

Road Traffic (Speed Limits) Bill

(supplementary evidence provided by the Institute of Public Health in Ireland)

Reducing road traffic accidents, injuries and fatalities

- A person is seven times more likely to survive if hit by a car travelling at 20mph rather than 30mph.¹
- Lowering the speed limit to 20mph reduces collisions between vehicles and children by up to 70%.²
- Research shows that the impact of pedestrian fatality drops from 7% at 30mph to 1% at 20mph.³

Evidence exists to support the introduction of 20mph speed limits as a means of reducing the number and severity of road traffic accidents. It has been estimated that a reduction of one mile per hour in existing low speed areas resulted in 5% fewer collisions.⁴

A recent umbrella review of the effects of 20mph zones and limits on health and health inequalities concluded that there was convincing evidence on the effectiveness of these measures in reducing accidents, injuries, traffic speed and volume, as well as improving the perception of safety. The findings of this review are summarised below⁵:

A UK study examining the impact of 20mph speed zones in 200 small residential areas found:

- On average speed reduced from 25 to 16mph
- 6.2% reduction in accidents for each 1mph reduction in speed
- 61% reduction in total injuries
- 70% reduction in child pedestrian injuries
- 48% reduction in child injuries⁶

Studies in the Netherlands reported similar effects at 30km/h:

- 85% of traffic was travelling at a mean speed of <30km/h⁷
- 15-30% reduction in traffic volume
- 5% reduction in accidents
- 25% reduction in injuries
- 25% in injuries over a 15 year period
- considered to be a cost-effective intervention⁸

A German study found a 25% reduction in accidents in an area where 30km/h limits were in place.⁹

In Denmark, 15-30km/h speed zones were associated with a 64% reduction in road user injuries; whilst a London based study reported a 45% reduction in injuries in 20mph zones.¹⁰

A 1 mph reduction in average speed would reduce accident frequency by about:

- 6% on urban main roads and residential roads with low average speeds
- 4% on medium speed urban roads and lower speed rural main roads
- 3% on the higher speed urban roads and rural single carriageway main roads.²

The most recent analysis of the role of vehicle speed in pedestrian fatalities in Great Britain, found that 85% of pedestrians killed when struck by cars or car-derived vans, died in collision that occurred at impact speeds below 40mph, 45% at less than 30 mph and 5% at speeds below 20 mph.¹¹

20 mph zones in London

A review of over one hundred 20 mph zones in London found that they were effective in reducing road injuries to children. In the zones, speeds were reduced by 9 mph and traffic flows by about 15%. Road casualties in 20mph zones were reduced by 45% and fatal or seriously injured casualties by 57%.

Significant protection was provided to the most vulnerable road users:

- Pedestrian casualties down by 40%, and pedestrians killed or seriously injured (KSI) down by 50%
- Child pedestrian casualties down by 48% and child pedestrians KSI down by 61%
- Cyclist casualties down by 33% and cyclist KSI down by 50%
- Child cyclist casualties down by 59% and child cyclists KSI down by 60%
- Car occupant casualties down by 57% car occupant KSI down by 77%
- Child car occupant casualties down by 51% child KSI down by 47%¹²

(Further information from London based studies is presented in Table 1, p4-5)

Accident data from Manchester (2012)

The number of accidents on 20mph roads represented a total 5.7% of all accidents on residential roads (ie 20 and 30mph speed limits). Residential roads with a 30mph speed limit constituted 94.3% of the accidents in these areas. Only 2.4% of all killed or seriously injured casualties occurred on 20mph roads despite these roads forming 16% of the total Manchester highway network.¹³

20mph speed limits in Portsmouth

20mph speed limits have been shown to reduce speeds, particularly where average speeds were over 24mph. In Portsmouth, where average speeds of 24 mph or more were reported before the 20mph speed limits were introduced, experienced a reduction of 6.3 mph in traffic speeds.¹⁴

European Examples

The implementation of 30km/h speed limits in Graz, Austria led to a 24% reduction in serious injury road traffic collisions.^{15,16} In the Netherlands, the number of serious accidents decreased from 48 per 1000km of 30km/h roads in 1998 to 17 serious accidents per 1000km of 30km/h road in 2008.¹⁷

(Further examples of the effects of 30km/h speed limits are presented in Table 2, p6-8)

The following tables have been reproduced and summarised from a report by Steer Davies Gleave, *Research into the impacts of 20mph speed limits and zones*.¹⁸

Table 1: Key findings from studies of 20mph speed zones in London

Study	DfT report completed by TRL ⁶	DfT report completed by TRL ¹⁹	Study TfL report completed by Grundy et al ²⁰	TfL report completed by Grundy et al ²¹
Scope	72 20mph zones in England	78 20mph zones in London	399 20mph zones in London	399 20mph zones in London
Method	Before and after analysis (before period of at least three years and after period of a least one year)	Before and after analysis (before period of five years, after period of three years)	Time series analysis	Time series analysis
Key Findings	<p>Road safety</p> <p>61% reduction in accidents and 70% reduction in KSI accidents</p> <p>63% reduction in pedestrian injury accidents</p> <p>29% reduction in pedal cyclist injury accidents</p> <p>73% reduction in motorcyclist injury accidents</p> <p>67% reduction in child (pedestrian and cyclist) injury accidents</p> <p>Ratio of KSI accidents to all accidents fell from 0.21 to 0.16</p> <p>Reduction in accidents did not appear to be due to migration</p>	<p>Road safety</p> <p>45% reduction in casualties and 57% reduction in KSI casualties</p> <p>45–60% reduction in child KSI casualties</p> <p>39–50% reduction in pedestrian KSI casualties</p> <p>30–50% reduction in pedal cyclist KSI casualties</p> <p>68–79% reduction in powered two wheeler casualties</p> <p>Ratio of KSI casualties to all casualties fell from 0.16 to 0.12</p> <p>Reduction in accidents did not appear to be due to migration onto surrounding roads</p>	<p>Road safety</p> <p>42% reduction in casualties in 20mph zones</p> <p>Effects diminishing (zones implemented 2000–2006 show only a 22% reduction in casualties)</p> <p>Zones more cost effective in higher casualty areas</p> <p>Positive benefit in areas with >0.7 casualties/km/year (only taking into account casualty costs)</p> <p>Traffic volumes and sustainable modes</p> <p>20mph zones appears to reduce rat running (casualties closer to home in 20mph zones)</p>	<p>Inequality</p> <p>20mph zones historically targeted at high casualty, high deprivation areas, therefore helped to reduce inequality</p> <p>But limited future role as few areas left that have high levels of deprivation and eligible for 20mph zones</p> <p>Other measures needed to reduce road safety inequalities</p>

	<p>onto surrounding roads</p> <p>Traffic speeds Overall average reduction in mean speed from 25mph to 16 mph (reduction of 9mph)</p> <p>6.2% reduction in accidents for each 1mph reduction in mean Speed</p> <p>Traffic volumes and sustainable modes Limited traffic flows information, but reductions in flows within zones and increases around zones</p> <p>Implementation issues Generally favourable public reaction, although negative reaction to some specific features (e.g. chicanes, speed humps)</p> <p>Schemes generally cost £100k to £200k</p>	<p>Traffic speeds Average speed reduction of 9mph (after mean traffic speeds of 17mph)</p> <p>Traffic volumes and sustainable modes Average reduction in traffic volumes of 15%</p>		
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Table 2: Impact of 30km/h speed limits implemented in other European countries (summarised from Steer Davies Gleave report)

Country, city	Background and measures implemented	Observed outcomes
Austria (Graz) ^{15,16}	<p>A 30km/h limit was applied to the whole city of Graz, with the exception of a network of 'priority roads'.</p> <p>This scheme consisted of the following elements:</p> <ul style="list-style-type: none"> • Signs at the city boundary • Road markings, consisting of speed limit roundels and repeaters • Intensive public relations • Police enforcement complemented by vehicle activated signs 	<p>24% decline in the number of serious injury collisions</p> <p>12% decline in whilst the number of slight injury collisions</p> <p>17% decrease in pedestrian collisions</p> <p>Public acceptance increased from less than 50% prior to implementation, up to 77% post-implementation</p>
Denmark ¹⁰	<p>30km/h streets in Denmark have some requirements for physical measures.</p> <p>They were created as a cheaper alternative to 15km/h streets, which had more stringent requirements for physical measures. As such, 30km/h streets became much more popular, especially in existing residential areas.</p>	<p>Mean vehicle speeds fell by about 11km/h, although this was through the use of physical measures.</p> <p>On 30km/h streets:</p> <ul style="list-style-type: none"> • 24% reduction in the number of collisions • 45% decrease in the number of casualties <p>This benefit appeared to also extend to the streets just outside of the 30km/h areas, with an 18% reduction in the number of collisions and 21% decrease in the number of casualties.</p> <p>A more intensive analysis was undertaken for casualties per road user kilometre (which includes motorised traffic, cyclists and pedestrians), for a smaller sample of streets. It was found that casualties per road user kilometre fell by 72%.</p>

<p>Germany (Hamburg)²²</p>	<p>In 1983, 30km/h speed zones were proposed by the Hamburg Police traffic department in conjunction with local authorities.</p> <p>Such zones were limited to areas that are residential in character, and excluded main roads.</p> <p>All junctions within the zones were uncontrolled, with all signs controlling traffic removed. Within the zones, no zebra crossings or cycle ways were required.</p> <p>Following the example in Hamburg, 30km/h zones were included in national legislation in 1985, which enabled their spread to other cities.</p>	<p>55% of drivers complied with the limit (which implies that the median vehicle speed became less than 30km/h).</p> <p>A decrease in the number of collisions was not observed, although there was a decrease in the severity level of the collisions that did occur.</p> <p>A small decrease in vehicle noise levels was observed.</p>
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