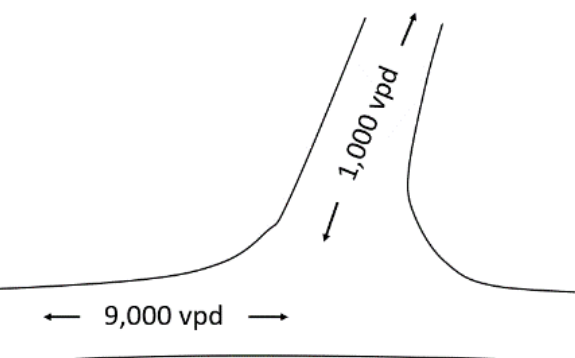


How to score exposure

Exposure is the number of times, or for how long, road users are exposed to a hazard. This is mainly driven by traffic volume (the more traffic (or pedestrians, cyclists, motorcyclists), the more likely a hazard will cause a crash). On the face of it, exposure seems fairly easy to score, because it is generally just the road user volume. But what about at intersections?

Intersections present an interesting case because we must deal with multiple traffic streams. Consider a rural road carrying 9,000 vpd (two-way) and an intersecting side road carrying 1,000 vpd (two way).

What is the exposure?



There are three obvious options:

- a) The total number of vehicles passing through the intersection (10,000 vpd) ✓
- b) The number of vehicles on the main road (9,000 vpd), as that is the number of vehicles exposed to a hazards as they pass through the intersection ✗
- c) The number of vehicles on the side road (1,000 vpd), as that is the number of potential hazards vehicles on the main road are exposed to ✗

If we knew everything about both traffic streams (full turning volumes and arrival times) we could calculate the exposure exactly. However, we will almost never know this information, so we must approximate it somehow. It helps if we consider each traffic stream separately. Assuming no other hazards, the vehicles on the main road are only exposed to a hazard when a vehicle on the side road enters the intersection. The exposure score for the main road in that case is based on the side road volume. Similarly, vehicles on the side road are only exposed to a hazard if they arrive at the intersection at the same time as a vehicle on the main road, so their exposure score is based on the main road volume. **Thus, the total exposure score for the intersection is based on the sum of both traffic streams, or the total number of vehicles passing through intersection (option a).**

What is a Safe System Assessment?

A Safe System Assessment is a process to measure road infrastructure's alignment with Safe System principles and the ultimate objective of eliminating fatal and serious injuries from crashes on the road network.

The process is documented in Austroads Report AP-R509-16, VicRoads' and DPTI's Safe System Assessment Guidelines. This Fact Sheet provides supplementary information and clarification.