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THINK Academy Article 002

Summary

There is a clear imperative to reduce average speeds and excessive speeding to prevent injury and death. One approach to achieve this is to use strategically placed infrastructure that slows traffic. In the UK, this approach has led to 'traffic calmed' 20 mph speed zones. Another approach is to enforce a law that limits traffic to a given reduced speed, recommended by the World Health Organisation as 20mph in areas where vulnerable road users and vehicles mix. Both interventions are proven to improve road safety.

As 20 mph speed limits are becoming more widespread, there is a discussion around what impact the measure can have on community severance.

Bringing together research on community severance, road safety and 20 mph speed limits, this article explores the contributing factors to community severance and how and why reducing speed limits could help to tackle it.

The article highlights the importance of using additional interventions with 20 mph speed limits to tackle the multiple factors that contribute to community severance, such as traffic volume, built environment design and traffic speed. It also explores how community severance affects different people to a greater and lesser extent, and what this means in terms of reducing community severance through a combination of reducing both traffic speed and volume, road width and fit-for-purpose inclusive infrastructure.

The article suggests:

- 20 mph speed limits could be beneficial as part of a strategy against community severance. These are most effective when used with other measures that reduce traffic and improve the built environment for pedestrians and cyclists, including vulnerable road users and those most affected by traffic.
- 20 mph speed limits could improve the quality and safety of spaces to encourage and facilitate walking and cycling.
- 20 mph speed limits could help to tackle health inequalities. They could positively impact the mobility of people with restricted movement, people with disabilities, older people and children. This is because slower speeds give drivers more time to react, and give vulnerable adults and children more time to cross roads and to assess risk when crossing roads, which could improve the chances of their safe crossing.
- Additionally, 20 mph speed limits could reduce the severity of road collision injuries. This will benefit everyone, but particularly those more likely to die in collisions because of their vulnerability relating to age, health conditions, or disability.
- However, in places with relatively low volume of traffic and without adequate crossing infrastructure, a speed limit of 20 mph could benefit some people more disproportionately than others. For example, the most able may find more opportunities to cross a road in slower moving traffic whereas vulnerable people could continue to experience difficulties in navigating spaces where they encounter roads and vehicles even when traffic speeds are slowed to 20 mph. The more the speed limit is enforced, the closer the average speed will be to 20 mph, the smaller the gap in that inequality. Effective infrastructure will be required that adequately supports pedestrians, wheelchair users, and cyclists to get about, even in low volume, slower moving, traffic.
- In places with high traffic density, additional measures are needed in addition to 20ph speed limits to tackle community severance that will reduce traffic volume to ensure vehicles do not dominate places. This will ensure people living in deprived communities will equally benefit from reduced speed limits as much as those living in quieter, more affluent suburbs.

Background to 20 mph speed limits

The World Health Organisation recommend traffic speeds of up to 30 km/h (18.6 mph) on roads where vehicles are likely to interact with pedestrians, cyclists and vulnerable road users[1]. Globally, 1.3 million people die each year in road crashes[2]. Approximately 22,000 serious injuries and 1,850 deaths occur annually in the UK. At an impact speed of 30 mph, the risk of fatality for older pedestrians involved in a crash is 47%, 5% for adults and 4% for children[3]. In Europe, pedestrians and cyclists account for 32% of fatalities, or 30% in UK, most of which occur in built-up areas.

The UK is one of 130 countries that in 2020 accepted being part of the Stockholm Declaration mandating a maximum road travel speed of 30 km/h (20mph) in areas where vulnerable road users and vehicles mix, except where strong evidence exists that higher speeds are safe.

Interventions used to reduce traffic speeds in cities include implementing traffic calming infrastructure in roads to enforce reduced speeds. Infrastructure tends to be placed strategically where there are vulnerable roads users, such as outside schools, or where there are problems of excessive speeding creating 20mph speed zones.

Another approach is to implement speed limits that do not necessarily include the use of infrastructure to slow traffic but are enforced through the law. In 2023, Wales will move to a blanket default speed limit of 20 mph in residential areas.

In the UK, reducing road speed limits from 30 mph to 20 mph has been estimated to reduce the likelihood of city-wide fatal injuries to various road users by 63% in Bristol[4]. The case study indicates that implementing 20 mph limits reduces average speeds on the city's roads by 2.7 mph. In Calderdale, average speeds reduced by 2 mph and casualties reduced by 30%[5].

Related to the impact speed reductions have on road safety, there is consideration that lowering speed limits to 20 mph could reduce community severance caused by road traffic[6][7].

Bringing together research on community severance, road safety and 20 mph speed limits, this article explores the contributing factors to community severance and how and why reducing speed limits could help to tackle it. The article highlights the importance of using additional interventions with 20 mph speed limits to tackle the multiple factors that contribute to community severance, such as traffic volume, built environment design and traffic speed. It also explores how community severance affects different people to a greater and lesser extent, and what this means in terms of reducing community severance through a combination of reducing both traffic speed and volume, road width and fit-for-purpose, inclusive, infrastructure.

How could 20mph speed limits reduce community severance?

Traffic signals and road markings that legally require drivers to give way to pedestrians are particularly effective mechanisms used for safe road crossing. However, in many instances softer measures are used to assist pedestrians crossing roads, such as mid-lane refuge islands, signage and various road markings, sometimes in combination with raised speed bumps.

Whereby drivers are not legally obliged to give way at crossing places, speed reductions may increase the odds of drivers doing so. In the USA, research finds that where speeds are 25mph, drivers yielding to traffic is over 60% but only 15% on 35 mph roads[8]. A study in Delhi records 115 fatal crashes over 6 years at just one bus stop where a marked crossing exists [9]. The study indicates a speed reduction is necessary to enable drivers more time to react to pedestrians crossing. Improving the safety and efficiency of crossing places for pedestrians and other users is critical because if they are ineffective, people avoid using them, particularly those more vulnerable.

If 20 mph speed limits are effective in getting drivers to give way to other road users, they could create opportunities to use street designs that recalibrate street use in favour of non-motorised ways of moving around places by walking, cycling, scooting, wheelchair and adapted cycle use. There may be opportunities to remove cumbersome barriers that are inconvenient or even entirely excluding.

20 mph could help to safeguard pedestrians and cyclists while the road culture is changing to reflect a shift away from the entitled position car drivers have historically had over other road users. For example, in the UK, The Highway Code now requires drivers to give way when pedestrians step out to cross a road in which they are turning into. Until recently, drivers have had the right of way to continue turning into a road whereby the pedestrian's momentum is brought to a halt. It is now their choice to step out, but pedestrians may feel more inclined to test their newfound rights if traffic speeds are generally slower.

Evidence shows that children cannot reliably detect a vehicle approaching to make safe judgments crossing roads at speeds of over 25 mph[10]. Similarly, people in later life are vulnerable while crossing roads partly because as people age, assessing safe gaps between traffic to cross becomes less accurate with declined walking-speed and changes to their cognitive function used to interpret risk [11]. Children and adults with a physical or developmental disability, visual or hearing impairment, or neurodivergence, are also more at risk in traffic interactions. As pedestrians gain more rights in street space, it is imperative to safeguard those who are more vulnerable in crossing scenarios involving more complex driver-pedestrian interaction.

Reducing traffic speeds is likely to have an impact on people's perceptions and experience of places dissected by roads, which could lead to more people walking and cycling and less people avoiding using places, avoiding trips entirely or using a car instead[12]. There is evidence that speed reduction measures are increasing levels of cycling because of actual and perceived safety benefits[13]. Higher numbers of cyclists have been observed on 20mph roads than 30mph roads suggesting preference for slower traffic speeds[14]. Where segregated cycle lanes are unavailable the benefits of slowing traffic are likely to be more beneficial to those cycling and particularly for children[15].

Increase in cycling and walking may help to reduce the volume of traffic overall in cities if there is sufficient shift away from car driving, thus potentially reducing community severance as a result of high traffic volume.

Road noise may cause people to avoid a place or use a car, adding to existing car volumes and creating severance for others. Traffic noise can overwhelm children and adults with autism, affecting their journeys and putting them at risk while crossing roads[16]. Reducing speed limits reduces traffic noise[17] and therefore can reduce the degrading effect that traffic has on places, and which contributes to community severance, for example, by reducing social interactions and placing stress on those nearby or crossing and using roads[18].

Why do we need to implement additional measures to tackle community severance with 20 mph speed limits?

As described above, slower traffic speeds could contribute to reducing the effects of traffic on community severance. However, because other factors contribute to community severance and because different people are impacted by road traffic in different ways, it is important to highlight the need for additional approaches that tackle community severance with vehicle speed reductions.

Community severance is often felt equally as an effect of vehicle speed and volume. For example, a study quotes a London resident describing (notoriously busy) Finchley Road as "just a big pain", traffic is so heavy, buses, coaches and lorries - it's not the speed as such, sometimes there is too much congestion for anyone to speed - it's a river of traffic constant, non-stop".[19] Traffic volume, the study finds, contributes to community severance just as much as its speed. Community severance is not only a result of the danger of a road, but also is caused by a barrier effect of the difficulty, or even impossibility, to navigate it. The difficulty increases with the width and business of a road, how dominant the traffic is in a space, and how effective infrastructure and street design is for those moving around in it.

In a study that estimates the monetary value people attribute to different hypothetical interventions to improve crossing a busy road, 80 % of people indicated they would choose not to cross a busy road with a 20-mph speed limit with no crossing facilities[20]. A reduction in traffic speed below 30-mph was significantly valued by participants. However, it was not assigned as much value as reducing traffic lanes from 3 to 2, adding a central reservation, or reducing the density of traffic. On busy roads, reducing speed may only contribute to reducing community severance when implemented with other infrastructure measures that facilitate the movement of people across roads.

In terms of 20 mph and children's play, it is often claimed that reducing speed limits offers opportunities for children to play, another aspect of community severance. Although speed reductions improve safety of children's road crossing and therefore their journeys, 20 mph limits seem less likely to enable streets to be reclaimed by children in the same way that interventions preventing or controlling cars accessing a neighbourhood street would and which may be more suitable to facilitating play[21]. For example, cul-de-sacs reduce traffic through-flow and volume. The design of these neighbourhoods creates spaces suitable for children's play. In the 1980s, Donald Appleyard talks about the liveability of streets in terms of their protection and sanctuary. For Appleyard, it is the mews, squares, tucked away spaces and narrow streets of historic European cities that have enabled play. That was in the 1980s when traffic was far less in volume than it is today. In terms of reducing community severance, it will be appropriate to ensure space and access to it for play is available and suitable for the activities children want to carry out. This is particularly relevant in areas of where streets have higher volumes of traffic, which affects the most deprived communities to a greater extent than those least deprived. Future experiments in street design and traffic management could consider enabling children's equal access to streets with very low traffic volumes by restricting through-traffic on streets at consistently regular intervals. In this scenario, 20 mph limits could safeguard children accessing those nearby quiet streets.

Community severance impacts some people more so than others and can further exclude already marginalised communities and individuals, contributing to health inequalities. For example, deprived communities are more likely than affluent communities to be living near to and interacting with the busiest and widest roads of urban places notoriously difficult to negotiate[22]. People of lower socio-economic status are less likely to own a car and are more exposed to community severance as pedestrians and cyclists. Some road users are more vulnerable moving in and around traffic than others.

On one hand, speed reductions have the potential to be beneficial to the most vulnerable of people and to help make streets more inclusive. A national, or city-wide, strategy to lower the default road speed in built-up areas from 30 to 20 mph can be evenly distributed across communities of differing levels of deprivation and wealth and avoids the need for community advocacy to implement a local speed limit reduction. Ideally speed limits would be enforced effectively everywhere, but this isn't always realistically possible given that resources are finite and therefore allocated depending on logical and ethical assessments of need. Enforcement of speed limits can be targeted to roads that are particularly problematic, evidence higher than average speeding offenses, are dangerous and are used by pedestrians and cyclists, and vulnerable people.

On the other hand, as described above, traffic volume contributes to community severance to an equal or possibly greater extent than traffic speed, particularly where there is limited or inadequate pedestrian infrastructure. Those living nearest to and intersecting busy roads will continue to suffer from community severance despite a reduction in traffic speed without other measures to tackle traffic volume and facilitate people's safe and efficient movement across space. While 20 mph speed limits have potential to reduce community severance, they will need to be accompanied by other measures to be effective, particularly for those encountering the busiest of roads, which are most commonly in or adjacent to deprived neighbourhoods.

In quieter residential areas, 20 mph speed limits will not offer the same benefits for everyone where there are limited crossing places and infrastructure that leaves some people more vulnerable to road collisions than others. For example, the most able of people may find more opportunities to cross a road in slower moving traffic whereas vulnerable people could continue to experience difficulties in navigating spaces where they encounter roads and vehicles even when traffic speeds are slowed to 20 mph. The more the speed limit is enforced, the closer the average speed will be to 20 mph, the smaller the gap in that inequality. However, effective infrastructure will be required that adequately supports pedestrians, wheelchair users, and cyclists to get about, even in low volume, slower moving, traffic. Like many problems in transport and health, solutions are not generally realised in isolation and the same is true when tackling community severance. Reducing traffic volumes and addressing street design will be equally as important as speed reductions.

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