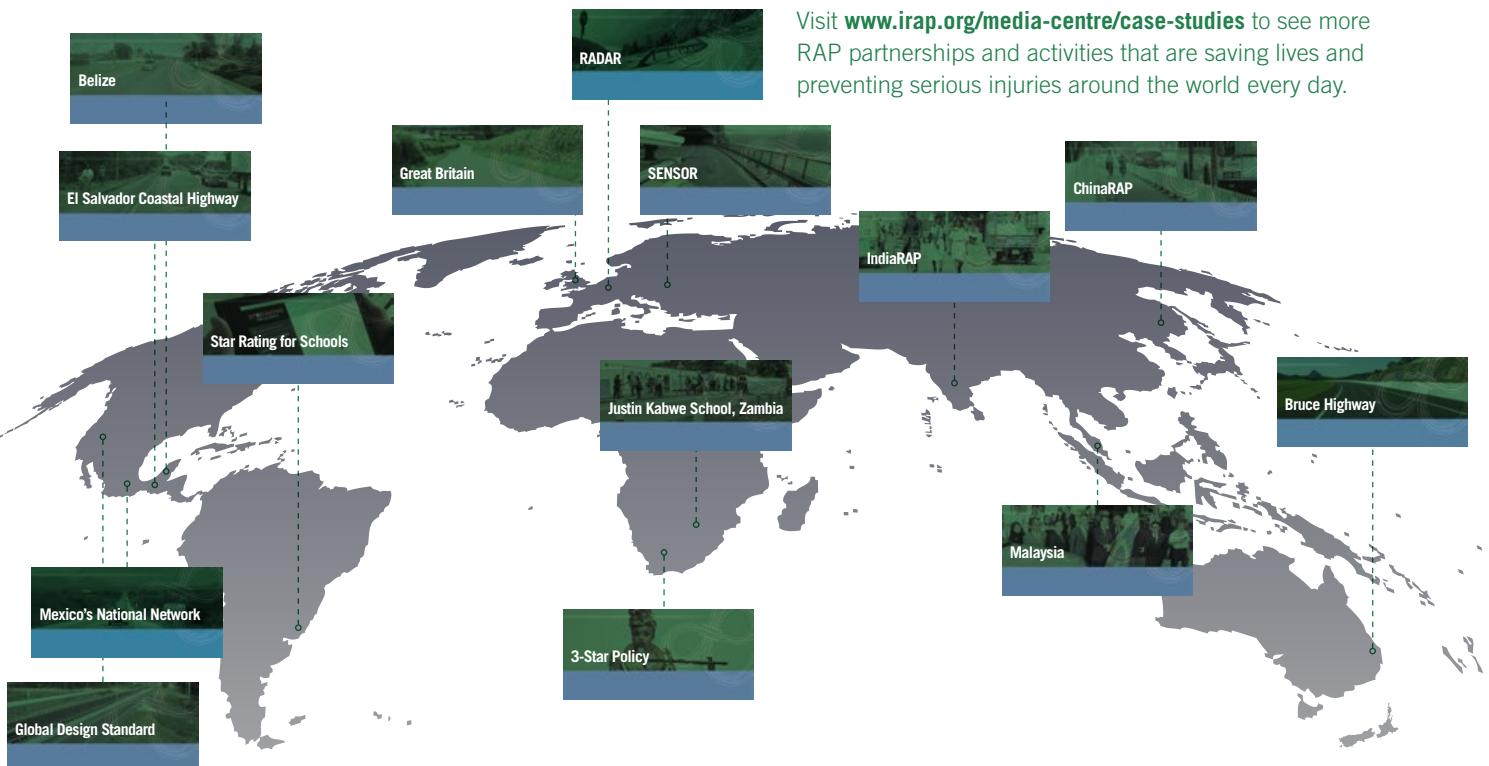


World Bank: Minimum 3-star targets for selected projects around the world.

CASE STUDIES OF SUCCESS

Many governments and private road operators have now implemented road upgrades as part of their RAP projects and programmes. Policies are in place, optimised investment is being mobilised and lives are being saved. An estimated US\$75+ billion of road investment is already being made safer. The following case studies show that saving lives on 3-star or better roads is truly possible as we **scale up action worldwide**.

Visit www.irap.org/media-centre/case-studies to see more RAP partnerships and activities that are saving lives and preventing serious injuries around the world every day.



A world free of high-risk roads

THE BUSINESS CASE FOR SAFER ROADS

For each **\$100** that road trauma costs the community,

only **\$1-3** is currently invested to prevent crashes.

Put simply, there is a **gross under-investment in life saving road upgrades and speed management worldwide** – and the **solutions to save lives are highly cost-effective.**

The iRAP Business Case for Safer Roads, which can be explored at vaccinesforroads.org, provides a high-level global and national estimate of the lives and serious injuries that can be saved, and the social and economic benefits of maximizing the percentage of travel on 3 star or better roads by 2030.

The simple analysis shows that affordable road improvements, such as footpaths, safety barriers, bicycle lanes, paved shoulders and safer speeds, applied at large-scale, will play an important role alongside safer vehicles, safer road users and better post-crash care in achieving the UN SDG targets.

UN TARGET 4 >75% of travel on roads that meet technical standards for all road users by 2030 (equivalent to 3-star or better)

	Low income	Lower middle income	Upper middle income	High income	ALL
Number of countries	29	52	53	51	185

CURRENT SITUATION

Annual number of fatalities*	172,759	591,534	485,109	95,415	1,344,817
Fatalities per 100,000 population	27.8	19.7	18.6	8.3	18.2
Annual number of fatalities and serious injuries	1,900,349	6,506,874	5,336,199	1,049,565	14,792,987
Annual cost of fatalities and serious injuries (US\$)	\$28 bn	\$290 bn	\$933 bn	\$975 bn	\$2,225 bn
Annual cost of fatalities and serious injuries (% of GDP)	7.1%	4.7%	4.5%	2.0%	3.0%

WHAT CAN BE ACHIEVED with >75% of travel on 3-star or better roads for all road users by 2030*

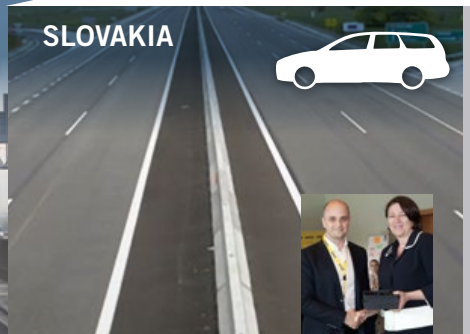
Annual investment as a % of GDP (2020)	0.20%	0.17%	0.12%	0.14%	0.14%
Reduction in fatalities per year	76,271	200,212	162,167	21,040	459,691
Reduction in fatalities and serious injuries (FSI) over 20 years	16,779,677	44,046,532	35,676,817	4,628,895	101,131,921
Economic benefit (\$US)	\$205 bn	\$1,657 bn	\$5,308 bn	\$3,381 bn	\$10,550 bn
Benefit Cost Ratio	18	11	15	4	8

*Full assumptions and national snapshots are available at vaccinesforroads.org



Achieving **>75%**
of travel on 3-star or better
roads by 2030 will save
an estimated
450,000+
lives every year and
100 million
lives and serious injuries
over the 20-year life of
the treatments.

Targeted safe roads investment by
all countries of
0.1-0.2% GDP per year
through to 2030 will unlock this
incredible outcome with
\$8 of benefits
for every \$1 invested.



A world free of high-risk roads TAKE ACTION NOW

Applying the Step by Step Approach to Safer Roads provides the confidence to invest, the metrics to measure success and the **vaccine we need for safer roads**.

Investing in safer roads and safer speeds will save lives and provide significant economic benefits. iRAP encourages and supports all countries to fully develop their own capacity to lead and deliver their own Road Assessment Programme.

STEP 1

Undertake risk mapping & identify high-risk road sections

STEP 2

Undertake star rating & investment plan analysis

STEP 3

Set network and corridor level star rating targets

STEP 4

Establish a safer roads fund or dedicated funding stream

STEP 5

Invest in safer roads

STEP 6

Save lives and save money

STEP 7

REPEAT!



Join us on the #3StarorBetter journey with #VaccinesForRoads

TAKE ACTION NOW >

vaccinesforroads.org

donate@irap.org

To establish or expand your own RAP programme, please contact us:

 icanhelp@irap.org

 irap.org

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iRAP is the umbrella charity supporting 100+ countries and regional RAP programmes including:



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Maximising travel on 3-star or better roads for all road users vaccinesforroads.org