To:	Transport & Health Policy Makers, & Practitioners
From:	Prof Adrian Davis, TRI, Edinburgh Napier University
Date:	22nd July 2019
Subject:	Essential Evidence 4 Scotland No. 13 Effects of city-wide 20mph speed limits on road injuries

Top Line: A study of reduced urban speed limits identifies a general trend of injury reductions and strong evidence of reduction of fatal injuries following a city-wide signs-only 20 mph speed limit intervention.

Twenty miles per hour (32 km/hour) hour speed limits represent a potential strategy to reduce urban road injuries and are becoming increasingly widespread in Western countries. Twenty miles per hour limits are sign-only interventions without engineering measures, such as speed bumps, as opposed to 20 mph speed zones, which also include speed-reduction engineering measures to slow traffic. The injury analysis was based on Police STATS19 data from 2008 to 2016 for the city of Bristol, UK where residential roads and some high streets changed from 30mph to 20mph speed limits.[1] STATS19 records the date, location, and number and type of injury (slight, serious or fatal). An injury is defined as serious if the person is detained in the hospital as an inpatient or has any of the following injuries: fractures, concussion, internal injuries, crushing, non-friction burns, severe cuts and lacerations, or severe general shock requiring medical treatment. An injury is classified as fatal if the person dies within 30 days of the collision.

The analysis compared injury counts before and after the introduction of the 20 mph speed limit while controlling for year and areas. A stepped-wedge design enables a robust evaluation based on a natural experiment, allowing for the rolling nature of the intervention, implemented in several steps.

The analysis highlights a general reduction in injuries and suggests evidence of a city-level reduction in fatalities of 63%. These findings are in line with the reductions of injuries in Brighton City Centre, where a similar area-wide (but not city-wide) scheme has been implemented. The reductions in fatalities in Bristol are larger than the 46% reduction in London associated with the introduction of traffic-calmed 20 mph zones, as identified by Grundy et al.[2] The city-level reduction of fatal injuries identified in our study should also be set against national trends, which show that the number of deaths on built-up roads has increased from the 2010–2014 annual average of 585 to a 2017 figure of 607 deaths. Therefore, this finding goes some way to supporting city-wide 20 mph speed limits as an intervention to reduce road injuries.

The fact that such a solid reduction was observed at a city level, rather than on 20 mph roads only, might be explained by the fact that average speeds decreased overall in Bristol following the intervention, and not only in 20 mph roads. Pre-intervention average speed in 30 mph roads was relatively high, and the reduction in speed may have contributed to reducing fatal injuries in these roads. This is similar to findings from Brighton, where reductions in collisions were observed especially in major strategic roads. This also suggests that the reduction in injuries is due to a general change in driving behaviour related to the city-wide nature of the 20 mph speed limit, with slower driving speeds also in 30 mph roads, where speed tends to be higher than in 20 mph roads.

[1] Bornioli, A., Bray, I. Pilkington, P., Parkin. J. 2019. Effects of city-wide 20mph (30km/hour) speed limits on road injuries in Bristol, UK, *Injury Prevention*, Epub 13/07/2019 doi:10.1136/injuryprev-2019-043305

[2] Grundy C, Steinbach R, Edwards P, et al, 2009. Effect of 20 mph traffic speed zones on road injuries in London, 1986-2006: controlled interrupted time series analysis. *British Medical Journal*;339.