APPENDIX ONE –SELECTED STUDIES AND PAPERS ON THE IMPACT OF SPEED LIMITS

Travel speed and the risk of serious injury in vehicle crashes

https://pubmed.ncbi.nlm.nih.gov/34455340/

Doecke SD, Dutschke JK, Baldock MRJ, Kloeden CN. Travel speed and the risk of serious injury in vehicle crashes. *Accid Anal Prev.* 2021 Oct;161:106359. doi: 10.1016/j.aap.2021.106359. Epub 2021 Aug 26. PMID: 34455340.

"The analysis found significant positive relationships between the risk of serious injury and travel speed for all of these impact types. The travel speeds at which the risk of serious injury reached one per cent were 63 km/h across all impacts, 17 km/h for head on impacts, 48 km/h for single vehicle impacts, 58 km/h for side impacts, 81 km/h for front impacts and 96 km/h for rear impacts."

Impact speed and the risk of serious injury in vehicle crashes

https://pubmed.ncbi.nlm.nih.gov/32570088/

Doecke SD, Baldock MRJ, Kloeden CN, Dutschke JK. Impact speed and the risk of serious injury in vehicle crashes. *Accid Anal Prev*. 2020 Sep;144:105629. doi: 10.1016/j.aap.2020.105629. Epub 2020 Jun 19. PMID: 32570088.

"Impact speed was found to have a highly significant positive relationship to risk of serious injury for all impact types examined. The risk of serious injury reaches 1% at 28 km/h for head on impacts, 51 km/h for side impacts, 64 km/h for front impacts, and 67 km/h for rear impacts."

Factors affecting injury severity of vehicle occupants following road traffic collisions

https://pubmed.ncbi.nlm.nih.gov/25467823/

Abu-Zidan FM, Eid HO. Factors affecting injury severity of vehicle occupants following road traffic collisions. *Injury.* 2015 Jan;46(1):136-41. doi: 10.1016/j.injury.2014.10.066. Epub 2014 Nov 6. PMID: 25467823.

"The general linear model was highly significant and showed that mechanism of injury ($p<0.0001$), speed of the vehicle ($p=0.02$), and age of the vehicle occupant ($p=0.03$) significantly affected the Injury Severity Score."

Safe speed limits for a safe system: The relationship between speed limit and fatal crash rate for different crash types

https://pubmed.ncbi.nlm.nih.gov/29323934/

Doecke SD, Kloeden CN, Dutschke JK, Baldock MRJ. Safe speed limits for a safe system: The relationship between speed limit and fatal crash rate for different crash types. *Traffic Inj Prev*. 2018 May 19;19(4):404-408. doi: 10.1080/15389588.2017.1422601. Epub 2018 Apr 11. PMID: 29323934.

"The results indicate that speed zones of 100 km/h or more only meet the objectives of the Safe System, with regard to fatal crashes, where all crash types except rear-end crashes are exceedingly rare, such as on a high standard restricted access highway with a safe roadside design."

Speed limits, enforcement, and health consequences

https://pubmed.ncbi.nlm.nih.gov/22224882/

Elvik R. Speed limits, enforcement, and health consequences. *Annu Rev Public Health*. 2012 Apr;33:225-38. doi: 10.1146/annurev-publhealth-031811-124634. Epub 2012 Jan 3. PMID: 22224882.

"Traffic speed strongly influences impact speed in crashes and therefore has major implications for public health."

Twenty miles per hour speed zones reduce the danger to pedestrians and cyclists

https://www.sciencedirect.com/science/article/abs/pii/S2214140519301859?via%3Dihub

Cook R, Davidson P, Martin R; NIHR Dissemination Centre. Twenty miles per hour speed zones reduce the danger to pedestrians and cyclists. *BMJ*. 2020 Feb 26;368:m453. doi: 10.1136/bmj.m453. PMID: 32102784.

"Current evidence indicates that 20 mph 'zones' are effective in reducing the number and severity of collisions and casualties."

"Eleven studies were identified reporting nine 20 mph 'zone' and two 20 mph 'limit' interventions. 20 mph 'zones' were associated with a reduction in the number and severity of collisions and casualties."

The relationship between impact speed and the probability of pedestrian fatality during a vehicle-pedestrian crash: A systematic review and meta-analysis

https://pubmed.ncbi.nlm.nih.gov/31176144/

Hussain Q, Feng H, Grzebieta R, Brijs T, Olivier J. The relationship between impact speed and the probability of pedestrian fatality during a vehicle-pedestrian crash: A systematic review and meta-analysis. *Accid Anal Prev*. 2019 Aug;129:241-249. doi: 10.1016/j.aap.2019.05.033. Epub 2019 Jun 5. PMID: 31176144.

"Fifty-five studies were identified for a full-text assessment, 27 met inclusion criteria, and 20 were included in a meta-analysis. The analyses found that when the estimated impact speed increases by 1 km/h, the odds of a pedestrian fatality increases on average by 11%."

Reducing injury from speed related road crashes

https://injuryprevention.bmj.com/content/10/5/257.long

Johnston I. Reducing injury from speed related road crashes. *Inj Prev*. 2004 Oct;10(5):257-9. doi: 10.1136/ip.2004.006486. PMID: 15470003; PMCID: PMC1730134.

"There can be no doubt that decreasing vehicle travel speeds reduces stopping distances and impact speeds, and thus the incidence of serious casualties and fatalities. While individual studies can be criticised, the weight of evidence, both within and across methodological paradigms, is overwhelming."

Effects of city-wide 20 mph (30km/hour) speed limits on road injuries in Bristol, UK

https://pubmed.ncbi.nlm.nih.gov/31302608/

Bornioli A, Bray I, Pilkington P, Parkin J. Effects of city-wide 20 mph (30km/hour) speed limits on road injuries in Bristol, UK. *Inj Prev*. 2020 Feb;26(1):85-88. doi: 10.1136/injuryprev-2019-043305. Epub 2019 Jul 13. PMID: 31302608; PMCID: PMC7027024.

"Based on a stepped-wedge design using count data, negative binomial regressions showed that between 2008 and 2016, the 20-mph speed limit intervention was associated with a city-level reduction of fatal injuries of around 63% (95% CI 2% to 86%), controlling for trends over time and areas."

Traffic safety effects of new speed limits in Sweden

https://pubmed.ncbi.nlm.nih.gov/28219638/

Vadeby A, Forsman Å. Traffic safety effects of new speed limits in Sweden. *Accid Anal Prev*. 2018 May;114:34-39. doi: 10.1016/j.aap.2017.02.003. Epub 2017 Feb 20. PMID: 28219638.

"Results show a reduction in fatalities on rural roads with reduced speed limit from 90 to 80km/h where the number of fatalities decreased by 14 per year, while no significant changes were seen for the seriously injured. On motorways with an increased speed limit to 120km/h,

the number of seriously injured increased by about 15 per year, but no significant changes were seen for the number of deaths."

A health impact assessment of a proposed bill to decrease speed limits on local roads in Massachusetts (U.S.A.)

https://pubmed.ncbi.nlm.nih.gov/25279544/

James P, Ito K, Banay RF, Buonocore JJ, Wood B, Arcaya MC. A health impact assessment of a proposed bill to decrease speed limits on local roads in Massachusetts (U.S.A.). *Int J Environ Res Public Health*. 2014 Oct 2;11(10):10269-91. doi: 10.3390/ijerph111010269. PMID: 25279544; PMCID: PMC4210978.

"Decreasing traffic speeds increases the amount of time drivers have to react to road hazards, potentially averting collisions, and makes crashes that do happen less severe."