

LSE Cities Case Series

What next for congestion policy in London?

Introduction

Congestion is a central risk to the economic productivity of cities and can lead to considerable diseconomies of agglomeration. Bigger, more productive cities tend to be challenged by crowding and congestion as firms and households compete for space in the most popular locations. Above all, it is the excessive space requirement of private vehicular traffic that is a major contributor to congestion and parking pressures on public space as road infrastructure provision in cities is unable to keep up with rising levels of vehicular traffic. Related financial and welfare costs to cities and citizens can be substantial. In the largely urbanised European Union these costs were estimated at 0.75 per cent of GDP. The costs of congestion are frequently even higher in developing and middle income countries, with estimates of up to 3.4 per cent of GDP in Buenos Aires, 2.6 per cent in Mexico City and 3.4 per cent in Dakar (World Bank 2002). The New York City metropolitan region alone is estimated to lose US\$13 billion annually as a direct result of traffic congestion, resulting in a notional loss of about 52,000 jobs annually (PFNYC 2013).

London is no exception and the first Mayoral elections in 2000 had a particularly strong focus on a range of transport policies that would be able to deal with the increasing levels of congestion. Eventually this led to the implementation of congestion charging in Central London in 2003 and the city can now look back at a more than 10 year experience with this policy instrument (see Appendix A for an impact assessment of congestion charging).

While the number of private vehicles entering central London on a daily basis has been reduced by more than 60,000 (about 20 per cent), congestion remains a major concern also outside the central charging zone. The recent Roads Task Force report (GLA 2013) offered the following more general assessment on the state of London's streets and public spaces: "While considerable achievements have been delivered in recent years, with the Capital's population set to grow to around 10 million by 2031 there is now a need for even greater ambition and action."

This case study exercise will explore three principal options for tackling congestion in London over the years to come. You are asked to choose one and defend your choice.

- 01 Congestion Charging 2.0: Expand congestion charging across all of Greater London based on enhanced and GPS-based charging technology to facilitate differential charging (different charges for different locations, times of travel and vehicle sizes).
- 02 Congestion Charge PLUS: Keep the existing congestion charge for Central London and apply a combination of traffic demand management measures (see Appendix B)
- 03 The 'Central Paris Solution': Shift towards greater physical driving restrictions (re-distribution of street space to higher capacity transport modes) while phasing-out congestion charging in Central London.

Briefing Note¹

Overview on London's Congestion Charge

The congestion charge is a daily levy imposed on drivers entering central London between 07:00 and 18:00 from Monday to Friday, excluding public holidays. Set at £5 at its inception in 2003, the charge has gradually increased over time, and as of June 2014 stands at £11.50 if paid in advance or on the day, or £10.50 for drivers that have registered for CC Auto Pay.

The scheme makes use of purpose-built automatic number plate recognition (ANPR) cameras to record vehicles entering and exiting the zone. The cameras read car number plates and cross-reference them against a register of cars. Cameras can record number plates with a 90% accuracy rate through the technology. Drivers are able to pay the charge in advance or on the day of travel. If they forget they can pay up until midnight the following day, but will incur a surcharge.

Groups exempt from paying the congestion charge and those eligible for discounts include people with disabilities, residents living within the congestion zone, emergency services and breakdown recovery vehicles, taxis, and drivers of alternative fuel vehicles.

The congestion charge zone covers a large portion of central London. The boundaries of the congestion charge zone link points in central London such as Euston Road in the north, Commercial Street in the east, Vauxhall and Chelsea Embankment in the south and Harrow Road and Earls Court in the west (Figure 1). In 2007 the congestion charging zone was enlarged via the Western Extension, but this was revoked in 2011, returning the charging zone to its original size.

¹This briefing note is compiled from extracts taken from <http://politics.co.uk/reference/congestion-charge>, <http://www.cchargelondon.co.uk/effect.html>, and http://legacy.london.gov.uk/assembly/reports/transport/congestion_charge_alternatives.pdf



Figure 1: Map of congestion charging zone

Summary of congestion charging outcomes

Six months following the introduction of congestion charging in 2003, TfL published a report that found that, on average, the number of cars entering the central zone was 60,000 fewer than the previous year, representing a drop in non-exempt vehicles of 30 per cent. Around 50-60 per cent of this reduction was attributed to transfers to public transport, 20-30 per cent to journeys avoiding the zone, and the remainder to car-sharing, reduced number of journeys, more travelling outside the hours of operation, and increased use of motorbikes and cycles. Journey times were found to have been reduced by 15 per cent. In 2006, another TfL report found that congestion was down around 26 per cent in comparison with the pre charge period and traffic delays continued to reduce. While the congestion charge has undoubtedly contributed to significant modal shift in London over the past 10 years, simultaneous reductions in road capacity due to measures such as dedicated bus

and cycle lanes have meant that traffic speeds have slowly reduced again over the past few years and congestion is now at similar levels as it was before introduction of the charge.

The charge also had an immediate environmental impact, with Transport for London recording falling particulate levels within the original congestion charge area and along the Inner Ring Road boundary zone. Nitrous Oxide (NO_x) fell 13.4 per cent between 2002 and 2003, and there were similar falls for Carbon Dioxide (CO₂) and Particulate Matter (PM10). However, other reports have claimed that the air pollution impacts are negligible and that at least 25 per cent of the benefits would have occurred anyway as the vehicle fleet got cleaner, according to one study, which noted a 16 per cent reduction in overall emissions.

In terms of the effect the charge has had on local businesses, despite strong criticism from business owners which accompanied its introduction, a TfL review in 2004 found that business activity within the charge zone had been higher in both productivity and profitability since the charge was introduced, and that the charge had a “broadly neutral impact” on the wider London economy. All in all, studies show that a majority of Londoner’s support congestion charging and the policy is generally seen as successful.

Debate

Congestion charging is welcomed by environmentalists as a way of reducing carbon emissions and encouraging people to use public transport, and town planners across the UK have begun looking into the scheme as a way of cutting congestion and using the revenue to drive further investment in the public transport system.

At the same time, congestion charging has also faced a range of criticisms. Opponents have challenged its regressive nature, whereby poorer motorists will be charged the same levy as richer car owners, and some have described the congestion charge as a 'tax on the poor'. The plan to impose the levy on key workers, who are not exempt from the congestion charge, is similarly criticised.

Businesses affected by the charge have also been vocal critics of the current scheme, because of both the new costs imposed by the congestion charge and concerns that visitors to central London would be deterred by the daily charge.

Londoners are also upset that residents living with the congestions charge- in some of the city’s wealthier neighborhoods will get a 90 per cent discount on the charge.

When the charge was initially introduced, typical comments included the following: ‘You expect me to pay a fiver every time I step in the city? Doing business is hard as it is’. George Leonard a restaurant owner in London’s west end feels very let down by London’s new Mayor. ‘I rely on food deliveries on a daily basis by over five suppliers and guess what? - They will push the congestion

charging costs over to me. I was never given a chance to choose. I thought the whole point of having a Mayor was to turn this city more democratic.'

Modal Shift Potential

[TFL \(2013\) - Road Taskforce Report 2013](#)

Figure 22: Car driver trips that could feasibly be made by another mode
Trips made on average day by London residents in London

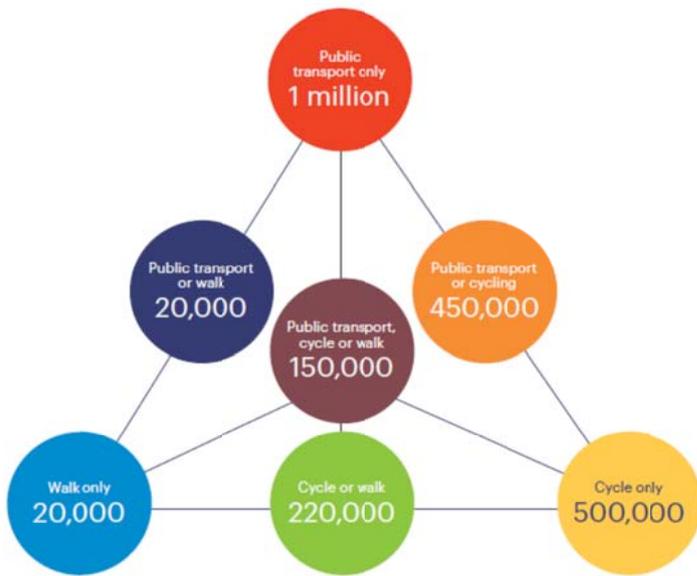


Figure 23: Distribution of switchable car driver trips
Trips made on average day by London residents in London

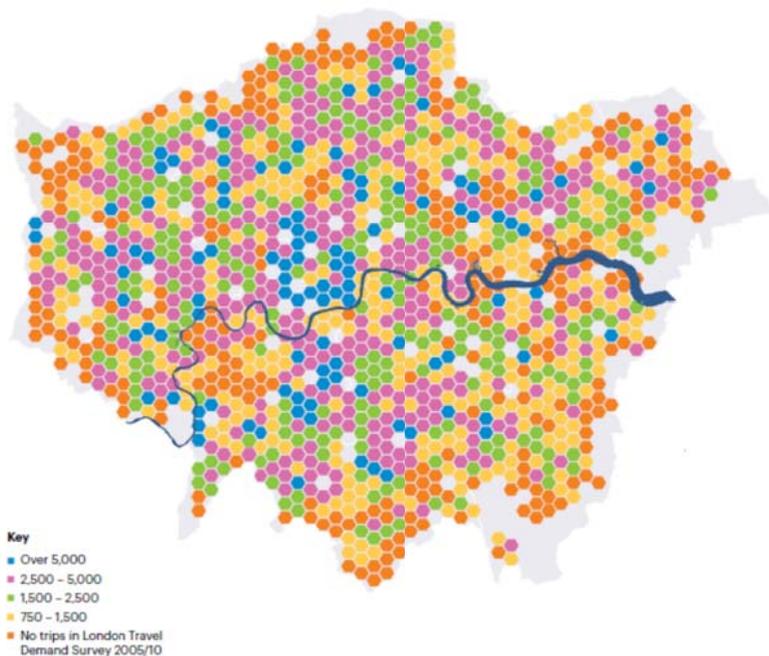


Figure 4.1 Congestion in the original central London charging zone during charging hours. Moving car observer surveys.

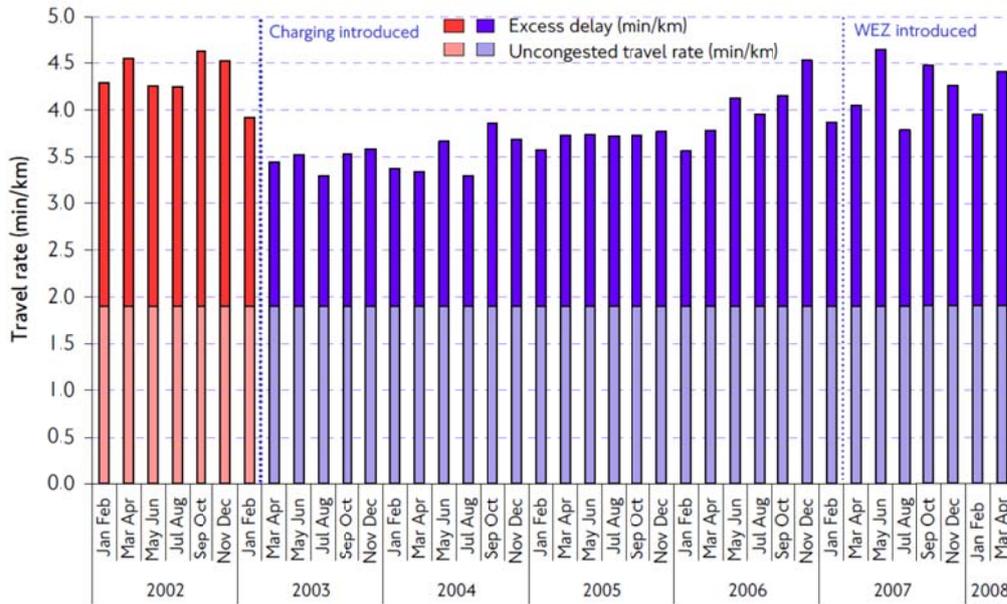


Figure 5.3 Bus passengers entering central London, 07:00-10:00. Autumn counts, 1986 to 2007. TfL Central Area Peak Count.

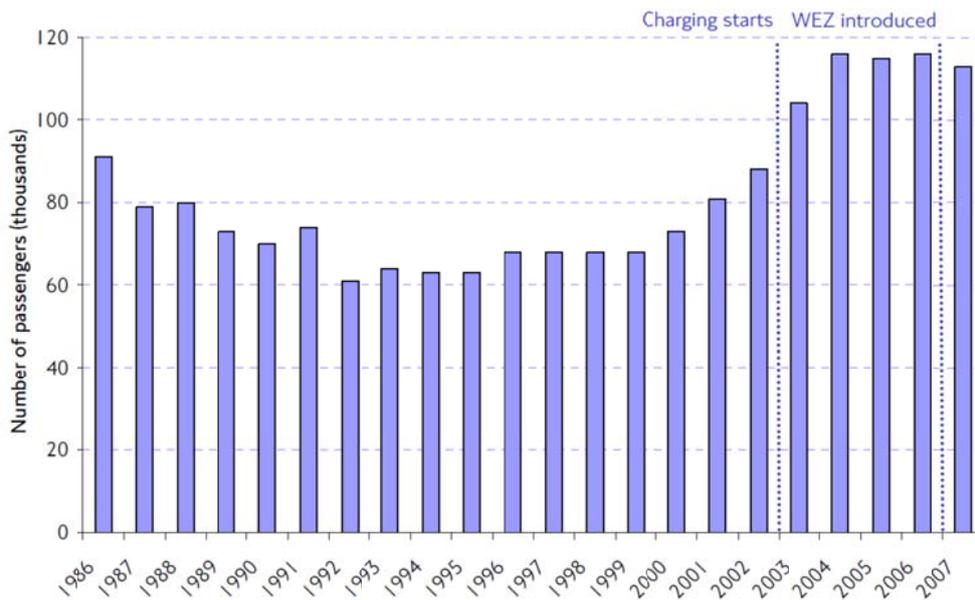


Figure 5.5 Average bus journey speeds for selected sections of road in and around the original central London congestion charging zone, 2002 to 2007.

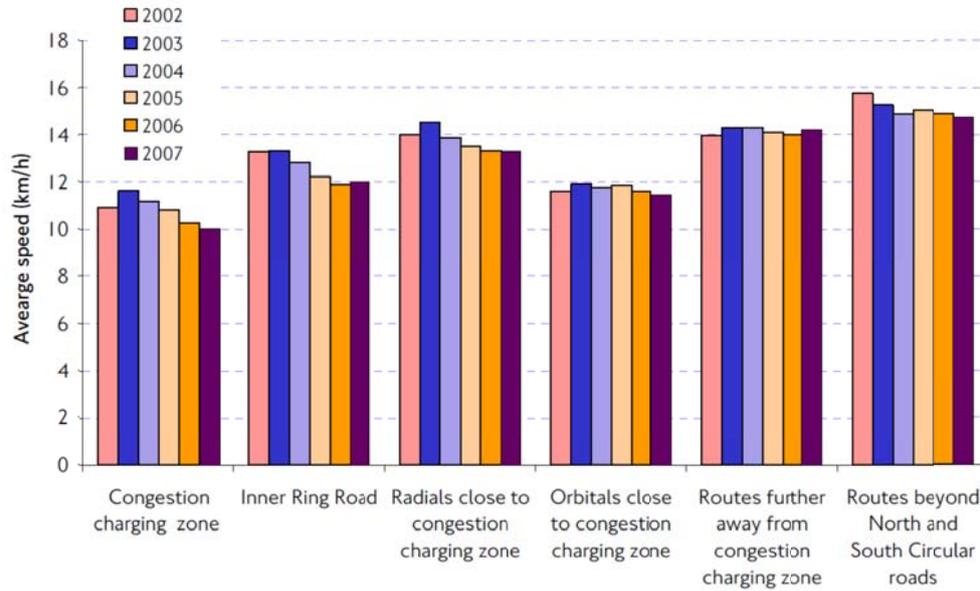
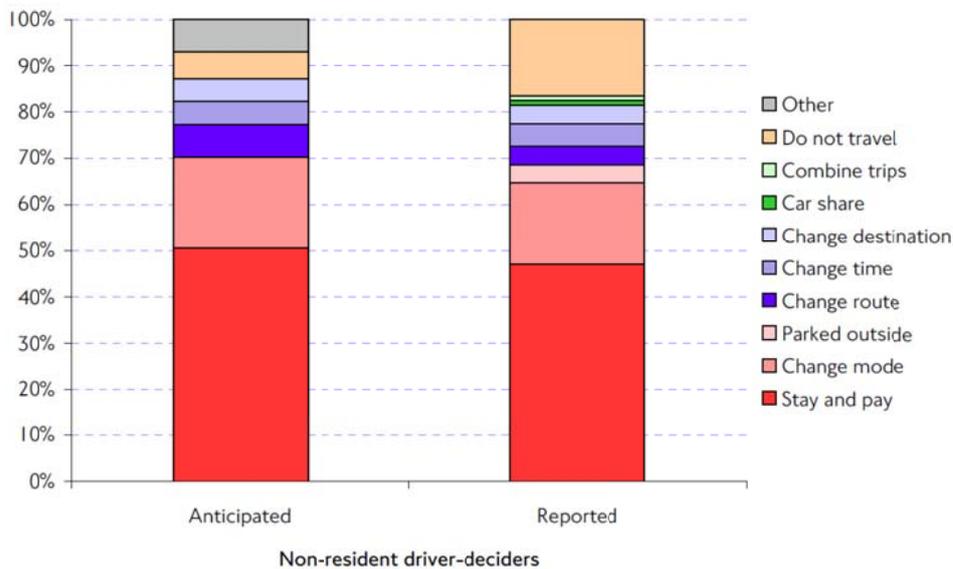


Figure 6.5 Comparison of anticipated and reported behaviour, non-resident 'driver-deciders'. Charging hours equivalent, 2006 and 2007.



Appendix B – Managing Car Use in Cities

“In the most advanced cities today ‘transport policy’ really means finding ways of achieving lower levels of car use and higher shares for public transport, cycling and walking in overall mobility. In cities in developing countries ‘transport policy’ still largely means the opposite: how to accommodate more car use.” – Enrique Peñalosa, former Mayor of Bogota

Road pricing

In recent years, road pricing schemes have become increasingly popular as an effective monetary instrument to manage car use in cities not least following London’s success of reducing car use with an 12 Euro charge in its central area by more than 80.000 private cars per day. The basic logic of road user charges is one of traffic demand management. By internalising the real cost of driving in cities (considering the enormous space it requires per person as well as cost in relation to pollution, noise and accidents that are usually not paid by car drivers) it also reduces traffic levels to the available road capacity and eases congestion. For long, experts have urged to adopt pricing mechanisms as the most promising solution to improving urban transport. Besides London, successful examples of road pricing include Singapore, Stockholm, Rome and Milan. In most cases, these schemes have been implemented by city governments requiring the generated income to be spent on public transport, walking and cycling.

Fuel tax

Fuel tax is a common national sales tax on transport related fuel use in most countries. While often a general revenue for public finance, it is commonly used as indirect user fee for transport related cost (mainly transport infrastructure). In many European countries with high fuel tax (making fuel with a price of about 1.50 Euros per litre about 3 times higher compared to the Americas), it is increasingly used for traffic demand management and aims to reduce motorisation and the dependence on fossil fuels. In Germany, an additional eco tax on fuel is a further step towards internalising the enormous environmental damage caused by motorisation. Increasing the level of taxes on fuels (or put differently, decreasing the degree of indirect subsidies for car use) is among the most critical steps towards more sustainable urban development allowing cities to re-negotiate their territorial structure towards greater compactness and their internal use of public space.

Road space reductions

The amount of road space given to cars is the most reliable predictor for the level of motorisation. Past experience has shown, the more road space is created for cars the more cars will fill it up (cities like Los Angeles, Houston and Atlanta with more than 40% of surface area dedicated to car use being the most extreme cases). This has also been the case when congestion was tackled by

increasing road capacity only to find that at least the same congestion levels returned after a short period of adjustment. But, these elasticities work in both directions. Given that alternatives to driving are provided (public transport, cycling and walking), the reduction of capacity for motorists (widening of sidewalks, public space, priority bus lanes, configuration of urban layouts to keep road space to less than 20% of the surface area) have led to a decline of car use in many city centres. These dynamics are particularly pronounced, if the reduction of traffic capacity is linked to increasing the capacity of public transport along the same streets. The introduction of surface public transport systems, such as trams and bus rapid transit are the most prominent examples.

High occupancy lanes (HOL) and high occupancy toll lanes (HOT)

Road transport's excessive demand for urban space combined with low vehicle occupancy rates has challenged policy makers to provide various kinds of incentives to utilise cars more efficiently and to tackle congestion. High Occupancy Lanes (HOL) are exclusively reserved lanes for cars with at least two occupants allowing to bypass congested sections of a motorway. Against the background of low utilisation levels of HOL, High Occupancy Toll lanes (HOT) were introduced in the mid 90ies. They work on the same basis as High Occupancy Lanes running alongside an existing toll-free highway, but they are open for single occupancy drivers willing to pay a toll to use the lane. HOT Lanes are kept congestion free by varying the toll every few minutes or based on a pre-published tariff schedule.

Licence plate restrictions

Most transport demand management tools require an upfront investment and certain degree of physical intervention in urban road space, often combined with high operating costs on both, vehicle and the infrastructure side. For many cities such expenditures are not feasible. Road space rationing by license plate restrictions is a very cheap and effective measure to manage demand, often applied in Latin-American and Asian Cities suffering from heavy pollution. Interestingly, number plate restrictions seem to avoid inequality issues and evoke less adverse public opinion. The tool seems to follow a fairly intuitive and archetypal approach of 'sharing resources' which are agreed to be scarce. Restrictions based on the two digit restrictions lead to reductions in vehicle mileage of 15-20%, however the clear downside of number plate restrictions is that it increases car ownership levels, particularly in high-income households.

Parking fees

Taking the 5 million cars currently operating in many metropolitan areas of the largest cities around the world, multiplied by the 10 square meters of space a car requires for parking leads to an astonishing 50 square kilometres of space – an area as large as Manhattan – that needs to be provided simply to accommodate parking cars. Parking fees allocate these scarcity costs of urban

space directly to the car user rather than sharing it with others through taxes and higher rents. Parking fees - particularly in residential parking - have been found to have a significant impact on modal choice decisions, particularly if it changes car-ownership levels. In inner city areas, the real cost of one parking space is easily around 300 Euro per month. To date, for curbside parking in many cities these costs are not covered by individual car users but by the general public.

Parking space reduction

Vauban, at 1/2km², is the home of Europe's largest car-free development. It costs £12,500 (plus a monthly management fee) for a parking space on its fringes. The neighbourhood is within Freiburg, a Green stronghold in Germany, and a city that has successfully reduced car mode share by about 5% in the past 20 years or so, through policies of parking reduction, investment in public transport and cycling facilities, land use planning and pedestrianisation. In 1962, Copenhagen was the first city to pedestrianise a main arterial route. At 2km, Strøget is still Europe's longest pedestrian street and is now the centre of a larger pedestrian area. The policy has been complemented by an incremental reduction of parking every year. Car traffic has been constant for the past 30 years and cycling has become the dominant mode at 36%. The move towards supporting walking and cycling was justified by the mass public opposition to plans for a new freeway system; the increase in trade eventually justified this in the eyes of shopkeepers as well.

Zero emission zones

European cities are increasingly resorting to low emission zones (LEZs) in order to improve local air quality, spurred on by the impetus of EU targets and the prospect of fines. The zones define areas through which the passage of vehicles is restricted, by means of a fine or ban, based on their level of emissions. The largest scheme covers Greater London and is being rolled out in phases over four years, beginning in 2008. The London LEZ relies on automatic number plate recognition. Its set up costs have been estimated at £50m, with operating costs at £80m for the first 7 years and an estimated annual revenue of £5-7m. Like the London Lorry Control Scheme, which imposes weekend and night-time restrictions on heavy goods vehicles, the LEZ enjoys the support of residents but is opposed by the freight industry as a costly burden. Modal shift is not expected, as the scheme is not complemented by the promotion of alternative modes for freight.

Car free days

Car-free days differ in their ways of implementation and indeed their effectiveness but their common aim is to give people the opportunity to experience a day without cars and reflect upon it. Though it was embraced by the European Commission in 2000, its effect within Europe has been limited by the fact that the day amounts to little more than a plea for people to avoid using their car. In stark contrast, in 2001, spearheaded by Mayor Enrique Peñalosa, Bogotá held the largest car-

free day ever by area and population, prohibiting cars from circulation. The event was covered extensively by the Colombian media – aerial pictures were broadcast to show the effect on the city. The day has been established by referendum as a yearly event. Bogotá's weekly Ciclovía is also largely car-free, opening up the streets to cyclists, pedestrians, skaters, dancers and others in a celebratory atmosphere which seeks to promote active travel. Mayor Michael Bloomberg promised to establish a similar tradition if New York's version of 'Summer Streets', held three times last August, proved successful.

Physical driving restrictions

Speed limits and driving restrictions have long been used to improve safety on the roads but they are equally important in attempting to reduce cars' dominance of residential neighbourhoods. A package of traffic calming measures amounting to a 'woonerf' or 'home zone' was developed in the Netherlands in the 1960's to this effect. The approach of blurring the boundaries between cars and pedestrians has been increasingly adopted in Europe, with great variation but with the common aim of rendering streets more inviting for pedestrians, especially children and the elderly, by reducing vehicle speeds and traffic. In fact, the most notable effect in such areas has been a reduction in crime through increased natural surveillance. In Bogotá driving restrictions have been introduced in a more stringent manner and with the explicit aim of inducing modal shift; 40% of private vehicles may not enter the city centre during peak hours (depending on their number plate). A referendum has endorsed the eventual elimination of all private vehicles from the city centre starting in 2015.