Road safety factsheet: 20mph zones and speed limits

September 2023

In 2022,770 people were killed, 19,697 were seriously injured, and 81,574 were slightly injured in reported road collisions on built up roads in Great Britain[1]. A large proportion of these collisions happened on roads with a 30mph speed limit.

Table one: Number of casualties, by severity, on built-up roads and percentage of collisions by speed limit on all built up roads in the UK (2022)

Speed Limit (mph)	Fatal	Seriously injured	All casualties
20	68 (9%)	3,192 (16%)	18,453 (18%)
30	532 (69%)	13,890 (71%)	69,727 (69%)
40	170 (22%)	2,615 (13%)	12,449 (12%)

Speed significantly increases the chance of being injured in a collision. Research has shown that the risk of death for pedestrians struck by car drivers increases at higher impact speeds, although the exact risk levels varied between the studies.

One of the first studies of pedestrian injury and car impact speed[2] found that at 20mph there was a 2.5 per cent chance of being fatally injured, compared to a 20 per cent chance at 30mph, although this study is now regarded as having overestimated the risks. A recent review identified the studies which had produced the most reliable modern estimates[3].

History of 20mph speed limits in the UK

In December 1990, the Department for Transport issued Circular Roads 4/90, which set out guidelines for the introduction of 20mph speed limits; local authorities had to apply for consent from the Secretary of State to introduce a 20mph zone.

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[1] Department for Transport (2023) Table RAS0301: Casualties by speed limit, built-up and non-built-up roads https://www.gov.uk/government/statistical-data-sets/reported-road-accidents-vehicles-and-casualties-tables-for-great-britain#geographical-breakdowns-ras04: Accessed 02/10/2023

[2] Ashton, S. J. and Mackay, G. M. (1979) 'Some characteristics of the population who suffer trauma as pedestrians when hit by cars and some resulting implications'
URL: http://www.ircobi.org/wordpress/downloads/irc1979/pdf_files/1979_4.pdf: Accessed 02/10/2023

[3] Rosén, E. et al. (2011) 'Literature review of pedestrian fatality risk as a function of car impact speed', Accident Analysis and Prevention, 43: 25-33.

The initiative was based on experience internationally, which had demonstrated that lower speed limits could have safety benefits when combined with traffic calming measures to ensure that vehicles maintained low speeds through the zone. Road safety publicity messages at the time, such as the "Kill your speed, not a child" campaign highlighted 20mph speeds as crucial to reducing the risks of injury in a collision.

The first 20mph limit was in Tinsley, Sheffield. There were 450 20mph speed limits introduced between 1991 and 1999.

In 1999, the law was changed by the Road Traffic Regulation Act (Amendment) Order 1999, which gave highways authorities more flexibility so they no longer had to apply for permission to introduce a zone. The updated legislation made two distinct types of 20mph speed limit possible:

- 20mph limits, which consist of just a speed limit change to 20mph which is indicated by the speed limit (and repeater) signs, and
- 20mph zones, which were designed to be "self-enforcing" due to the traffic calming measures that were introduced along with the change in the speed limit.

It, therefore, suggests that 20mph limits are appropriate for roads where average speeds are already low (below 24mph) or along with traffic calming measures. Ultimately, the local authority is responsible for deciding which of these was the most appropriate.

In January 2015, the Scottish Government published their 'Good practice guide in relation to the setting of 20mph speed restrictions' (updated 2016)[4]. The document aims to provide greater clarity on the options available to local authorities in setting 20mph speed restrictions throughout Scotland. Whilst encouraging consistency across the country, local authorities have the option to introduce them near schools, in residential areas and in other areas of our towns and cities where there is a significant volume of pedestrian or cyclist activity. It also aims to encourage local authorities to set 20mph speed restrictions, where appropriate.

Local authorities have several options when considering introducing a 20mph speed restriction, including:

- 20mph speed limit zones
- 20mph limits
- Variable and part-time 20mph limits.

However, the information in the good practice guide is intended as guidance only. It is not meant to modify or override any of the provisions contained in the relevant road traffic legislation.

[4] Transport Scotland (2016) 'Good practice guide on 20mph speed restrictions' https://www.transport.gov.scot/media/38640/20-mph-good-practice-guide-update-version-2-28-june-2016.pdf: Accessed 02/10/2023

The guide is intended for use by Scottish local authorities and replaces all previous guidance on 20mph issued by the Scottish Executive.

The Department for Transport's current guidance is set out in DfT Circular 01/2013[5], which encourages traffic authorities to consider the introduction of more 20mph limits and zones, over time, in urban areas and built-up village streets that are primarily residential to ensure greater safety for cyclists and pedestrians. The guidance sets out that the purpose of 20mph areas is to create conditions in which drivers naturally drive at around 20mph because of traffic calming measures or the general nature of the location.

Characteristics of 20mph zones and speed limits

There is a significant difference between the characteristics of a 20mph speed limit and a 20mph zone.

20mph limits are areas where the speed limit has been reduced to 20mph but there are no physical measures to reduce vehicle speeds within the area. Drivers are alerted to the speed limit with 20mph speed limit repeater signs.

20mph limits are most appropriate for roads where average speeds are already low, and the guidance suggests below 24mph. The layout and use of the road must also give the clear impression that a 20mph speed or below is the most appropriate.

20mph zones use traffic calming measures to reduce the adverse impact of motor vehicles on built up areas. The principle is that the traffic calming slows vehicles down to speeds below the limit, and in this way the zone becomes 'self-enforcing'. Speed humps, chicanes, road narrowing, planting and other measures can be introduced to both physically and visually reinforce the nature of the road.

Traffic calming programmes can incorporate a wide range of measures designed to work together to reduce speeds and improve the overall environment. In effect this means there can be significant differences between schemes.

There are four main techniques to traffic calming programmes:

- Vertical deflections
- Horizontal deflections
- Road narrowing and;
- Central islands.

[5]DfT (2013, Guidance, Setting local speed limits, https://www.gov.uk/government/publications/setting-local-speed-limits/setting-local-speed-limits: Accessed 02/10/2023

Vertical deflections in the carriageway are the most effective and reliable of the speed reduction measures currently available. There are several different techniques available to achieve this:

- Road hump
- Plateau (speed table)
- Cushion and;
- Uneven road surface (rumble strips).

Horizontal deflections in the carriageway are less effective than vertical ones in achieving reductions in speed, although their impact is significantly increased when used in combination with a vertical measure. Essentially all horizontal shifts may be classified as chicanes. The impact of chicanes is reduced if the design must allow for the passage of HGVs as the wider carriageway increases the speed that it can be negotiated at. Chicanes can significantly reduce parking spaces.

Road narrowing can also be used to support vertical deflections. It is not a speed-reducing device, but it can be a reminder or encouragement to drive slowly or calmly. The effectiveness of this measure in controlling speed can be increased if the carriageway width is reduced to a single lane. However, this is largely dependent on the balance of the opposing traffic flows. The extra space created by road narrowing can be used to provide some combination of widened footways, dedicated cycle lanes and formalised parking bays, or to provide more space for public transport, for example, bus lanes.

Central islands have only a limited effect on reducing speeds unless combined with another measure such as a chicane. They do, however, provide useful pedestrian refuges.

Often, traffic calming involves providing more space for pedestrians and cyclists and improving the local environment. Traffic calming schemes operate on a principle of shared space between all road users. Roads can be redesigned to give greater prominence to the residential function of the road and reduce the dominance of motor vehicles.

Effectiveness of 20mph zones and speed limits: 20mph zones

There have been several literature reviews summarising the current research into the effectiveness of 20mph zones.

A Cochrane review found that area-wide traffic calming in towns and cities may be a promising intervention for reducing the number of road traffic injuries and deaths[6]. A meta-analysis found that traffic calming schemes

[6] Bunn, F. et al (2003) 'Area-wide traffic calming for preventing traffic related injuries', *Cochrane Database of Systematic Reviews,* 1: Art. No.: CD003110

reduced the number of injury accidents by about 15 per cent on average, with schemes in residential areas showing a greater reduction[7].

In 2018, the Department for Transport commissioned a study into the effectiveness of 20mph zones. The study carried out an extensive literature review. It found that in general, research had shown that in 20mph zones there had been both a reduction in speed and a reduction in collisions.[8]

Below is a summary of key research into 20mph zones:

- The first widespread evaluation of 20mph zones in the UK was carried out by TRL in 1996[9]. It found that injury collisions were reduced by 60 per cent, and child injury collisions were reduced by 67 per cent. The evaluation did not find evidence that collisions increased on surrounding roads due to drivers changing their route. There was a decrease in traffic of 27 per ent in the zones during the evaluation, but the authors attributed a large part of this to bypasses which were also built in conjunction with some of the schemes to take through traffic away from the area.

- From 1994, there was a widespread introduction of 20mph zones in Hull, and by 2003, there were 120 zones covering 500 streets. The casualty statistics between 1994 and 2001 showed a fall of 14 per cent in Hull, compared to a rise of 1.5 per cent in the rest of Yorkshire and Humberside. In the 20mph zones in Hull, there was a decrease in total collisions of 56 per cent and in fatal and serious injuries of 90 per cent. The biggest reductions were pedestrian casualties, which fell by 54 per cent, child casualties, which dropped by 54 per cent and child pedestrian casualties, which fell by 74 per cent. [10]

- A 2007 review of half of the 20mph zones which had been implemented in London (78 zones) found that they reduced injury collisions by about 42 per cent and fatal or serious collisions by 53 per cent.[11]

- A major review of road casualties in London between 1986 and 2006 was published in 2009.[12] It demonstrated that 20mph zones reduced the number of casualties by over 40 per cent. The 20mph zones were also slightly more effective in preventing fatal or serious injuries to children, which were reduced by half. There was a smaller reduction in casualties among cyclists than any of the other major groups of road users studied, with a reduction of 16.9 per cent.

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[7] Elvik, R. (2001), 'Area-wide urban traffic calming schemes: a meta-analysis of safety effects', *Accident Analysis and Prevention*, 33(3):327-36

[8] Atkins, AECOM and Mahon (2018) '20mph Research Study: Process and Impact Evaluation Headline Report' https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757307/20mph-headline-report.pdf Accessed: 02/10/2023

[9] Webster, D. C. and Mackie, A. M. (1996) *Review of traffic calming schemes in 20 mph zones*, UK: TRL

[10] Brightwell, S. (2003) Hull Reaps Road Safety Rewards From Slowing the City's Traffic, London: Local Transport Today

[11] Webster, D. and R. Layfield (2007), Review of 20 mph zones in London Boroughs, UK: TRL.

[12] Grundy, C. 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, 2009; 339:b4469

The analysis showed that the reduction in road injuries in 20mph zones occurred at a greater rate than the overall trend of reduction in casualties in London and that there was no displacement in collision risk to roads close to the 20mph zones.

- Based on the casualty reductions seen in the 2009 BMJ paper, the North West Public Health Observatory predicted what the effect would be of introducing 20mph zones in all residential zones in the North West region.[13] Casualty figures collected by the police were used and the average number of casualties per year in the region was calculated using data from between 2004 and 2008.

  This study found that there would have been 140 fewer killed or seriously injured child casualties if there were 20mph zones in all residential areas in the region. This was an improvement of 26 per cent on the actual figures. In addition, there would have been a 26 per cent reduction of all pedestrian casualties and 14 per cent reduction in all cyclist casualties.

20mph limits

- The earliest examples where 20mph (30km/h) limits have been introduced without traffic calming are outside of the UK. Graz, in Austria, introduced 30km/h as the speed limit on all residential streets in September 1992. This accounts for around 800km of roads in the city, around four-fifths of the total network[14].

  The introduction was part of a comprehensive traffic plan in the city. The two strands were: to promote walking, cycling and public transport through improving the infrastructure and education activities; and to limit the volume and speed of traffic through introducing restrictions in the city centre. The limit itself was marked by signage and a key component was police enforcement of the limit. An education campaign about the limit accompanied the change.

  Comparing the year after the introduction of the limits, there was a 12 per cent reduction in collisions that resulted in a minor injury and 24 per cent fewer collisions that resulted in a serious injury. There was a reduction in all pedestrian collisions of 17 per cent and with car drivers of 14 per cent. There were also reductions in the number of collisions on the roads which remained at 50km/h; this was seen at both crossings and free stretches of road. The researchers argued that this was due to the comprehensive traffic plan establishing a new “traffic culture”.

  To control for the effects of increased enforcement of the new limit, a comparison was made by giving police in other cities the same laser enforcement equipment used in Graz. These cities showed either a smaller decrease, or an increase, in the number of collisions.

[13] Deacon, L. et al (2011) ‘Road Traffic Collisions and Casualties in the North West of England’
URL: http://www.pedestriansafety.org.uk/files/roadtrafficcollisionsandcasualtiesinthenw.pdf: Accessed 02/10/2023

[14] National Highway Traffic Safety Administration (1999) ‘Literature Review on Vehicle Travel Speeds and Pedestrian Injuries’, http://www.nhtsa.gov/people/injury/research/pub/HS809012.html: Accessed 26/07/2022

Road Safety factsheet: 20mph zones and speed limits

There has been an expansion of 20mph limits in the UK. Several authorities have implemented 20mph as the default limit for residential streets, with a number running pilot projects or committing to implementing 20mph limits. The reasons for this rapid expansion are not solely for road safety, and many are being introduced to contribute towards healthier environments.

In July 2022, legislation to lower the default national speed limit on residential roads and busy pedestrian streets from 30mph to 20mph was approved by the Senedd. The aim of introducing the 20mph speed limit is to reduce road collisions and noise and encourage people to walk or cycle. The new 20mph limit will came into force in September 2023. The new legislation does not apply a blanket speed limit on all roads, itl makes the default limit 20mph, leaving local authorities to engage with the local community to decide which roads should remain at 30mph. The Scottish Government announced plans for 20mph to be the norm on built-up roads by 2025.

- TRL carried out research on 20mph limits in 1998, which examined the effectiveness of 20mph limits without traffic calming measures[15]. It found that traffic calming was a more effective way of reducing vehicle speeds than signs only, which only produced a small reduction in speed. There was some evidence that public awareness campaigns and enforcement further reduced traffic speeds.

- In 2007, the speed limit was reduced from 30mph to 20mph on around 94 per cent of roads in Portsmouth[16]. 223 sites within Portsmouth, split between six different areas of the city were monitored. A distinction was made between roads where the average speed before the 20mph zone was introduced was: 20mph or less; between 21 and 24 mph; and over 24mph. This allowed the effect of the limits to be examined in these different conditions.

  There was an overall average speed reduction of 1.3mph following the introduction of the limits, as the average speed dropped from 19.8mph to 18.5mph. The change across the six areas varied from a reduction of 0.6mph to 1.7mph. This was a statistically significant reduction in speeds across the city.

  Overall, there was a drop in the number of police reported injuries in the six areas comparing the average of 163.7 casualties per year over the three years before the introduction and an average of 129.4 casualties per year in the two years after. This represented a 21 per cent reduction. The number of people killed or seriously injured (KSIs) rose from an average of 18.3 per year to 19.9 per year in the same period, although the relatively low numbers of recorded KSI casualties in Portsmouth mean that small fluctuations up and down by chance can have an undue influence on this. Much of this increase came from the number of pedestrians injured and it was not possible to measure whether the amount of pedestrian activity had increased following the introduction of the 20mph limits.

[15] Mackie, A (1998) Urban speed management methods, UK: TRL
[16] Department for Transport (2010) 'Interim Evaluation of the Implementation of 20mph Speed Limits in Portsmouth, Final Report – September' https://www.iancampbell.co.uk/files/Portsmouth_20mph_statistical_analysis.pdf: Accessed 02/10/2023

- Bristol has also piloted 20mph limits in two areas using only signage as one element of a strategy to increase physical activity in Bristol[17] along with events that encourage children to play outside and increase the uptake of cycling. There was also a communications strategy, which resulted in several different education campaigns about the 20mph limits.

  The Inner East Bristol pilot area covered around 300 roads and the Inner South Bristol pilot area covered around 200. Vehicle activated signs were used on higher speed or major roads within the areas to supplement the signage at entry points, and repeater signs. Roundels with the speed limit painted onto the road were also used.

  Two years after the introduction of the limits, speed surveys were conducted on 10 per cent of the roads covered by the scheme. There was a reduction in mean daytime speeds on 65 per cent of the roads. On residential roads, there was on average a 0.4mph reduction in traffic speeds. There was a greater reduction on main roads, as 1.7mph was the average reduction in the Inner East area and 1.3mph in the Inner South area.

  There were reductions in speed on the 30mph roads within the areas too. In the Inner South area, there was a reduction of 1mph comparing the mean speeds before and after, and in the Inner East area, there was a 9.2mph reduction on the same roads. There was a 1.1mph reduction in average speeds on 30mph roads outside of the Inner South area.

  Given the relatively low numbers of casualties in each of the two areas, it was not possible to draw conclusions about the effect of 20mph limits on injuries from the data available.

- There has also been a pilot scheme in South Central Edinburgh, which aimed to reduce vehicle speeds through signage and surface markings in residential streets with high levels of pedestrian activity[18]. The council adopted a target to increase levels of cycling in the city and to reduce the number of road traffic incidents. For the council, it was expected that lowering speeds would encourage increased levels of walking and cycling, while reducing the severity of any potential incidents.

  Although the council had chosen to implement several 20mph zones in the past with physical traffic calming measures, these were very costly to implement and required additional maintenance. It is estimated that a 20mph limit can be introduced at just one-sixth of the cost of a 20mph zone. For this reason, several 20mph limits were trialed in residential areas.

  To evaluate the success of the 20mph limit pilot, 48 'before' speed surveys were taken across a sample

[17] Bristol City Council (2012) '20mph Speed Limit Pilot Areas: Monitoring Report' http://www.bristol20mph.co.uk/wp-content/uploads/2016/06/20mph-Monitoring-Report-pilot-areas-2012.pdf: Accessed 02/10/2023

[18] Turley, M. (2013) South Central Edinburgh 20mph Limit Pilot Evaluation, Transport and Environment Committee, August 2013 http://www.spokes.org.uk/wp-content/uploads/2014/09/130827-Item_7.3___South_Central_Edinburgh_20mph_Limit_Pilot_Evaluation.pdf: Accessed 02/10/2023

of street locations in the pilot area before the implementation of a 20mph limit. Speed surveys were taken again after the 20mph limit was enforced. Of these locations, 20 locations remained at a 30mph limit for the pilot period and 28 of the locations were changed to the new 20mph limit.

For the 28 locations that had their speed limit changed to 20mph, average 'before' speeds were 22.8mph, while 'after' speeds fell to 20.9mph, an average fall of 1.9mph. In the locations that remained at a 30mph limit, the average fall in speed between the 'before' and 'after' speed was 0.8mph. 12 'before' locations also had an average speed that exceeded 24mph, an average of 25.8mph. The average 'after' speed at these locations was 22.4mph, an average fall of 3.3mph.

However, there were some slight increases in the average speed in four of the 'before' locations. Four locations also continued to have average speeds of over 24mph. To ensure that these speeds fall towards 20mph; it was proposed that permanent engineering changes were made to these streets, including physical traffic calming measures, additional signage and road narrowing, as with a traditional 20mph zone.

Overall, the speed surveys have demonstrated that the 20mph speed limit has resulted in an overall reduction in speeds in the majority of cases. Although 75 per cent of the locations still have a speed average in excess of 20mph, in all but four of the locations, speeds are below 24mph, which is the DfT threshold recommended for the effective operation of 20mph limits.

Benefits evidenced through this pilot scheme were lower vehicle speeds, and strong residential support for 20mph limits. Surveyed residents also mentioned benefits of 20mph limits such as safety for children walking around the area and playing in the street, and better walking and cycling conditions. In the year following the launch of the scheme, data also showed a 7 per cent increase in journeys by foot, a 5 per cent increase in journeys by bicycle and a 3 per cent fall in journeys by car.

Birmingham first introduced 20mph speed limits in 2016. Interim evaluations showed that average speed reduction where the 20mph limit was introduced was -1.4mph. Total collisions decreased roughly at the same rate in 20mph areas as the citywide figure. Killed, or seriously injured figures decreased at a higher percentage in 20mph limit areas than as the city as a whole.[19]

- In 2014, the Department for Transport (DfT) commissioned engineering consultancy firm Atkins to conduct an evaluation[20] into signed-only 20mph limits without physical traffic calming measures based on 12 case study schemes in England and various comparable areas with a 30mph speed limit in place.

[19]Birmingham City Council (2018) 20mph Speed Limit Pilot – Year One Interim Evaluation, 20mph speed limit pilot: Accessed 02/10/2023

[20] Atkins, AECOM and Mahon (2018) 20mph research study: process and impact evaluation: headline report, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/757307/20mph-headline-report.pdf: Accessed 02/10/2023

The study explored the enablers and barriers to implementing a successful 20mph speed limit scheme and found that early engagement and buy-in from relevant stakeholders, clear articulation of the scheme's rationale, objectives and outcomes and tailoring of schemes to the local circumstances are crucial to a scheme being accepted by the public. It had long been thought that most residents and drivers support 20mph schemes, and this study confirmed it. Overall, it found that:

- The introduction of 20mph limits led to a small reduction in median speed (0.7mph in residential areas and 0.9mph in cities), but vehicles traveling at higher speeds before the change of speed limit reduced their speed more than those already traveling at lower speeds
- There was a concern amongst members of the public regarding a lack of enforcement of 20mph limits and a view that the chance of being caught exceeding the speed limit is very small
- There is not yet enough evidence to conclude that in residential areas the introduction of 20mph limit had led to a significant change in casualty and collision rates, but this may change as more data becomes available. However, there was a small but statistically significant rise in reported levels of cycling and walking.
- The findings of the study support the advice set out in the DfT's Setting Local Speed Limits.
- Consideration should be given to encouraging traffic authorities to work with relevant partners from the police, health, environment, urban planning, education, and the local community to deliver 20mph limits as part of an integrated approach to addressing transport, community, environment and health objectives.

Benefits of the schemes included an improvement in quality of life, community benefits and encouragement of healthier travel modes such as cycling and walking. Effects of both zones and limits

One study aimed to investigate the effects of 20mph zones and limits on public health outcomes such as collisions and air quality. It also aimed to assess the differences between the individual effects of 20mph zones and limits, making it the first of its kind. The study involved conducting a systematic review of the 20mph zones and limits research area, starting with 6,162 records and resulting in 12 key studies that all reported at least one public health outcome because of 20mph interventions. These studies were then investigated and outlined to give a picture of the overall effects of these interventions.

The results of the study suggest that 20mph zones have a very positive effect on public health outcomes. Overall research does indicate that 20mph limits are beneficial, but further evaluation is needed, with the use of comparison groups, to identify the specific public health effects. The key beneficial public health outcomes for 20mph zones were significant reductions in numbers of collisions and severities of casualties.

Research that investigates the effects on non-road safety related public health outcomes, such as pollution, is limited. It is possible that 20mph zones and limits could increase pollution, as some vehicles will operate inefficiently at low speeds. However, it is also possible that reduced speeds encourage smoother driving and reduced acceleration, which reduces emissions. Regardless, any negative effects could be seen as insignificant when considering the highly positive road safety benefits found because of 20mph zones. Some studies showed

that 20mph interventions resulted in individuals feeling safer and calmer in areas that were previously full of high-speed traffic, encouraging them to walk and cycle more.[21]

Local highway authorities should consider the type of traffic calming measures used within 20mph zones, as some features can cause more vehicle pollution than others. This is illustrated in a report published by Imperial College London which explored the effects of a London 20mph speed restriction on vehicle emissions. It was found that cars can produce up to 98 per cent more nitrogen oxides and up to 64 per cent more carbon dioxide when driving over a speed bump as opposed to a speed cushion (these are shallower and do not span the entire width of the road)[22].

Reduction in traffic flow

Reduction in collision risk is not usually the only intended outcome to a traffic calming scheme. 20mph zones and limits can also lead to other benefits, such as a reduction of traffic flow in the area. Although results of studies do vary, it is generally suggested that traffic volumes reduce following the implementation of a 20mph zone or limit.

Between 2007 and 2008, levels of motorised traffic in Portsmouth 20mph areas fell by 3 per cent, which was higher than the national average reduction in traffic. However, the report concluded that data suggested that traffic had not re-routed systematically from the roads subject to 20mph limits to main roads on the cordon[1].

However, other studies have indicated larger reductions of traffic flow in 20mph limits and zones. A TRL review of 250 20mph zones in England, Scotland and Wales stated that traffic flow in 20mph zones reduced on average by 27 per cent, but flows in surrounding boundary roads increased by 12 per cent Despite this, the review concluded that there was generally little collision migration to surrounding roads.[23] A more recent Steer Davies Gleave report suggested that there is a reduction in traffic volumes of 5.2 per cent for 20mph areas without traffic calming and 13.4 per cent for areas with traffic calming.[24]

In conclusion, traffic volumes generally decrease in 20mph zones, although this impact is highly variable and depends on the characteristics of a particular area. The level of motor vehicle traffic is an underpinning cause of injury on the roads, with research indicating that traffic volume is predictive of the number of cyclist and

[21] Cleland CL, McComb C, Kee F (2019) Effects of 20mph interventions on a range of public health outcomes: A meta-narrative evidence synthesis [published online ahead of print October 4, 2019]. *Journal of Transport & Health.* 2019. doi: 10.1016/j.jth.2019.100633

[22] Transport and Environmental Analysis Group (2013) An evaluation of the estimated impacts on vehicle emissions of a 20mph speed restriction in central London. Centre for Transport Studies, Imperial College London. https://www.edinburgh.gov.uk/downloads/file/25178/city-of-london-emissions-report: Accessed 02/10/2023

[23] DfT (1999) '20mph Speed Limits and Zones'
URL:https://www.tsrgd.co.uk/pdf/tal/1999/tal-9-99.pdf: Accessed 02/10/2023

[24] Steer Davies Gleave (2014) 'Research into the Effectiveness of 20mph speed limits and zones'
URL: http://www.roadsafetyknowledgecentre.org.uk/downloads/20mph-reportv1.0-FINAL.pdf: Accessed 02/10/2023

pedestrian injuries. This means that reducing traffic volume has the potential to improve cycle safety, pedestrian safety, and road safety in general.

Lower traffic speeds and health

As well as road safety benefits, it is important to highlight the contribution that 20mph zones can have in improving air quality, reducing noise pollution and encouraging more physical activity, such as walking and cycling, by contributing towards a safer environment. The money spent on the schemes can also greatly improve the residential area.

A 2017 study[25] suggested that a default speed limit of 20mph would substantially reduce road traffic casualties, and at worst would not lead to a direct change in air pollution. However, indirectly, if reduced traffic speeds encourage people to switch to active modes of travel, such as cycling and walking, there are likely to be greater reductions in air pollution. The study concluded that health and costs savings are likely to be substantial, and the costs of implementing 20mph limits are likely to be far lower than the benefits reduced speeds bring.

Assessment of any unintended negative consequences

Vehicle damage

RoSPA has received enquiries from members of the public who have raised concerns that traffic calming used in 20mph zones has unintended negative consequences, such as causing vehicle damage and injuring vehicle occupants when vehicles go over the calming, slowing emergency services, or increasing vehicle emissions.
Research to evaluate the impact on road humps on both vehicle damage and the likelihood of occupant injury by TRL and Millbrook[26] included testing vehicles on speed cushions and road humps and creating computer models of vehicles and their occupants.

The tests did not show evidence of any vehicle damage from the humps or significant and permanent changes to the vehicle's suspension systems. The report concluded that the levels of discomfort caused by the humps were generally acceptable if they were traversed at an appropriate speed (15-20mph) and that the forces on the spine were an order of magnitude smaller than what typically causes an injury. However, some people with conditions such as degenerative discs or weak bones are more susceptible to an injury.

Emergency services response times

There have been concerns raised about the effect on ambulance response times, and that this puts people at risk.

[25] Jones, S. J. And Brunt, H. (2017) 'Twenty miles per hour speed limits: a sustainable solution to public health problems in Wales', *Epidimol Community Health,* 0: 1-8.
[26] Kennedy, J. et al (2004) *Impact of road humps on vehicles and their occupants,* UK: TRL

TRL research looked at the average speed of a fire tender running over different types of traffic calming in an estate in Surrey.[27] The authors estimated that on average, traffic calming measures caused a time delay of 1.25-1.40 seconds, and that the average speeds were lowest over flat top humps, and highest over speed cushions.

When implementing 20mph zones, consultation with the emergency services, as well as the local community would be beneficial to identify any issues before the traffic calming is put in. This would help to provide safer roads and meet the concerns of the emergency services, or to identify other ways to ensure rapid response times without losing the significant road safety benefits of a 20mph zone.

It is important that communities, and other stakeholders, know what they are getting from a 20mph zone or limit and have a say in their development. Results from the Inner-City Road Safety Demonstration Project[28] highlight that residents often had concerns about the amount of available on street parking, and proposals which reduced it were opposed. There was both opposition and support for traffic calming features, with greater levels of support for it in residential areas.

One important finding from the demonstration project was that consultation must be 'right first time'.

RoSPA's policy position on 20mph zones and speed limits

Inappropriate speed is one of the most serious road safety problems on Britain's roads and causes death and injury to thousands of people each year.

A co-ordinated speed management strategy must include education, training and publicity, highway engineering and design, vehicle engineering and enforcement measures. Setting appropriate speed limits is an important part of this strategy.

20 mph zones

RoSPA strongly supports the use of 20mph zones as they are an effective means of reducing road crashes and casualties. They are very effective at protecting our most vulnerable road users, including children, pedestrians and cyclists, and significantly decrease the risk of being injured in a collision. RoSPA encourages their greater use, especially in residential areas.

20 mph limits

RoSPA supports and encourages the wider use of 20mph limits. They have been shown to reduce traffic speed, although not as much as 20mph zones with traffic calming. However, they are considerably less expensive to implement, which means that wider areas can be covered. They also provide additional benefits, such as encouraging more physical activity, such as walking and cycling. They can also greatly improve the character of a residential area and quality of life of the residents.

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[27] Boulter, P. G. et al. (2001) *The Impacts of Traffic Calming Measures on Vehicle Exhaust Emissions*, UK: TRL

[28] DfT (2009) *Inner City Road Safety Demonstration Project Interim Report,* URL:https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3733/techreportappendixa.pdf: Accessed 02/10/2023

Road Safety factsheet: 20mph zones and speed limits

20mph limits are most appropriate for roads where average speeds are already low, below 24mph, and the layout and use of the road also gives the clear impression that a 20mph speed or below is the most appropriate.

Although a high proportion of urban roads are suitable for 20mph limits, RoSPA does not believe that 20mph speed limits are suitable for every road in a local authority area. They should be targeted at roads that are primarily residential in nature and on town or city streets where pedestrian and cyclist movements are high (or potentially high), such as around schools, shops, markets, playgrounds and other areas. Roads which are not suitable for 20mph limits are major through routes.

Local Authorities are the bodies responsible for determining where 20mph zones and limits should be introduced

Local Authorities should take advantage of opportunities to introduce them where they are needed. 20mph areas should initially be prioritised to places where they are most needed, for example, in areas of social deprivation which have high populations, areas which consistently display collision problems or have other issues which a 20mph zone could alleviate, and in residential areas around locations which are common urban destinations. The need for 20mph zones can be examined when developing safer routes to school.

Speed limits can, and should, be supported by other measures to help drivers drive at safe speeds, and to enforce the limits for drivers who choose to ignore them.

Consultation and engagement with local communities and other stakeholders is of vital importance

Consultation and engagement with local communities and other stakeholders is of vital importance, to make sure that safer roads are prioritised where needed.

Local communities should have input into the schemes development. Emergency services must be consulted when implementing 20mph zones to ensure that their requirement to use the roads quickly is balanced with the considerable benefit of a 20mph zone.

The underpinning idea behind the 20mph schemes is that the speed limit – if adhered to – reduces the risk of crashes occurring and presents a strong chance of avoiding fatal or serious injuries if one does occur. In built up residential areas, RoSPA believes that 20mph represents the best compromise between mobility and risk.

Other Benefits

20mph limits are not just a road safety measure. Therefore, when assessing their value and effectiveness, it is important to consider increases in walking and cycling and improvements in quality-of-life indicators, such as health improvements, community cohesion and better air quality, as well as reductions in vehicle speeds and road crashes and casualties.