

Glossary of Proposed Countermeasures

About the Mobility Snapshot analysis

1. Star ratings

Star Ratings are an objective measure of the level of safety that is 'built-in' to the road for users. 1-star band roads have the highest risk, with the infrastructure-related risk of death or serious injuries being extremely high, while 5-star band roads have the lowest risk, with the infrastructure-related risk of death or serious injuries being extremely low. iRAP advocates for all new roads to achieve a minimum 3-star band rating, with existing roads also recommended for upgrades to meet this standard. For your Star Rating Mobility Snapshot in 2025, you will receive a star rating for pedestrians and a star rating for bicycles.

1.0 – 1.9: 1-star band

2.0 – 2.9: 2-star band

3.0 – 3.9: 3-star band

4.0 – 4.9: 4-star band

5.0 – 5.9: 5-star band

You will receive a 'before' star rating, which indicates the rating based on the data you submitted in your Mobility Snapshot, an 'after with priority countermeasures', indicating what the star rating would be if the Priority Interventions and cycle lanes were implemented, and 'after with full countermeasures', providing a star rating with the Priority Interventions and additional iRAP recommendations.

2. Risk reduction

Estimated percentage reduction in risk of death and serious injuries.

A Star Rating Score (SRS) is calculated for each segment of road and each of the four road users, using the following equation:

$$\text{SRS} = \Sigma \text{Crash Type Scores}$$

where:

- the SRS represents the relative risk of death and serious injury for an individual road user; and
- Crash Type Scores = Likelihood x Severity x Operating speed x External flow influence x Median traversability

where:

- likelihood refers to road attribute risk factors that account for the chance that a crash will be initiated;
- severity refers to road attribute risk factors that account for the severity of a crash;
- operating speed refers to factors that account for the degree to which risk changes with speed
- external flow influence factors account for the degree to which a person's risk of being involved in a crash is a function of another person's use of the road;
- median traversability factors account for the potential that an errant vehicle will cross a median (only applies to vehicle occupants and motorcyclists run-off and head-on crashes).

$$\text{Estimated percentage reduction in risk of death and serious injuries (\%)} = \frac{\text{SRS before} - \text{SRS after}}{\text{SRS before}}$$

In the Star Rating Mobility Snapshots 2025, SRS is calculated for pedestrians and bicycles.

About recommended Priority Interventions (countermeasures)

Priority countermeasures refers to the [Priority Interventions](#) recommended in the [Alliance Accountability Toolkit](#) (plus bicycle lanes).

3. Speed limit reduction and enforcement

Speed limit reduction is one of the methods for managing vehicle speeds. When lower limits lead to actual reductions in speed, they can help decrease the number of road crashes and casualties. Lower speed limits are most effective when supported with traffic calming measures and/or enforcement to increase compliance with the legal limit. 30 km/h per hour is the recommended limit where people and vehicles frequently mix and this intervention is recommended where possible. In some cases, it may be too much of a leap to advocate for a reduction to 30 km/h in one go, and another limit might be recommended.

4. Footpath

These are paths that are dedicated to pedestrians and physically separated from motorized traffic. Curb extensions extend the footpath to physically and visually narrow the width of the roadway and create safer and shorter pedestrian crossing. Footpaths should always be provided on both sides of the streets whenever possible, except exclusive vehicle corridors.

5. Unsignalized raised pedestrian crossings

These are slightly elevated above the level of the rest of the road. The raised section slows down vehicle speed and increases the visibility of pedestrians. They are recommended for the main road (larger road) and/or side road (secondary road - smaller road) at the intersection.

6. Signalized pedestrian crossings

These have traffic signals that alert pedestrians when it is safe to cross the street. They are recommended for the main road (larger road) and/or side road (secondary road - smaller road) at the intersection.

7. Traffic calming

Traffic calming measures reduce speed of traffic in areas where pedestrians, cyclists, and motorcyclists are present, road infrastructure safety quality is poor, and/or vehicles enter a built-up area on a rural road. They should have the ability to reduce the operating speed 10km/h below the speed limit. Examples include speed humps, chicanes, lane narrowing, roundabouts, rumble strips, etc.

8. Upgrade pedestrian facility quality

Pedestrian facility quality records how well the pedestrian crossing can be seen by drivers, or if there are warning signs present.

An adequate quality pedestrian crossing is one where signing, marking & visibility enable a driver to be aware in good time of the presence of a pedestrian crossing. For example:

- a. Vehicle drivers are required to stop and give pedestrian right-of-way (and do so),
- b. The facility is clearly visible and can be anticipated by vehicle drivers, and
- c. The facility is not obstructed by parked vehicles, street furniture or other items.

9. Bicycle Lane

Three different types of bicycle lane may be included in your recommended interventions:

- Bicycle lane (shared use): Bicycles have access to a path shared with pedestrians, which is separated from traffic by $\geq 1\text{m}$ raised or paved surface.
- Bicycle lane (off-road): A dedicated bicycle path separated from traffic by $\geq 1\text{m}$ raised or paved surface.
- Bicycle lane (on-road): A dedicated bicycle lane separated from traffic by lane markings on the roadway or by $< 1\text{m}$ of raised or paved surface. An on-road lane should be appropriate to the traffic speed environment; be of adequate width, well maintained surface, and have little or no conflict with other uses, such as merge lanes, parked vehicles or bus stops.

About recommended full countermeasures

Your Mobility Snapshot Star Rating results may include additional interventions that are not part of the Priority Interventions but which could improve the safety of the intersection.

10. Delineation and signing

Delineation should guide drivers to stay in their lane, alert them to upcoming road or intersection changes, and clearly show where motorcyclists and bicyclists are.

The delineation may use a combination of the following:

- Painted center lines, lane markers, edge lines, or other painted markers;
- Physical items, such as posts (such as guideposts or delineators) or road studs and
- Signs (on or beside the road) when approaching a change in the road layout.

Delineation, particularly using reflective materials, is important for safety at night.

Signing is the use of road signs to communicate important information to road users. This includes regulatory signs (such as speed limits and stop signs), warning signs (such as those indicating curves or pedestrian crossings), and informational signs (such as those providing directions or distances).

11. Road surface rehabilitation

Road surface rehabilitation refers to the condition and grip of the road surface.

Road surface condition means that the road has a level, even running surface that is free from major surface defects that may adversely affect vehicles traveling on it, cause them to lose control, or require them to change their path. It should be adequate for all road users including motorcyclists and bicyclists.

Notes: A paved road is constructed using materials such as tar, bitumen, concrete, or asphalt. It must be able to accommodate frequent motorized and pedestrian traffic. It typically includes a sub-base beneath the top layer to enhance stability and prevent deterioration over time.

Road surface grip prevents tires from sliding along the pavement surface. Good road surface grip is expected to have adequate skid resistance performance. There should be no visible smooth and shiny sections on the preferred vehicle path.

12. Street lighting

Installing and maintaining lights along roadways to enhance visibility for all road users, including drivers, pedestrians, and cyclists. Examples include street lighting, intersection lighting, tunnel lighting, pedestrian crossing lighting, etc.