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**Sustainable Development Goals: Potential contribution by
WP.1**

Submitted by Italy and Sweden

This document demonstrates the importance of including minor and moderate injuries in order to account for all negative consequences of road traffic injuries.

The relevance of including minor and moderate injuries:

Widening the scope of SDGs 3.6 and 11.2 to implement the vision of a society without health losses from road traffic injuries.

1. Worldwide, injuries represent one of the leading causes of mortality, and nearly one-quarter of all injuries are road traffic related. About 1.35 million a year die from an injury and tens of millions more are injured or disabled every year¹. Road traffic injuries are also the leading cause of deaths for people aged 5-29 years of age² and injuries account for considerable socioeconomic costs in terms of health losses, medical expenses and lost production³. Agenda 2030, an adopted resolution from 2020 UN General Assembly, proclaims a new goal of reducing fatalities and injuries by at least 50% between 2021–2030. In particular, to curb the tragic toll in some regions of the world, where the death rates and life-changing injuries represent a significant socio ethical impact on the community⁵.

2. Traditionally, the consequences of injuries is most often described as the number of mortalities due to injuries. A problem with this from a global public health perspective is that mortality do not show the full consequences on health and societal and economic consequences costs caused by serious, moderate and minor road traffic injuries (RTIs).

3. However, despite a general understanding that the majority of road traffic deaths and injuries are preventable and, although some improvements in countries, including in developing countries, they remain a major public health and development problem that has broad social and economic consequences which, if unaddressed, may affect progress towards the achievement of the Sustainable Development Goals⁶. Road traffic deaths and injuries are also a social equity issue, as the poor and the vulnerable are most frequently and also vulnerable road users.

4. Although scientific knowledge show⁷ that relatively minor non-fatal injury incidents, and not only major events, can lead to a significant consequences for injured individuals, families and societies these injuries are usually not included in many countries road safety efforts due to the fact that they are not life threatening and by this not regarding as “serious”.

5. Without knowing the exact relationship between road traffic fatalities, severe, moderate and minor injuries is it, since many years, a well-known fact that a relationship exist between fatalities and injuries (and also near misses and unsafe acts) originally shown by the Triangle Theory (from research of Herbert William Heinrich (1931) and later Frank E. Bird (1966) and others)⁸. In the WHO global status report on road safety (2015) is an older information of that every person who dies in a road traffic crash there are at least 20 others that sustain non-fatal injuries⁹, however the text in the report do not distinguished between severities of the injuries.

¹ Global Status Report on Road Safety 2018. World Health Organization (WHO) 2018.

² See 1 above

³ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1123095/pdf/1139.pdf>

⁴ UN. (2020, August 31). Improving global road safety | General Assembly of the United Nations. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N20/226/30/PDF/N2022630.pdf?OpenElement>.

⁵ Taniform P, Persia L, Usami S D, Kunsoan N B, Karumba M M and Wijnen W. (2023). An Assessment of the Social Costs of Road Traffic Crashes in Cameroon. Sustainability 2023, 15, 1316

⁶ See 1 above

⁷ Rissanen R, Berg H-Y, Hasselberg M (2017) Quality of life following road traffic injury: A systematic review: Accident Analysis and Prevention 108 (2017) 308–320

⁸ <https://www.oshaoutreachcourses.com/blog/safety-triangle-the-safe-pyramid/>

⁹ World Health Organization. International Classification of Diseases – 10th Revision. Geneva, World Health Organization, 1990.

Heinrich's Triangle Theory

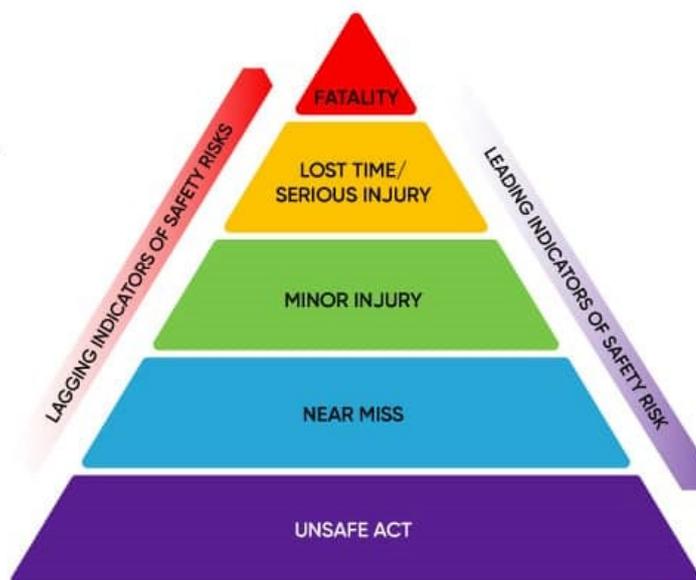


Figure 1.

The Heinrich's triangle theory

6. A systematic literature review by Rissanen et al. (2017)¹⁰ confirmed that independent of measure, the overall health (expressed as Quality of Life, QoL) was significantly reduced after a road traffic injury compared to the general population norms. Although physical and psychological consequences are considerable for all levels of injury severity, some patient groups are more vulnerable than other groups. Persons who are older, of female gender, lower socioeconomic status, diagnosed with posttraumatic stress disorder, with more severe injuries or injuries to the lower limbs are more vulnerable to loss of health following road traffic injury compared to other patient groups injured in road traffic crashes.

7. To come closer to showing the full and long term burden of road traffic injuries and to prevent them, an acknowledgment and understanding of the importance of including minor and moderate injuries are needed as they are so many more than serious – critical/maximum injuries. An extended focus from mostly mortalities and severe injuries towards minor and moderate is therefore required to be able to counteract and neutralise the total burden on society from road traffic injuries.

8. Showing, as an example; the total burden of road traffic injuries can be made by putting the Heinrich's triangle theory in to practice (or equal "iceberg" effect in injuries). To do so the Swedish fatality figures and injury data from emergency hospitals from 2021 can be used as an example (Figure 2). If assuming that MAIS¹¹ 1 and 2 are "minor-moderate" injuries and MAIS 3-6 "serious – critical/maximum injuries" this will give 19 573 persons with at least one minor-moderate injury and 905 seriously - critical/maximum injured. In 2021 Sweden had 210 fatalities due to road traffic injuries and this will give a ratio of 4.3 seriously- critical/maximum injured per fatality and of 93 minor-moderate injured per fatality.

¹⁰ Rissanen R, Berg H-Y, Hasselberg M. (2017). Quality of life following road traffic injury: A systematic literature review. *Accident Analysis and Prevention* 108 (2017) 308–320.

¹¹ AIS is a threat to life scale where 1 have 0% probability of death, 2= 1-2%, 3 8-10%, 4 and 5 = 5-50% and 6=100%. MAIS is the maximum AIS if several injured body parts.

Distribution of injuries and injured persons by AIS and MAIS in Strada, 2021

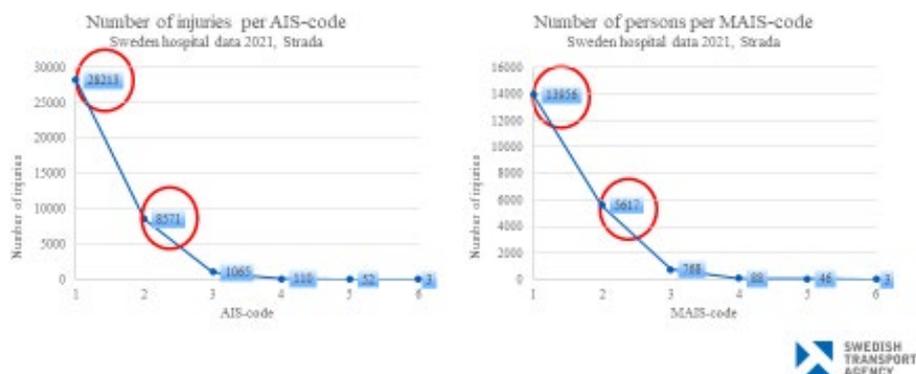


Figure 2.

Distribution of injuries and injured persons by AIS and MAIS-code known by hospitals in Sweden 2021

9. If using the Swedish ratios to calculate the number of minor-moderate and seriously-critical/maximum injured by means of WHO estimated road traffic fatalities in the Global Status Report on Road Safety 2018 with Italy (61 milj. inhabitants, high income country and with 3 333 estimated fatalities in 2015) and Tanzania (54 milj. inhabitants, low income country and with 16 252 estimated fatalities in 2016) as examples. This will give a number of about 14 300 seriously- critical/maximum injured persons and 310 000 minor-moderate injured in Italy, the figures for Tanzania will be much higher, 69 800 seriously-critical/maximum injured and 1 511 000 minor-moderate injured.

Conclusion and suggestion

10. For policy making and regulation it is essential to pay attention to the fact that negative consequences of RTIs can be long-term and can arise even for apparently minor non-fatal injurious events¹². As written above, the immediate outcome of a road traffic injuries usually differ from the long-term outcomes. To be able to understand the societal burden of road traffic injuries it is important to define the problem, to have as good data as possible and to use a measure(s) that captures aspects of long-term consequences following an injury. In addition, for policy making and regulation it is also essential to pay more attention to the fact that social impact, long term socio economic burden can arise very frequently from apparently minor or over –looked non-fatal injurious RTIs events. Although it is disputed if such data would ever be measurable, still in terms of the actual health impact of RTIs, it is important to produce, complement, or improve the available data collecting and management by moving from the concept of sole trauma severity to that of life consequences in an attempt to prevent all health losses (a true “vision zero”) and by this more accurate picture of the actual health losses resulting from traffic injuries than today.

11. Many countries vision currently are to achieve a society without health losses from road traffic injuries. The goal is usually that no one should be killed or seriously injured as a result of a traffic accident (the “Vision Zero”). In Agenda 2030 health is also as a central goal, which includes better traffic safety incorporated in the societal development as a natural part of achieving a future transport system without health losses. However, as mortality and the direct severity on humans still is the main definition of a consequence of road traffic injuries in many countries the full societal burden of road traffic injuries are not able to be

¹² Monárrez-Espino J, Laflamme L, Berg H-Y (2018). Measuring and assessing risk of quality of life loss following a road traffic injury: A proposed methodology for use of a composite score. *Accident Analysis and Prevention* 115 (2018) 151–159

assessed and used as input to a prevention. For being able to show the full burden of RTIs on individuals a focus shift is needed from premature deaths to also injuries causing negative life long-term consequences for individuals and society. The suggested extended focus to prevent minor and moderate road traffic injuries would therefore be more compliant and closer to the spirit of Agenda 2030, and to the transformational role of safe mobility across the globe.

12. WP1 is invited to discuss this topic, taking – as the Global Forum For Road traffic Safety - into account a more comprehensive approach related to the evaluation of social burden of road traffic injuries as contribution to the global public health analysis and prevention.
