



# Low traffic neighbourhoods and population health

## Evidence shows powerful local improvements

Anthony A Laverty,<sup>1</sup> Anna Goodman,<sup>2</sup> Rachel Aldred<sup>3</sup>

Car use harms health, the environment, and society in many ways. In 2019, 1752 people were killed by vehicle collisions in Great Britain, with another 25 945 seriously injured.<sup>1</sup> Motor traffic is also a major contributor to air pollution, which is estimated to cause 28 000–36 000 deaths in the UK annually.<sup>2</sup> Traffic noise pollution is an under-recognised health harm, associated with increased risk of stroke and premature death.<sup>3</sup> Car travel increases sedentary time and is a major opportunity cost in terms of the physical and mental health gains that could have been achieved by walking or cycling instead. This is before we consider the urgent need to decarbonise our transport system to mitigate climate crisis.

## Reallocating road space

The covid-19 pandemic and associated lockdowns have substantially disrupted travel patterns. With public transport capacity considerably reduced, and seeking to avoid a car based recovery, the UK government in May 2020 announced £250m (€290m; \$350m) in emergency active travel funding and encouraged local authorities to reallocate road space from cars to walking and cycling.<sup>4</sup> While a wide range of changes are needed, low traffic neighbourhoods are among the most promising.

To reduce motor traffic, we need to make driving less attractive and alternatives better— that is, mixing “sticks” and “carrots.”<sup>5</sup> Low traffic neighbourhoods do this by using bollards, planters, and cameras to remove through traffic from neighbourhoods while retaining motor vehicle access to all homes. The carrot is safer, more pleasant walking and cycling (thanks to reduced motor traffic), with the stick being slightly less convenient car journeys. Such measures suit minor urban streets, where most people live (91% of people in London—a proportion similar across demographic and socioeconomic groups).<sup>6</sup> Low traffic neighbourhoods sit within a suite of measures to reduce car use or mitigate its consequences. These include protected cycle tracks and bus priority lanes, clean air zones, and 20 mph (30 kph) speed limits.

Low traffic neighbourhoods are now being trialled at pace in some cities, particularly London, with 4% of Londoners living in low traffic neighbourhoods implemented between March and September 2020.<sup>6</sup> This is likely to increase and extend to more cities as the Department for Transport announced a second tranche of emergency funding (£175m) in November 2020 to fund more low traffic neighbourhoods and related measures. Similar schemes are being rolled out in cities worldwide, including New York, Barcelona, and Berlin.

## National and international evidence

Evidence from existing low traffic neighbourhoods is encouraging. The London Borough of Waltham Forest has implemented growing numbers of these neighbourhoods since 2015. A longitudinal survey found that after implementation, residents increased their walking and cycling relative to people living elsewhere in Outer London (by 115 minutes for walking and 20 minutes for cycling after three years).<sup>7</sup> Analyses of vehicle ownership data found that, relative to a control group, levels of car or van ownership decreased by 7% after three years.<sup>8</sup> These effects were several times larger than in areas that only received interventions such as cycle tracks. Additional research found no increase in emergency service response times, an 18% reduction in street crime after three years, and a 75% reduction in the risk of being injured in a road traffic collision inside low traffic neighbourhoods.<sup>9–11</sup>

International evidence bears this out—the widespread adoption of low traffic neighbourhood principles in Dutch urban design has contributed to high levels of cycling and low risks of road injury.<sup>12</sup> Low traffic neighbourhoods can also make residential streets safer for play, socialising, and exercise. This is particularly important in areas with overcrowded housing and without private green space. Notably, deprived areas in London have been considerably more likely than affluent neighbourhoods to receive new low traffic neighbourhoods.<sup>6</sup>

While existing evidence suggests substantial population health benefits, the evidence should be strengthened by further quasi-experiments as well as research to identify the necessary conditions for success. For example, many of Waltham Forest’s low traffic neighbourhoods were accompanied by cycle tracks, greening, and other improvements. Increased walking and cycling are expected to benefit mental and physical health, and confirmation of these effects would reinforce the case for bold policy action. The charitable arm of Guy’s and St Thomas’ Foundation Trust is funding and evaluating three new low traffic neighbourhoods in Southwark.

Despite potential benefits and evidence of public support, a vocal minority has generated loud opposition, as often happens when car use is restricted.<sup>13 14</sup> Some local authorities have responded by scrapping schemes within weeks, neglecting opportunities for proper evaluation.

We urgently need to transition to healthier and more environmentally sustainable travel patterns, and low traffic neighbourhoods may substantially contribute to this goal. Resistance means, however, that such measures are not guaranteed to be implemented or

<sup>1</sup> Public Health Policy Evaluation Unit, School of Public Health, Imperial College London, London, UK

<sup>2</sup> Faculty of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, London, UK

<sup>3</sup> Active Travel Academy/School of Architecture and Cities, University of Westminster, London, UK

Correspondence to: A A Laverty  
a.laverty@imperial.ac.uk

Cite this as: *BMJ* 2021;372:n443  
<http://dx.doi.org/10.1136/bmj.n443>

Published: 22 February 2021

**stay in place. Avoiding the damage of a car based recovery will require bravery and a commitment to evidence based decision making from policy makers, supported by strong advocacy from civil society groups.**

Competing interests: We have read and understood BMJ policy on declaration of interests and declare that RA and AG have received research funding from policy organisations including Department for Transport and Transport for London. This has included Transport for London funding for the People and Places study, which generated evidence regarding low traffic neighbourhoods.

Provenance and peer review: Not commissioned; externally peer reviewed.

- 1 Department for Transport. Reported road casualties in Great Britain: 2019 annual report. 2020. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/922717/reported-road-casualties-annual-report-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/922717/reported-road-casualties-annual-report-2019.pdf)
- 2 Public Health England. Review of interventions to improve outdoor air quality and public health. 2019. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/938623/Review\\_of\\_interventions\\_to\\_improve\\_air\\_quality\\_March-2019-2018572.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938623/Review_of_interventions_to_improve_air_quality_March-2019-2018572.pdf)
- 3 Halonen JJ, Hansell AL, Gulliver J, et al. Road traffic noise is associated with increased cardiovascular morbidity and mortality and all-cause mortality in London. *Eur Heart J* 2015;36:2653-61. doi: 10.1093/eurheartj/ehv216 pmid: 26104392
- 4 Department for Transport. Statutory guidance. Reallocating road space in response to COVID-19: statutory guidance for local authorities. 2020. <https://www.gov.uk/government/publications/re-allocating-road-space-in-response-to-covid-19-statutory-guidance-for-local-authorities>
- 5 Piatkowski DP, Marshall WE, Krizek KJ. Carrots versus sticks: assessing intervention effectiveness and implementation challenges for active transport. *J Plann Educ Res* 2019;39:50-64doi: 10.1177/0739456X17715306.
- 6 Aldred R, Verlingheri E. LTNs for all? Mapping the extent of London's new low traffic neighbourhoods: a report by Possible and the Active Travel Academy. 2020. [www.werepossible.org/LTN-report](http://www.werepossible.org/LTN-report)
- 7 Aldred R, Goodman A. Low traffic neighbourhoods, car use, and active travel: evidence from the people and places survey of outer London Active Travel Interventions. *Findings* 2020. <https://findingspress.org/article/17128-low-traffic-neighbourhoods-car-use-and-active-travel-evidence-from-the-people-and-places-survey-of-outer-london-active-travel-interventions>
- 8 Goodman A, Urban S, Aldred R. The impact of low traffic neighbourhoods and other active travel interventions on vehicle ownership: findings from the outer London mini-Holland programme. *Findings* 2020. <https://findingspress.org/article/18200-the-impact-of-low-traffic-neighbourhoods-and-other-active-travel-interventions-on-vehicle-ownership-findings-from-the-outer-london-mini-holland-programme>
- 9 Goodman A, Laverty AA, Aldred R. The impact of introducing a low traffic neighbourhood on fire service emergency response times, in Waltham Forest London. *Findings* 2020. <https://findingspress.org/article/18198-the-impact-of-introducing-a-low-traffic-neighbourhood-on-fire-service-emergency-response-times-in-waltham-forest-london>
- 10 Laverty AA, Aldred R, Goodman A. The impact of introducing low traffic neighbourhoods on road traffic injuries. Open Science Framework, 2020. [Preprint.] <https://osf.io/preprints/socarxiv/46p3w/>
- 11 Aldred R, Goodman A. The impact of introducing a low traffic neighbourhood on street crime, in Waltham Forest, London. *SocArXiv* 2021. [Preprint.] <https://osf.io/preprints/socarxiv/ftm8d/>.
- 12 Schepers P, Heinen E, Methorst R, et al. Road safety and bicycle usage impacts of unbundling vehicular and cycle traffic in Dutch urban networks. *Eur J Transp Infrastruct Res* 2013;13:221-38.
- 13 Walker P. Despite a loud opposing minority, low-traffic neighbourhoods are increasingly popular. *Guardian* 2020. <https://www.theguardian.com/environment/bike-blog/2020/oct/22/despite-a-loud-opposing-minority-low-traffic-neighbourhoods-are-increasingly-popular>.
- 14 Reid C. Handful of Twitter users can sway council decisions, finds data analysis of "low traffic neighbourhood" posts. *Forbes* 2020. <https://www.forbes.com/sites/carltonreid/2020/12/12/handful-of-twitter-users-can-sway-council-decisions-finds-data-analysis-of-low->
- 15 Schraufnagel DE, Balmes JR, Cowl CT, et al. Air pollution and noncommunicable diseases: a review by the forum of international respiratory societies' environmental committee, part 1: the damaging effects of air pollution. *Chest* 2019;155:409-16. doi: 10.1016/j.chest.2018.10.042 pmid: 30419235