

20 mph Zones – Public Health summary of evidence

What are they?

20 mph limits are areas where the speed limit has been reduced to 20 mph using road signs, while 20 mph zones use physical measures to reduce speed.¹ There is an international trend towards a default 20mph speed limit on residential roads in North America and Europe, including the UK.²

Why are they being considered?

- Local residents generally favour the schemes and popularity is increasing.⁵
- A larger percentage of pedestrians in the UK (22.5%) are killed than in any other EU country.³ The UK default 30 mph speed limit is 60% higher than most continental European towns, where 18.6mph (30kmh) is the norm.
- Road traffic is responsible for up to 80% of particulate pollution in the UK and this is likely to be an underestimate.⁴

Do they work?

Evidence that 20 mph limits significantly reduce speed is weak – a systematic review recently concluded that both 20 mph zones and limits reduce speed⁶ but in Islington, where it was first introduced, borough wide 20mph limits were shown to reduce speed on average by 1 mph instead of the intended 10 mph.⁷ Installing speed limit signs without traffic calming features are likely to have such minimal impact unless they are enforced.³⁷

A 2009 survey showed that more people thought dropping litter was unacceptable compared with driving 40mph on a 30mph road⁸ and that nearly half of drivers exceeded the 30mph speed limit. Driver education, safety campaigns and reinforcement of speed limits are therefore necessary for speed limit signs to be maximally effective.³⁸

Government currently advises that speed limits should be self-enforcing, i.e. have surroundings that naturally enforce a low speed or mechanical traffic calming measures.⁹ There is good evidence that 20 mph zones with traffic calming measures reduce speed to at least 24 mph or less.¹⁰ Traffic calming measures can include a number of measures such as rumble strips, chicanes, islands, speed bumps etc. with varying effectiveness and their own pros and cons.³⁹

Where 20mph are adhered to, does it reduce road traffic accidents (RTAs)?

In 2011 the Department for Transport report showed that there was an increase in road traffic accidents on 20mph roads over time¹¹. This was interpreted by the press as evidence that

20mph do not work.¹² However, the trend is likely to simply reflect the significant increase in roads with a 20mph speed limit.¹³

A pedestrian in contact with a car travelling at 30mph is eight times more likely to die than if they come into contact with a car travelling 20 mph, and every 1mph less reduces casualties & severities by 6%.¹⁴ This indicates that even a marginal 1 mph speed reduction associated with 20 mph -- as in Islington – can save lives. Brighton and Hove have experienced a 12% decrease in those killed or seriously injured since implementing 20 mph zones in certain areas¹⁵ while Burnley trialled 20 mph zones and saw reductions from 46 to 25 casualties.¹⁶ In London 20mph zones have led to a 42% reduction in casualties compared with areas outside the 20mph zone.³⁵ A systematic review in 2014 concluded that 20mph zones are effective in reducing accidents and injuries, traffic speed and volume, as well as improving perceptions of safety.⁶

A modelling exercise investigating the impact of 20mph traffic speed in residential areas with a 30 mph speed limit across the North West demonstrated that 140 killed or seriously injured children could have been saved in a four year period had a 20mph limit been in force.¹⁷ More than 80% of child road casualties occur on such streets nationally.

Speed is generally not a contributing factor in HGV related fatalities¹⁸ but HGVs are the main cause of cycling fatalities in the UK.¹⁹ Other measures may therefore also be necessary to reduce RTAs.

Do 20mph limits result in an increase in active travel and reduction of car journeys?

High vehicle speeds are the greatest deterrent to walking and cycling instead of driving.²⁰ There is growing consensus that introducing 20mph limits is the main evidence-based policy to raise regular exercise levels.^{21,22} In Hilden, Germany, the percentage of in-town trips made by bicycle increased to 23% after the introduction of an 18.6 mph residential limit.²³

What about air pollution?

There are two considerations. Firstly, does driving 20mph compared to 30 or 40mph lead to increased congestion and increased air pollution? The pollutants adversely affecting Londoners at present are particulate matter and nitrogen dioxide (NO₂) with harmfully high levels present - cars contribute 28% of NO₂ and 54% of particulate matter.³⁶ Secondly, does a 20mph limit lead to reduced air pollution overall?

Imperial College reported that air quality is no worse at 20mph and that brake and tyre wear (which contributes to particulate pollution) is significantly reduced.²⁴ When 30kmh zones were

introduced in Germany in the 1980s, car drivers changed gear 12% less often, braked 14% less often and required 12% less fuel.²⁵ When driving in an appropriate gear at a steady pace, a slower pace will result in lower fuel use and carbon dioxide (CO₂) emissions.²⁶ Results differ according to what is measured – particulate emission is likely to be reduced while it is unlikely that NO₂ or CO₂ levels are affected either way by speed reduction.²⁷ A more general study on the effect of speed reduction found a significant reduction in particulate matter but not NO₂ levels.²⁸

Congestion is a factor in air pollution, as standing emissions are higher than that of a moving vehicle.²⁹ A 20mph speed limit had no adverse effect on congestion.²⁸ On the contrary, traffic flow through junctions was smoother at lower speeds. Collisions causing congestions will be reduced at 20mph and thereby expected to result in fewer delays.

Whilst the reduction of pollution may be small when only driving vehicles are considered, an increase of the number of people replacing car journeys with walking and cycling as a result of the 20mph limit will lead to a reduction of pollutants overall.

Are there other benefits?

High speed traffic is disproportionately located in socio-economically disadvantaged neighbourhoods. The National Institute for Health and Care Excellence (NICE) concludes that implementing 20 mph zones, with priority given to protecting children and young people, in disadvantaged areas may reduce health inequalities.³⁰ 20mph zones are associated with reduced noise pollution.³¹ Traffic calming was recently also shown to promote greater neighbourhood interaction and outdoor child play.³²

Is it cost effective?

Focussing on areas which face the greatest risk in terms of road traffic accidents could lead to a 100% return on investment in the first 12 months.³³ After 10 years, on average £67,000 savings could be made in areas with at least one casualty per kilometre of road.³⁵ Increasing active and safe travel could achieve considerable savings to local authorities, the government and the NHS.³⁴

Are there any unwanted side effects?

Blanket 20 mph limits may contribute to dangerous driving on certain roads e.g. drivers overtaking, although this is speculative. There is a danger that focussing on the 20mph speed limit could replace more complex efforts to bring about modal shift to active travel and reduced traffic speed, such as making neighbourhoods more aesthetically pleasing, convenient and safer

in different ways. Such measures could include segregated cycle paths, cycling through parks, 'greening the borough', pedestrianising areas, improving public transport, restricting HGV traffic, 'reviving the high street' and others.

Are there alternatives to 20mph?

A focus on wider cultural change to increase safety and perceptions of safety by making street design more aesthetically pleasing and redesigning its purpose (such as the Dutch Woonerf approach, where a redesign focuses on increased liveability and sense of community with reduction of traffic and speed as a secondary outcome) may lead to better outcomes overall.⁴⁰

What's the unique situation in Hammersmith and Fulham?

On average, three children a month are injured on H&F's roads. Of a total of 763 people injured on H&F roads last year, almost half were cyclists or pedestrians. More than one third of H&F's roads are already 20mph zones, which include traffic calming measures. Since their introduction collisions have reduced by up to 80% in those areas.

However, the large number of HGV associated RTAs in inner London are unlikely to be affected by the 20mph limit and need to be addressed with enforced safety legislation around HGV equipment and use.⁴¹

An argument that is often brought against 20 mph limits in inner London is that average speed is already less than 20mph. However; this average speed takes into account stationary traffic at lights or in traffic jams. It is the steady speed at 20mph that is likely to be of benefit if adhered to.

Summary

Transport for London states that, "*The use of 20mph zones and limits remain an important and effective measure for reducing casualties through lowering speeds on local and residential roads.*"

Evidence shows that 20mph limits significantly reduce RTAs, air pollution, noise pollution and increase physical activity. They also have the potential to reduce health inequalities. Therefore, although 20mph limits appear to offer benefits they alone do not solve all road risks. Unenforced they may be ignored and opportunities may be missed to achieve safety by more complex measures, such as making neighbourhoods greener, more amenable to walking and cycling and reducing traffic and speed. Other measures are likely to be needed to address HGV-associated RTAs disproportionately affecting the inner London boroughs.

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