



2 August 2019

Jeremy Conway
CEO
Infrastructure SA
Level 15 Wakefield House
30 Wakefield St
Adelaide

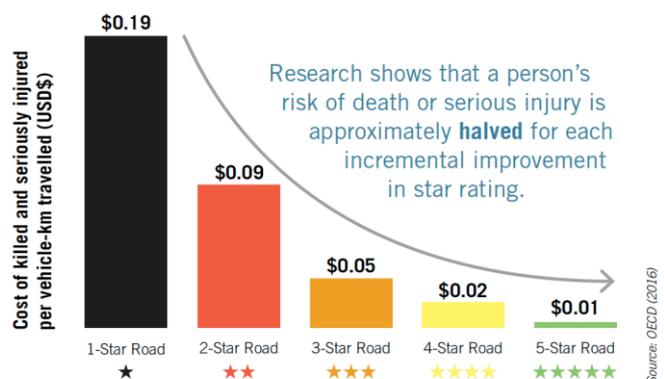
Dear Jeremy,

Infrastructure SA Discussion Paper

Thanks for the opportunity to contribute to the Infrastructure Discussion Paper. The focus of my submission will be on the road safety related infrastructure needs as it relates to both the transport and health sector. Road trauma is a significant and often under-estimated burden on families, the community, business, health sector and economy of South Australia. Originally growing up in the Clare Valley I understand the impact of road trauma in the State.

Rather than last but not least as expressed in the Transport Introduction on Page 31, with a focus on fatalities only, the full impact of road trauma must be understood and given the prominence it deserves to ensure the infrastructure response matches the scale of the problem. Based on current figures an estimated **1,600 South Australians will die in road crashes over the next 20 years and more than 60,000 will suffer injuries** like Severe Brain Injury, Limb Fractures, De-gloving, Contusions, Internal Injuries and Soft Tissue Injuries. All filling up trauma wards, hospital beds and health service capacity. **The cost to the SA economy is likely to exceed \$60 billion** over that period of time.

The Infrastructure Solutions to ensure that does not happen are proven and cost effective. The National Road Safety Strategy Action Plan agreed by Transport Ministers has a target for at least 80% of travel on State Roads to be 3-star or better by 2020. Road deaths and injuries are typically halved with each incremental improvement in star rating.





In Australia, typically 40% of road deaths are work-related. The cost to business of coping with an unsafe workplace in relation to road infrastructure is huge. In many cases small HSE risks are over-managed by business while one of the major risks – the condition of road infrastructure – is under-managed. As an example, based on AusRAP / ANRAM analyses undertaken by DPTI (numbers to be confirmed by DPTI):

- 21% of travel is on 1-star roads for vehicle occupants and 33% of travel is on 2-star roads for vehicle occupants
- 95% of State Roads in SA carrying high speed traffic are on undivided single carriageway roads with the risk of head-on crash death and injury built-in
- 86% of high-speed curves in SA have dangerous roadsides that will kill or injure
- 86% of intersections do not have safe turning provisions

While data is not yet available in South Australia, it is expected similar results for pedestrians, cyclists and other vulnerable road users exist in urban spaces across South Australia. With an increasingly urban population ensuring 3-star or better performance for all road users is an important component of safe, accessible, vibrant and sustainable urban areas and are reflected in global UN Targets (WHO, 2018).

Based on the scale of the problem, the high-return on investment from proven road infrastructure upgrades and the impact across wide ranging areas of the South Australian economy **the road trauma response should be elevated to first and foremost and not last and not least.**

The primary recommendations relate to the Transport Sector Section

Transport – page 31

Current state – elevate safety to a new second paragraph

- Road trauma is a significant burden on families, the community, business, health sector and economy in South Australia. Based on current figures an estimated 1,600 South Australians will die in road crashes over the next 20 years and more than 60,000 will suffer life-changing injuries including Severe Brain Injury, Limb Fractures, De-gloving, Contusions, Internal Injuries and Soft Tissue Injuries. In addition to the individual impact the infrastructure impact extends to trauma wards, hospital beds and health service capacity. The cost to the SA economy is likely to exceed \$60 billion over that period of time. Targeted safer road investment and maximising the safety outcomes of all road and transport infrastructure designs and maintenance will significantly reduce that unaffordable impact.



Developments underway – page 33

- *First paragraph* supporting liveable communities. **This includes State and Federal Government investment targeted at reaching the National Policy Target for 90% of travel on 3-star or better National Highways and 80% of travel on 3-star or better State Highways to reduce road trauma levels.**
- *Additional dot point on projects* Investment in the Black Spot Program across the State to improve the safety of roads with proven crash history or high-risk locations. (refer [DPTI](#) for further details).
- *Additional dot point on Future Focus*..... Addressing road trauma through increased investment in safer road infrastructure to maximise travel on 3, 4 and 5-star roads across the State and 3, 4 and 5-star performance for pedestrians, cyclists and other priority mobility modes in urban precincts and places to create vibrant communities that are safe and sustainable.
- *Green text - How can South Australia take the lead on reducing trauma, noise and emissions from transport*

Additional areas where the elevation of safety outcomes can be incorporated include:

Emerging pathways to growth opportunities:

- Investment in life-saving and job-creating 3-star or better safer road infrastructure across the State in support of the Nationally agreed targets will lift the burden of road trauma on families, communities, health systems, insurance, business and the economy.

An increasingly urban population

- Investment in urban infrastructure will be required to ensure cities are inclusive, safe, resilient and sustainable in support of UN Sustainable Development Goal 11. (refer to <https://sustainabledevelopment.un.org/sdg11> for further details)

Better integration of land use and infrastructure planning

- “Precinct planning provides an integrated approach which, if done well, can expedite development, drive innovation and build cohesive, **safe and sustainable** communities.” (refer to 5-Star Cities case study attached)
-”...that focus on developing **safer and** more efficient urban environment.....”. *As an example ensuring all new urban developments are 4 or 5-star for pedestrians and cyclists can provide a policy, design and investment focus for urban infrastructure that supports place-based and precinct planning.*



Improving infrastructure planning and prioritisation

- “Improving infrastructure planning and prioritisation involves thorough evidence-based **quantitative and** qualitative assessment and business case development.... **This should include contribution to key State and National Policy Targets and deliver a process that better enables the right....**”

Optimise current assets through better asset management

- “... replace earlier than expected. **Negative impacts of poor maintenance may also extend to community safety (e.g. poor line-marking and maintenance of roads; poor safety of buildings and public spaces) with external costs far exceeding any perceived or actual maintenance cost saving.** Effective asset ...”

Funding, financing and procurement alternatives – an example here may be useful

- Public-private partnerships to deliver 5-star safety pedestrian precincts as part of transit and safety-oriented developments and impact investment models that unlock the safety benefits of safer road infrastructure through innovative capital financing and sharing of crash cost savings provide viable financing alternatives that address the State’s road trauma challenge. (*refer Impact Investing case study and the Global Infrastructure Hub link below*)

References

Some additional references that may be useful:

- <https://www.roadsafety.gov.au/action-plan/2018-2020/>
- https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/ (refer pages 19, 48-55)
- <https://sum4all.org/>
- <https://www.gihub.org/resources/for-consultation/for-consultation-output-specifications-for-quality-infrastructure/> - note discussion paper stage and due for publication shortly

Thank you for the opportunity to comment on this important initiative for South Australia that will deliver the infrastructure for a vibrant, successful and safe State. All the best with your work and please feel free to call on [DELETED] if I can be of further assistance.

[DELETED]

Rob McInerney
CEO, iRAP

CASE STUDY

5-Star Cities for all road users

iRAP

FIA FOUNDATION

Bloomberg
Philanthropies
INITIATIVE FOR GLOBAL ROAD SAFETY

iRAP FOR SAFER CITIES

With over half of the world's population now living in cities, addressing urban road safety is becoming increasingly important to reduce road fatalities and serious injuries. **Vulnerable road users—pedestrians, motorcyclists and bicyclists—account for a high proportion of fatalities and serious injuries in cities.** This is particularly true for low- and middle-income countries, where pedestrians typically account for an average of 45% of road traffic fatalities compared to 18% in high income countries.

A ten year study in Accra, Ghana, showed that vulnerable road user deaths accounted for 72% of all road related deaths, of which 60% were pedestrians. A study of six Indian cities showed that the proportion of vulnerable road user deaths to overall road fatalities was even higher, ranging between 84% and 93%. In the Netherlands, cyclists now account for more than half of all road deaths. Increasingly, high income countries are now recognizing the large injury burden of both reported and unreported vulnerable road user crashes.

GLOBAL SNAPSHOT OF CITY STREETS

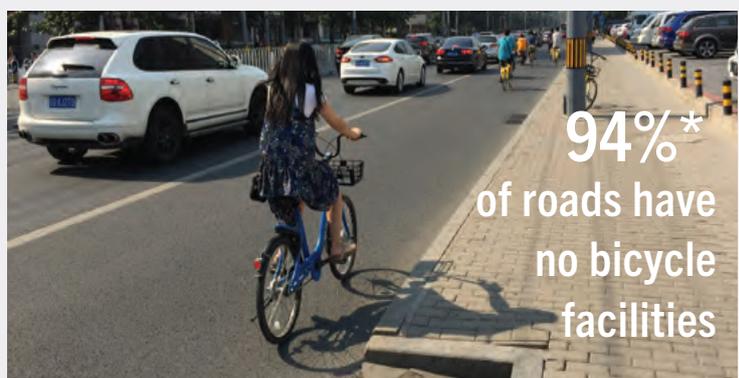
iRAP's global presence means urban road data can be analysed at a global level. iRAP's big data tool, www.vaccinesforroads.org, provides important insights into road safety in cities everywhere.



*Where pedestrians are present and speeds are over 40km/h (25mph).



*Where pedestrians are present and speeds are over 40km/h (25mph).



*Where bicyclists are present and speeds are over 40km/h (25mph).

3 GOOD HEALTH AND WELL-BEING



Goal 3.6:
"Halve the number of global deaths injuries from road traffic accidents"

11 SUSTAINABLE CITIES AND COMMUNITIES



Goal 11.2:
"Safe, affordable, accessible and sustainable transport systems for all"

The United Nations member states have agreed on global road safety performance targets that include the goal for more than 75% of travel to be on the equivalent of 3-star or better roads for all road users.

iRAP not only aims to achieve the United Nation's Sustainable Development Goal 3.6, to halve road deaths and serious injuries, but also Goal 11.2, to help create safe and sustainable cities.





For cities embracing Vision Zero targets, a **5-Star target for bicycling and walking and other road users** can help provide an objective target and measure of safe and sustainable transport options for all transport modes.

IRAP AND VISION ZERO

Road trauma is the biggest killer of young people worldwide and has been rightfully recognized as a global road safety crisis by the United Nations. An estimated 15 million people will be killed and a further 500 million people will be injured on the world's roads between now and 2030 based on current levels. Vision Zero is a strategy that aims to eliminate traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.

Cities around the world are joining the Vision Zero movement as a way to change how the safety of road users is considered in the planning, design, construction and operation of their streets. iRAP's aim is to support Vision Zero cities around the world in eliminate road deaths and serious injuries.

HOW IRAP CAN HELP

iRAP tools enable cities to track their progress toward their Vision Zero targets. iRAP Star Ratings, which assess over 50 different road attributes, provide a simple and objective measure of the level of safety which is 'built-in' to the road.

Star Ratings are given for each road user type: for vehicle occupants, motorcyclists, bicyclists and pedestrians. Five-star roads are the safest while one-star roads are the least safe. The road survey data is then used to identify high risk locations and prioritise road safety treatments.



Image credit: Pixabay

WHAT DOES A 5-STAR STREET LOOK LIKE?

In 2017, iRAP formally endorsed NACTO's Global Street Design Guide which help city and road authorities in planning, designing and constructing 5-Star streets.





As part of the **Bloomberg Philanthropies Initiative for Global Road Safety**, iRAP is helping the World Bank deliver safer streets in ten cities and five countries globally.

DELIVERING SAFER STREETS

iRAP has carried out assessments of existing streets, street designs and street upgrades across a diverse range of projects to support sustainable transport, deliver safer journeys for people using mass transit and create safer, healthier and more vibrant city streets.

Bike Lanes in Bogota

Star rating assessments of Bogota's road network found that bicycling risk was concentrated to a few roads, as can be seen on the map below showing the Bicyclist Star Ratings. As a result, the city used the Star Rating results to target funding which was available for cycling upgrades throughout the city.

Cycling facilities along sections of the network are being upgraded, including line markings and painted lanes, signage, raised crossings and intersection upgrades.



Active transport in Tianjin, China

With a population of more than 15 million people, Tianjin is one of the world's largest cities, and fourth largest in China.

With the support of the World Bank, the city aims to reprioritize the use of active transport modes (walking and cycling) in combination with public transport. The project will provide the city with safer, cleaner and more affordable transport options. It will also create a more vibrant urban space and higher quality environment in the central part of the city. Features of the designs include:

- Speed limit reductions to 30km/h in many locations
- Realignment of kerbs to calm traffic
- Installation of a wide median and adjusting flows from one-way to slower-speed two-way
- Installation of pedestrian crossing signals
- Protection of sidewalks using bollards
- Removal of on-street parking and/or creation of parking bays
- Creation of on-street bicycle lanes (physically separated from traffic).



5-STAR JOURNEYS

Safety around transit stations is crucially important to the success of bus and rail systems. Poor safety while travelling to and from stations can be a deterrent to people choosing to use mass transit over other modes.

Safer journeys on bus rapid transit in Ho Chi Minh City, Vietnam

The Ho Chi Minh City (HCMC) Green Transport Development Project involves the construction of the first of six planned Bus Rapid Transit (BRT) lines in the city. iRAP tools were used to assess the existing corridor, BRT designs as well as 45km of feeder streets and access corridors.

The proposed first stage of the HCMC BRT will be a dedicated busway approximately 23 km in length along the existing Vo Van Kiet – Mai Chi Tho Boulevard. Twenty-eight new stations will directly service seven city districts and could carry 80,000 passengers per day by 2030.

Safe access for BRT users is not only important for avoiding deaths and injuries; it is central to the business case of the project. Perceptions of safety will determine the attractiveness and how ‘usable’ the system is, and therefore how likely people will be to use it. The use of iRAP tools to support of the BRT project has been critical in planning and designing for passenger safety for the whole journey.

Making roads safer for pedestrians and bicyclists is an important step toward cities realising their own goals to become liveable and sustainable.

5-STAR STREET LIFE

City streets are much more than just transport corridors. Streets can serve a number of functions – recreation such as shopping or exercise, delivery and logistics for local businesses, and commuting.

Night traffic in Bangkok, Thailand

Ten streets were selected for assessment in Bangkok, in consultation with key project partners including the Bangkok Metropolitan Authority (BMA), WRI-EMBARQ and the World Bank. There were three principal corridors and seven feeder streets totalling 20km in length. Despite being a comparatively small assessment, these streets had one of the highest fatality and serious injury rates per kilometre among the BIGRS cities.

iRAP made a series of recommendations for pedestrian crossing facilities and did a slow-speed scenario test that illustrated significant safety benefits with marginal travel time changes. As a result, the city moved to install a series of localized temporary and permanent safety treatments. The iRAP post-upgrade assessment of these installations indicates significant reductions in risk.



Image credit: TBradford

IRAP'S INNOVATION FRAMEWORKS FOR SAFER CITIES

iRAP brings together innovative teams, with a common interest in saving lives through safer roads and safer journeys. Our global partnerships with government, mobility clubs, industry and research groups ensures innovative ideas from one programme partner are shared.



A world free of high risk roads: #3StarorBetter

✉ icanhelp@irap.org 🐦 [irapsavinglives](https://twitter.com/irapsavinglives) 📘 [iRAPfb](https://www.facebook.com/IRAPfb)

The international Roads Assessment Programme is a global registered charity. iRAP partners with automobile associations, governments, funding agencies, research institutes and other non-government organisations in more than 80 countries to provide the tools and training to make roads safe.
Registered Charity Number: 1140357 **Registered Office:** 60 Trafalgar Square, London, WC2N 5DS, United Kingdom **Published:** April 2019



ROAD SAFETY IMPACT INVESTMENT THE iRAP GLOBAL BUSINESS CASE FOR IMPACT INVESTORS



THE PROBLEM

- 500 million killed and injured between now and 2030
- #1 killer of young people worldwide

THE SOLUTION

- Investment opportunity USD\$1.4 trillion
- 1 in 3 deaths and injuries saved
- 20%+ Internal Rates of Return

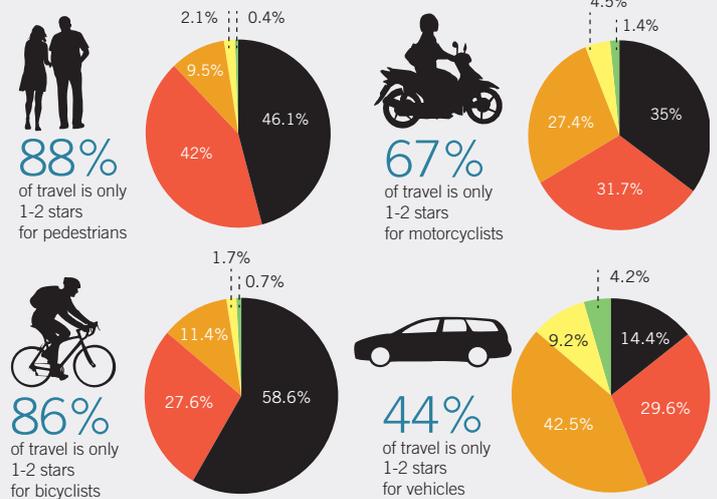
THE NEED

- The UN Sustainable Development Goal 3.6 aims for a halving of road death and injury.
- 16 million people will die and an estimated 500 million people will be injured in road crashes between now and 2030. The majority will be young people.
- The cost will be an estimated USD\$24 trillion.
- Gross under-investment in road safety continues. Only \$1-3 is invested in road trauma prevention for every \$100 of costs.
- Investment does not match the scale of this preventable public health crisis.
- Based on current action, Goal 3.6 will not be met.
- Lives will be lost. Life-long injuries will occur. Families will be changed forever.

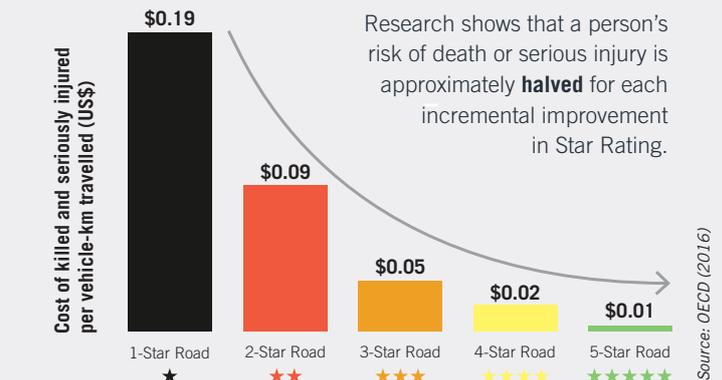
WHERE ARE WE NOW?

- A 1-star road is the least safe and a 5-star road is the safest.
- >40% of the world's roads assessed by iRAP are only 1- or 2-star - unacceptably unsafe.
- Proven and cost effective solutions exist such as footpaths and pedestrian crossings, divided carriageways, safe roadsides, safe turning provision, bicycle and motorcycle lanes, etc.

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



SOLUTION: A WORLD FREE OF HIGH RISK ROADS



THE GLOBAL CHALLENGE



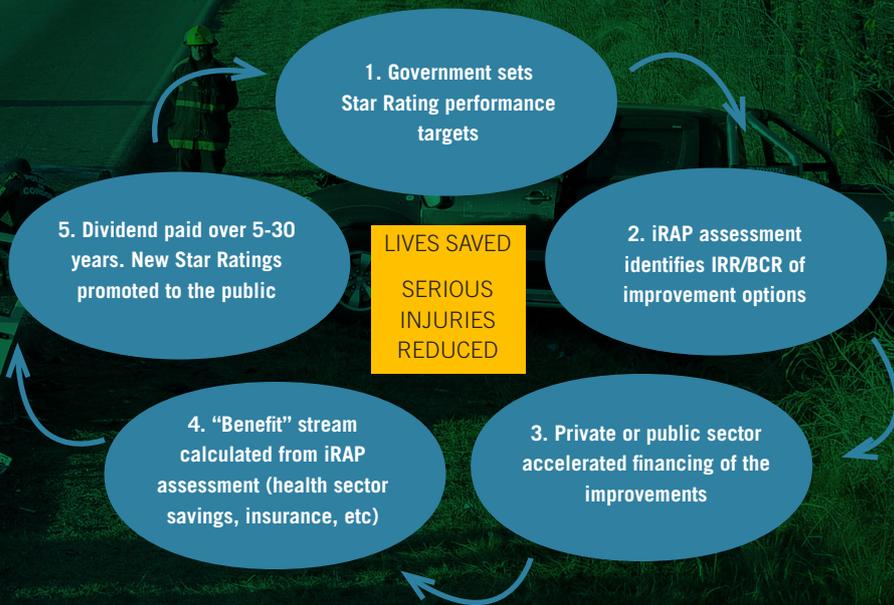
Transport accounts for 70% of spinal cord injury in Africa (World Health Organisation)

43% of major trauma in Victorian hospitals (Australia) is transport related.

(Department of Health, Australia)



IMPACT INVESTMENT MECHANISM



THE BUSINESS CASE FOR SAFER ROADS

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

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

However, unlocking the potential of USD\$1.4 trillion in targeted investment would achieve...

467 THOUSAND lives saved a year

100 MILLION deaths and serious injuries saved over 20 years

20%+ Internal Rates of Return

\$8 SAVINGS for every **\$1 INVESTED**

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	31	45	51	50	177
CURRENT SITUATION					
Annual number of fatalities	195,569	423,148	472,563	116,331	1,207,611
Fatalities per 100,000 population	24.2	17.1	19.6	9.2	17.3
Annual number of fatalities and serious injuries	2,151,259	4,654,628	5,198,193	1,279,641	13,283,721
Annual cost of fatalities and serious injuries (% of GDP)	5.8%	4.2%	4.7%	2%	2.9%
WHAT CAN BE ACHIEVED with >75% of travel on 3-star or better roads for all road users by 2030*					
Infrastructure and Speed Management Investment required	15 bn	140 bn	313 bn	925 bn	1,395 bn
Annual investment as a % of GDP (2018)	0.14%	0.18%	0.12%	0.14%	0.14%
Reduction in fatalities per year	86,342	169,259	174,106	37,332	467,039
Reduction in fatalities and serious injuries (FSI) over 20 years	18,995,159	37,237,024	38,303,352	8,213,036	102,748,571
Economic benefit (\$US)	\$273bn	\$1,335bn	\$5,063bn	\$4,507bn	\$11,180bn
Benefit Cost Ratio	18	9	16	5	8

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



ROAD SAFETY IMPACT INVESTMENT

How impact investment may be mobilised and the social benefits attained may differ by country income status.

A HIGH INCOME COUNTRY CASE STUDY

THE LANDSCAPE

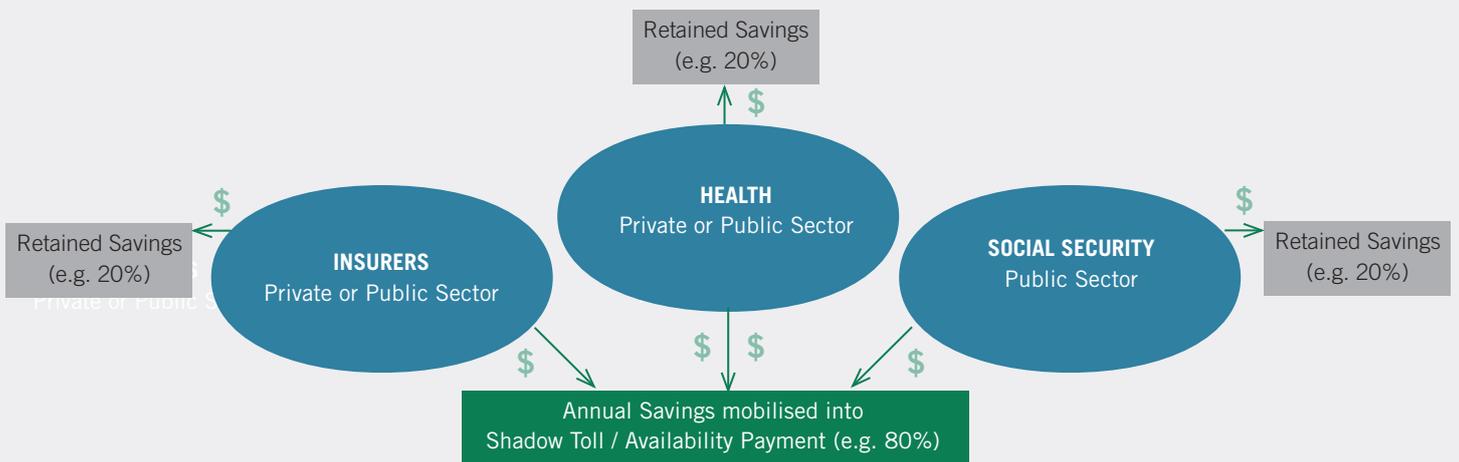
Road trauma costs are covered by:

- third party injury, property damage and life insurance schemes (up to 1% of GDP);
- emergency response and life-time care costs;
- social security and disability benefits;
- families and friends leading to lost productivity and lost tax revenue

THE SOLUTIONS

- Public private partnerships exist for road infrastructure upgrades for congestion reduction
- The same proven delivery models can be mobilised with safety the primary benefit
- The private sector carry the investment and financing risk for the project
- Benefits based on a combination of predicted iRAP outcomes and actual claim reductions
- A proportion of Road Trauma Cost savings are agreed and mobilised as Annual Income Streams / Availability Payments or through a Road Safety Impact Bond

THE ANNUAL INCOME STREAM - HIGH-MIDDLE INCOME COUNTRY



THE INVESTMENT STRUCTURE



*Road Safety Impact Bonds similar to Green / Climate Bonds can be established



ROAD SAFETY IMPACT INVESTMENT

How impact investment may be mobilised and the social benefits attained may differ by country income status.

A LOW-MIDDLE INCOME COUNTRY CASE STUDY

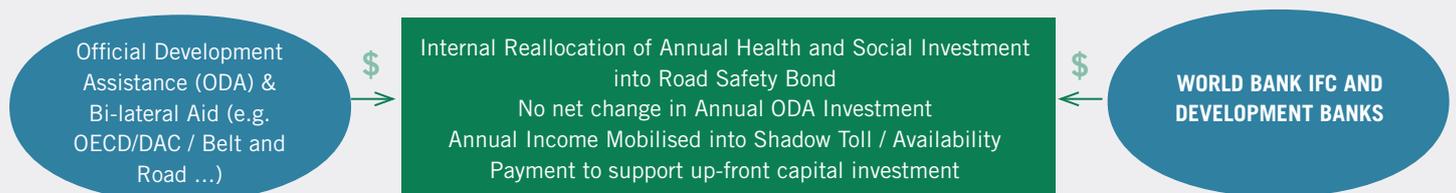
THE LANDSCAPE

- Road trauma costs are not well known or documented at the country level
- Financial governance levels vary greatly within each country
- Bi-lateral and development aid disbursements >US\$300 billion a year¹
- 18.3% of Overseas Development Assistance is for Education, Health and Population and 17.3% is for Economic Infrastructure²
- Development Financing and Grants value financial and social / poverty reduction outcomes³
- Value capture and re-distribution of aid allocations by sector will have no net increase in total aid disbursements

THE SOLUTIONS

- Public private partnerships exist for road infrastructure upgrades in most countries
- The same proven delivery models can be mobilised with safety the primary benefit
- Footpaths for pedestrians; Dual carriageway roads; Safe roadsides; Safe speeds are examples of treatments that will deliver on the UN Target for 3-star or better roads
- The private or development sector carry the investment and financing risk for the project
- Benefits based on the predicted and agreed iRAP outcomes
- A reallocation of the annual health and social cost savings provides the income stream to support the Road Safety Bond and/or up-front capital investment

THE ANNUAL INCOME STREAM - LOW-MIDDLE INCOME COUNTRY



THE INVESTMENT STRUCTURE



¹ <http://www.oecd.org/dac/stats/idsonline.htm>

² <https://www.oecd.org/dac/stats/aid-at-a-glance.htm> - detailed chart available [here](#)

³ <https://www.ifc.org/impactprinciples>

*Road Safety Impact Bonds similar to Green / Climate Bonds can be established



Because every life counts.



A world free of high risk roads: #3StarorBetter

icanhelp@irap.org [irapsavinglives](#) [iRAPfb](#)

The International Road Assessment Programme is a global registered charity. iRAP partners with mobility clubs, governments, funding agencies, research institutes and other non-government organisations in more than 90 countries to provide the tools and training to make roads safe. **Registered Charity Number:** 1140357 **Registered Office:** 60 Trafalgar Square, London, WC2N 5DS, United Kingdom **Published:** May 2019