

WHY FEWER (POLLUTING) CARS IN CITIES ARE GOOD NEWS FOR LOCAL SHOPS

*A review of evidence: impact of low emission zones and other
“Urban Vehicle Access Regulations” on retail in European cities*

CleanCities



Briefing

Executive Summary

Over the past years a growing number of European cities have been taking new or additional measures to curb toxic air pollution and tackle the climate crisis fuelled by road traffic.

City leaders have introduced “Urban Vehicle Access Regulations” that cover a variety of measures, ranging from low emission zones that limit the use of the most polluting vehicles to general restrictions of motorised transport overall, e.g. through low traffic zones.

Low emission zones have seen a particularly strong uptake across more than 250 European cities as their effectiveness in reducing emissions has been clearly proven. As a consequence, several European countries (including France, Spain and the Netherlands) have recently defined such zones as primary clean air and climate protection tools in national policies, which will further accelerate the rollout of these measures in the coming years.

But despite the strong track record of these measures, it is often argued that they could have a negative impact on the local retail sector. This briefing reviews the evidence for the actual effects of low emission zones and other “Urban Vehicle Access Regulations” on local shops.

The main findings are:

- The measures have generally had positive effects on the performance of the retail sector,
- Walking and cycling projects can increase retail sales,
- A reduction in retail vacancy (the number of empty shops) has also been observed after active mobility infrastructure improvements were made.

This can be explained by several factors:

- Car use plays a less important role among customers than shop owners tend to think,
- Reductions in the number of customers arriving by car are more than compensated by people arriving on foot, by bike or public transport as they are more numerous and visit local shops more frequently.

This clearly demonstrates that measures like low emission zones and low traffic zones can deliver a triple win solution for clean air, the climate and the local economy. City leaders should adopt ambitious measures that set a clear pathway to zero emission mobility by 2030, reallocate public space to active travel and make clean and affordable alternatives available to private car use.

1. Urban Vehicle Access Regulations as primary tools for clean air and climate

Curbing toxic levels of air pollution remains a pressing challenge in cities across Europe. Although air pollution has been slowly reduced over the past decades, it still causes more than 300,000 premature deaths per year in the EU¹ and the recently published update of the air quality guidelines of the World Health Organization (WHO) highlights the need to reduce it even further.² Road transport is one of the key challenges in cities, as it is the main source (39%) of nitrogen oxide (NO_x) pollution³ and it results in a wide range of other pollutants that harm human health, the environment and the climate.⁴

In response to this crisis, cities across Europe have been introducing policies to curb air pollution from exhaust pipes. In the terminology of the European Union, these policies are called “Urban Vehicle Access Regulations” (UVARs) as they “regulate access in specific urban locations according to vehicle type, age, emissions category or other factors such as time of day, or day of the week.”⁵ They typically include low traffic and car free zones, congestion charges and low or zero emission zones.

While low traffic and car free zones have been in use for many decades⁶, low emission zones (LEZs) have seen a particularly strong uptake in recent years. They are in place in more than 250 cities across 13 European countries and the United Kingdom⁷. LEZs are sometimes also called “Clean Air Zones” or “Ultra-Low Emission Zones”. These zones vary in area, timeline and stringency but all are defined as “areas where the most polluting vehicles are regulated”.⁸ Usually this means that vehicles

¹ European Environment Agency. (2021) *Health impacts of air pollution in Europe, 2021*. Retrieved from <https://www.eea.europa.eu/publications/health-risks-of-air-pollution/health-impacts-of-air-pollution>

² New WHO Global Air Quality Guidelines aim to save millions of lives from air pollution. (2021, September 22). WHO. Retrieved from <https://www.who.int/news/item/22-09-2021-new-who-global-air-quality-guidelines-aim-to-save-millions-of-lives-from-air-pollution>

³ European Environment Agency. (2020) *Air quality in Europe*. Retrieved from <https://www.eea.europa.eu/publications/air-quality-in-europe-2020-report> (Figure 3.4)

⁴ *The seven (dirty) air pollution tricks of the auto industry*. (2021, September 23). Transport & Environment. Retrieved <https://www.transportenvironment.org/discover/the-seven-dirty-air-pollution-tricks-of-the-auto-industry/>

⁵ Eltis - The Urban Mobility Observatory. (2021). *Urban Vehicle Access Regulations*. Retrieved from <https://www.eltis.org/topics/urban-vehicle-access-restrictions>

⁶ European Commission. (not dated). Reclaiming city streets for people. Chaos or quality of life?. Retrieved December 1st, 2021, from https://ec.europa.eu/environment/pubs/pdf/streets_people.pdf

⁷ Netherlands. (2021). *Urbanaccessregulations.eu*. Retrieved November 12, 2021 from <https://urbanaccessregulations.eu/countries-mainmenu-147/netherlands-mainmenu-88>

⁸ *Low emission zones*. (2021). Urbanaccessregulations.eu. Retrieved November 12, 2021 from <https://urbanaccessregulations.eu/low-emission-zones-main>

with higher emissions cannot enter the area, but in some low emission zones the more polluting vehicles can enter upon the payment of a fee.⁹

New impetus from national laws and zero emission initiatives

While the first LEZs date back to the 1990s, the wide-spread use of these policies has recently been accelerated by the repercussions of the dieselpgate scandal. In addition to this, there is now a new impetus from national laws that facilitate or even mandate the introduction of LEZs in European countries. The Netherlands already have a national framework for low emission zones that foresees restrictions on the use of diesel vehicles¹⁰. The French “Climate and Resilience Law” requires cities with more than 150,000 inhabitants to introduce LEZs before the end of December 2024¹¹. And the new Spanish climate law is even more ambitious as it requires cities with more 50,000 inhabitants to implement a LEZ before 2023, which affects 149 cities with a total of over 22 million inhabitants¹².

LEZs are now not only seen as a clean air tool but, when strengthened, also as a means to curb climate change. This is confirmed by the the fact that an increasing number of cities are preparing the introduction of so-called “Zero-Emission Zones” (ZEZs)¹³ in which “only zero-emission vehicles (ZEVs), pedestrians, and cyclists are granted unrestricted access. Other vehicles are either prohibited from entering or permitted to enter upon payment of a fee.”¹⁴ Currently more than half a dozen European cities have plans to introduce ZEZs, and the Dutch government has announced plans to implement ZEZs for freight vehicles in 30 to 40 of the country’s largest cities by 2025.¹⁵

LEZ haven proven effective in curbing air pollution

The main reason for the widespread use of low emission zones is their proven track record. A vast body of research shows that LEZs can significantly reduce air pollution

⁹ *Low emission zones*. (2021). Urbanaccessregulations.eu. Retrieved November 12, 2021 from <https://urbanaccessregulations.eu/low-emission-zones-main>

¹⁰ Eltis - The Urban Mobility Observatory. (2021). *Urban Vehicle Access Regulations*. Retrieved November 15, 2021, from <https://www.eltis.org/topics/urban-vehicle-access-restrictions>

¹¹ Ministère de la transition écologique. (2021) *Projet de loi Climat & Résilience*. Retrieved from <https://www.ecologie.gouv.fr/projet-loi-climat-resilience-deputes-viennent-finir-lexamen-des-articles-du-titre-iii-se-deplacer-ca>

¹² Spanish government bulletin. (2021) *Ley 7/2021, de 20 de mayo, de cambio climático y transición energética*. Retrieved from https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-8447

¹³ The International Council on Clean Transportation. (2021). *A global overview of zero-emission zones in cities and their development progress*. Retrieved on November 11th, 2021, from <https://theicct.org/sites/default/files/publications/global-cities-zez-dev-EN-aug21.pdf>

¹⁴ Ministère de la transition écologique. (2021) *Projet de loi Climat & Résilience*. Retrieved from <https://www.ecologie.gouv.fr/projet-loi-climat-resilience-deputes-viennent-finir-lexamen-des-articles-du-titre-iii-se-deplacer-ca>

¹⁵ *New agreements on urban deliveries without CO2 emission*. (Feb. 2021). Government of the Netherlands Retrieved November 24th, 2021 from <https://www.government.nl/latest/news/2021/02/11/new-agreements-on-urban-deliveries-without-co2-emission>

levels in cities. The French “Agency For The Ecological Transition” (ADEME) reviewed the evidence for a 20-year period and found that LEZs achieved a significant reduction of pollution by accelerating the renewal of the vehicle fleet.¹⁶ A 2019 review by Transport & Environment (T&E) found that many LEZs resulted in strong reductions of the principal pollutants, including nitrogen dioxide (NO₂).¹⁷

More recent case studies confirmed these findings: The low emission zone in Brussels has reduced nitrogen oxide emissions by 9% and particulate matter (PM_{2.5}) by 17% between 2018 and 2020.¹⁸ In London, an analysis for the City Hall estimated that the reduction in NO₂ pollution was 37% compared to a scenario where there was no ULEZ.¹⁹ And a study for Madrid found significant reductions of nitrogen dioxide levels in the zone as well as positive spillover effects outside that area.²⁰

Effects on car use, modal shift and CO₂ emissions

While LEZs primarily aim at reducing air pollution by restricting the use of the most polluting vehicles and accelerating the renewal of the vehicle fleet, other secondary impacts on road traffic have also been observed. The London Ultra-Low Emission Zone (ULEZ), for instance, has contributed to reducing traffic by 3% to 9% in 2019 compared to 2018 levels²¹. The LEZ in Ghent, Belgium, reduced car ownership within the zone by 10% over a period of two years.²²

This also provides benefits for the climate as greenhouse gas emissions are reduced as well. Six months after the entry into force of the London ULEZ, for example,

¹⁶ *Zones à faibles émissions à travers l'Europe*. (Feb. 2019). ADEME. Retrieved November 15, 2021, from <https://www.ademe.fr/sites/default/files/assets/documents/rapport-zones-faibles-emissions-lez-europe-ademe-2018.pdf>

¹⁷ Transport & Environment. (2019). *Low-Emission Zones are a success – but they must now move to zero-emission mobility*. Retrieved November 15, 2021, from <https://www.transportenvironment.org/discover/low-emission-zones-are-success-they-must-now-move-zero-emission-mobility/>

¹⁸ Bruxelles Environnement. (2021). *Zone de Basses Emissions : le parc automobile change de visage à Bruxelles*. Retrieved on November 11th, 2021, from <https://press.environment.brussels/zone-de-basses-emissions--le-parc-automobile-change-de-visage-a-bruxelles>

¹⁹ The Mayor of London. (2020). *Central London Ultra Low Emission Zone - Ten Month Report*. Retrieved November 28th, 2021 from https://www.london.gov.uk/sites/default/files/ulez_ten_month_evaluation_report_23_april_2020.pdf

²⁰ Salas, Rafael et al. (2019). *Restricting Traffic into the City Centre: Has Madrid Central Been Effective to Reduce NO₂ Levels?*. <http://dx.doi.org/10.2139/ssrn.3495440> [Link](#)

²¹ The Mayor of London. (2020). *Central London Ultra Low Emission Zone - Ten Month Report*. Retrieved November 28th, 2021 from https://www.london.gov.uk/sites/default/files/ulez_ten_month_evaluation_report_23_april_2020.pdf

²² *10 procent minder auto's in Gent en meer "schone" auto's dankzij lage-emissiezone*. (2020, 22 September). vrt.be. Retrieved from <https://www.vrt.be/vrtnws/nl/2020/09/22/gentenaar-schakelt-over-op-groene-auto-s-en-andere-vervoersmid/>

estimates showed that carbon dioxide emissions from road transport in the central zone were 6% lower than if there had been no scheme in place.²³

But what are the economic effects of low emission zones and similar policies?

Despite the strong track record of LEZs in European cities and the fact that a clear majority of European city dwellers (59%) supports measures to block all polluting vehicles from entering cities after 2030²⁴, the introduction of new or expansion of existing LEZs often provokes a lively debate. And although experience has shown that criticism often fades once new measures have been implemented²⁵, it is important that the effects of LEZs and Urban Vehicle Access Restrictions are understood. One of the main concerns put forward by critics is a potential negative impact on the local economy, namely the retail sector, within the concerned zones.

A review of the available evidence

This briefing assesses these potential effects by reviewing the available evidence for low emission zones and other “Urban Vehicle Access Regulations” that reduce the use of (polluting) cars and promote walking, cycling and public transport. Relevant studies and articles were identified based on predefined keywords in multiple languages²⁶ that were used for searches in the databases of Google Scholar and Researchgate. We also analysed the bibliography of each paper in order to identify other relevant publications. In addition to scientific publications, reports published by cities, transport authorities and mobility organisations have also been taken into account. Articles from renowned newspapers have been used to document the public debate on the issues covered in this analysis. *Ex ante* impact assessments have not been taken into account due to the high degree of uncertainty when modelling future effects. The briefing concludes by summarising lessons learned.

²³ The Mayor of London. (2020). Central London Ultra Low Emission Zone - Ten Month Report. Retrieved November 28th, 2021 from

https://www.london.gov.uk/sites/default/files/ulez_ten_month_evaluation_report_23_april_2020.pdf

²⁴ Clean Cities Campaign. (2021). What European city-dwellers want from their mayors post-Covid – Survey. Retrieved December 2nd, 2021, from

<https://cleancitiescampaign.org/2021/05/04/what-city-dwellers-want-from-their-mayors-post-covid/>

²⁵ For example, a public consultation held by the City of Paris in 2018 (prior to the implementation of its LEZ) showed that a slight majority (54%) of the 149 respondents was initially opposed to the LEZ.

However, when later asked about the extension of the LEZ to the Greater Paris area a few years later, polls showed that an overwhelming 75% of respondents were in favour. [France Bleu Paris](#), 2019. A similar phenomenon happened in Oslo due to the Car Free Livability Programme (see section 2.1), where 55% of interviewees think that their city should be as car-free as possible, despite initial resistance.

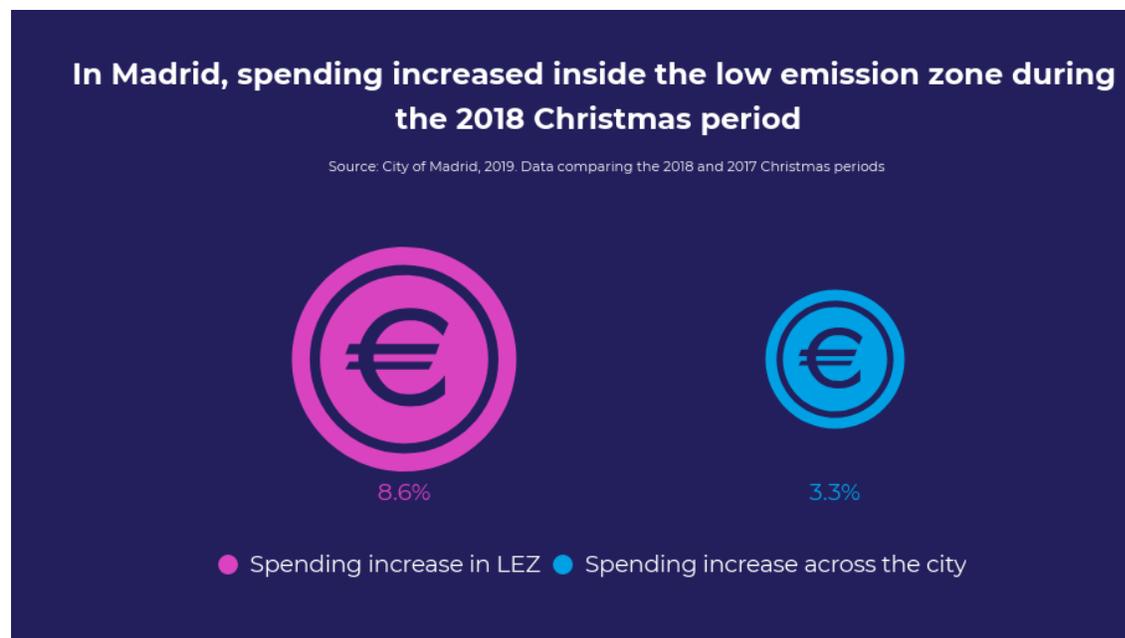
²⁶ We used the following keywords for research in the databases of Google Scholar and Researchgate in several languages (English, French, German, Dutch): Low-Emission Zones, LEZ, congestion charge, pedestrianisation, active travel, economic, impact, effects, revenue, shop, trades, restaurants, retail

2. The effects on the retail sector

In this chapter, we summarise the evidence for the effects of low emission zones and other “Urban Vehicle Access Regulations” on the retail sector.

Madrid: increased spending in the low emission zone

When it comes to the effects of LEZs on local shops, the case of Madrid is particularly interesting. After the introduction of the “Madrid Central” low emission zone in late 2018, a group of merchants defended the measures against criticism²⁷ and said that it wasn’t just a matter of their own health and air quality, which had clearly improved.²⁸ They also mentioned that sales did not register any significant drop, and in some cases even registered an increase. This was confirmed by a 2019 study for which more than 20 million payment transactions during the 2018 Christmas period were analysed.²⁹ The research found that compared to the previous Christmas period spending increased more strongly in the central area covered by the LEZ compared to the city overall (+8.6% vs. 3.3% respectively).



²⁷ Medina, M.A (2019, June). *Los comerciantes se movilizan a favor de Madrid Central*. Retrieved November 12, 2021 from https://elpais.com/ccaa/2019/06/27/madrid/1561642671_166887.html

²⁸ *Closing Central Madrid To Cars Resulted In 9.5% Boost To Retail Spending, Finds Bank Analysis* (2019). Retrieved November 15 2021 from <https://www.forbes.com/sites/carltonreid/2019/03/08/closing-central-madrid-to-cars-resulted-in-9-5-boost-to-retail-spending-finds-bank-analysis/?sh=6e6d3d9c55a7>

²⁹ City of Madrid. (2019). *Efectos gastó Navidad 2018/19, Gran Vía y Madrid Central*. Retrieved November 15 2021 from <https://diario.madrid.es/wp-content/uploads/2019/01/MC-gastos-navidad-DEF.pdf>

Positive impact of policies in Scandinavia

Scandinavian cities started tackling polluting road traffic in the 1990s and early 2000s. One prominent case is Stockholm^{30 31} where an urban congestion charge was introduced in 2006. The initial trial was made permanent after citizens expressed support in a referendum. While the air quality and congestion benefits of the policy weren't questioned, its impact on shops and restaurants was widely debated. Studies conducted during the trial period did not find any negative effects of the congestion charge on the retail sector: "A survey in shopping centres, malls and department stores shows that shopping for durable goods developed at the same rate as in the rest of the country. The same holds for other retail sectors."³²

Oslo's car-free liveability programme

Another well-documented case study is Oslo's car-free 'Livability Programme'³³. In order to reach the ambitious target of becoming fossil fuel free by 2030, the local council decided to implement the programme that included removing parking spaces, making space for cycle lanes and pedestrians as well as organising new events and outdoor activities. As a result, car traffic in the city centre was reduced by 11% in the period from 2016 to 2018, and by 19% between 2018 and 2019. Despite predicting that such strict measures would cause problems in urban logistics and a general drop in customers and turnover, this wasn't confirmed by research conducted for the city council.

Annual random surveys were conducted and found that "the number of pedestrians in various streets and the number of people spending time in different urban spaces showed an overall increase (14% and 43% respectively) over the period of the car-free 'Livability Programme'." Other studies documented a slight decline in retail turnover but stressed that "this decline was due to broader trends within the economy, and turnover in the city centre was at the same or even higher levels than in competing areas outside the car-free zone."³⁴

³⁰ [Daunfeldt et al.](https://doi.org/10.1080/18128602.2011.572570). Congestion charges in Stockholm: how have they affected retail revenues? (2009). <https://doi.org/10.1080/18128602.2011.572570> ([Daunfeldt et al. 2009](#))

³¹ Gervasoni et al. *Il road pricing: esperienze internazionali, costi, benefici e sostenibilità finanziaria*. (2007). Retrieved from <http://depositolegale.liuc.it/dspace/bitstream/2468/3115/3/3115.pdf> ([Gervasoni 2007](#))

³² Eliasson, Jonas et al. (2009). *The Stockholm congestion – charging trial 2006: Overview of effects*. Transportation Research Part A: Policy and Practice. 43. 240-250. <https://doi.org/10.1016/j.tra.2008.09.007> ([Link](#))

³³ *Oslo – Promoting Active Transport Modes*. (2021). Eltis 2021. Retrieved November 15th, 2021, from <https://www.eltis.org/resources/case-studies/oslo-promoting-active-transport-modes>

³⁴ *Oslo – Promoting Active Transport Modes*. (2021). Eltis 2021. Retrieved November 15th, 2021, from <https://www.eltis.org/resources/case-studies/oslo-promoting-active-transport-modes>

Making space for active travel leads to lower retail vacancy

Positive effects of reduced car use have also been found with regard to retail vacancy, i.e. the number of empty shops. In London, a study conducted by the University College London analysed the impact of improvements to publicly owned and managed areas of London's mixed streets, such as high streets and town centres. It found a "strongly related decline in retail vacancy leading to a sizable 17% per annum difference in vacancy rates between improved and unimproved street environments."³⁵

A similar effect has been observed in Altrincham, a market town in the Greater Manchester region in the UK. In 2010, Altrincham was branded a 'ghost town' in the national press with a retail vacancy rate of close to 30%. The Council adopted various strategies, including improved pedestrian infrastructure and the construction of a new transport interchange - in order to increase footfall, dwell time and spend. As a result, footfall increased by 11.4% and retail vacancy was reduced down to 7% between 2011 and 2018.³⁶

3. Why these policies have positive effects on the retail sector

The fact that the effects of low emission zones and other "Urban Vehicle Access Regulations" on the retail sector can be positive are twofold:

- Car use plays a less important role for customers than shop owners think,
- Customers that walk, cycle, wheel or use public transport spend more overall as they visit local shops more frequently.

Merchants overestimate the importance of car travel

Research from Berlin³⁷ shows that merchants tend to overestimate the share of their customers that use the car. Both traders and customers were surveyed on two different roads in Berlin and the results showed that most traders misjudged the use of the different modes of transport, underestimating the role of active modes and overestimating car use. While only 6.6% of shoppers travelled by car, traders on

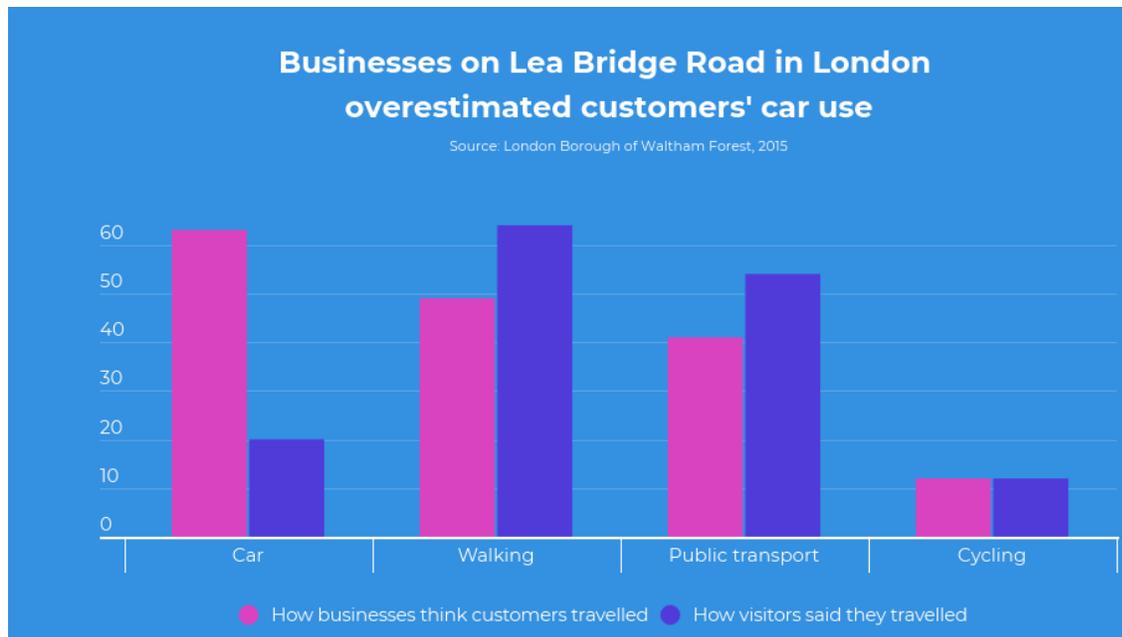
³⁵ Carmona, M. et al. (2018). *Street appeal - The value of street improvements*. Retrieved November 30th, 2021 from <https://content.tfl.gov.uk/street-appeal.pdf>

³⁶ Trafford Council. (2018). *Revitalising Altrincham Town Centre*. Retrieved November 30th, 2021, from <https://www.cipfa.org/-/media/Files/Services/Property/Regeneration-2019-Presentations/Executive-Room-1-Trafford-Richard-Roe.pdf>

³⁷ Von Schneidemesser, Dirk, and Jody Betzien (2021). *Local Business Perception vs. Mobility Behavior of Shoppers: A Survey from Berlin. Findings, June*. <https://doi.org/10.32866/001c.24497>. [Findingspress](#)

average estimated that 21.6% of their customers used this mode. The study indicates that shop owners may project their own mobility patterns on their customers.

The same trends were reported on Lea Bridge Road in London, which is used by 30,000 vehicles and 1,500 cyclists a day³⁸. A survey of local business owners and customers showed that only 20% of visitors used the car whereas merchants estimated that the share was 63%. In turn, 64% of customers came by foot and 54% used public transport, whereas business owners' estimations were respectively 49% and 41%.³⁹



A 2011 study in Brussels came to similar conclusions, showing that shop owners overestimated the share of car use and underestimated the importance of active travel and public transport among their customers.⁴⁰ In the wealthy “Louise” area, a particularly stark difference was found, with shop owners estimating that on weekdays more than 52% of their customers came by car, whereas only 11% of the surveyed customers said they had actually come by car. The study also found that shop owners were primarily worried about the availability and price of parking spaces, while their customers mainly highlighted problems with public transport services.

³⁸ [Waltham Forest Council](http://enjoywalthamforest.co.uk/lea-bridge-road/early-engagement-perception-surveys-and-results/). (2015). *Early Engagement perception surveys and results*. Retrieved November 15, 2021, from <http://enjoywalthamforest.co.uk/lea-bridge-road/early-engagement-perception-surveys-and-results/>

³⁹ Respondents could select more than one reply, which is why the total is superior to 100%.

⁴⁰ Espaces mobilités, Sonecom. (2011). *Étude de l'accessibilité des commerces dans la Région de Bruxelles-Capitale*. Retrieved November 15, 2021, from https://www.gracq.org/sites/default/files/enquete_commerces.pdf

Active travel means more more spending

The evidence also shows that in addition to playing a more important role than perceived by shop owners, active travel can also increase spending. Data published by the City of Copenhagen showed that cycling customers shop more often and spend more in total than motorists.⁴¹ It indicated that customers on bicycles and on foot account for half of the total revenue and two-thirds of all shopping trips in Copenhagen.

A survey from Berlin came to similar conclusions: while the average spend per visit was the highest among car users, shoppers who used active transport modes and public transport visit the shops more frequently and represent a higher proportion of customers which means these modes contribute the large majority of total revenue (91%) (see table below).

Berlin: Proportion of weekly spending by mode

| Mode | Modal Share | Avg. Number of visits per week | Avg. spend per visit (€) | Estimated spend per week (based on frequency of visit) (€) | Estimated total weekly spend according to mode (€) | Proportion of total weekly spend according to transport mode |
|---------|-------------|--------------------------------|--------------------------|--|--|--|
| Transit | 26.06% | 2.86 | 10.87 | 31.11 | 16,426 | 16.5% |
| Car | 6.58% | 2.80 | 23.45 | 65.60 | 8,659 | 8.7% |
| Bicycle | 14.64% | 3.78 | 11.98 | 45.35 | 13,379 | 13.5% |
| Foot | 52.08% | 4.97 | 11.63 | 57.82 | 60,652 | 61.0% |
| Other | 0.59% | 3.35 | 8.33 | 27.95 | 335 | 0.3% |

(Table source: von Schneidemesser, Dirk, and Jody Betzien. 2021⁴²)

These trends are also confirmed by research commissioned by Transport for London (TfL). The data showed that those who walk to the area are the most frequent visitors (49% visit five days a week or more) followed by train/tube users (31%) and bus users (28%).⁴³ Car users visit shops less often (17%). The research also found that “the total average spend per month by mode shows that average spend is highest for those who walked (215 pounds) or were a car driver/passenger (206 pounds), followed by

⁴¹ City of Copenhagen. (2014). *Bicycle Account 2012*. Retrieved November 15, 2021, from https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=1034

⁴² von Schneidemesser, Dirk, Betzien, Jody. (2021). *Local Business Perception vs. Mobility Behavior of Shoppers: A Survey from Berlin*. Retrieved November 15, 2021, from <https://findingspress.org/article/24497-local-business-perception-vs-mobility-behavior-of-shoppers-a-survey-from-berlin>

⁴³ Accent. (2013). *Town Centres 2013*. Retrieved November 25th, 2021, from <https://content.tfl.gov.uk/town-centres-report-13.pdf>

those who travelled by bus (110 pounds) and those who used a train/tube (67 pounds).”⁴⁴

A review of case studies showed that “if more space is given for walking and cycling and less to cars, the absence of customers arriving by car is more than compensated by people arriving on foot or by bike”.⁴⁵ It showed that walking and cycling projects can increase retail sales by 30% or more.⁴⁶ This confirms earlier findings on the positive impact of pedestrianisation on shopping turnover from German cities⁴⁷, and is in line with recent research from Canada that showed that monthly customer spending and the number of customers both increased following the removal of 136 on-street parking spots and the installation of a pilot bike lane.⁴⁸

Research from Bern highlighted the value of cycling for local shops: it found that converting parking spaces into bike parking can deliver higher retail spend. For every square metre of parking space, customers who cycled generated 7,500 euros compared to 6,625 euros spent by car drivers.⁴⁹

These studies show that the travel behaviour of customers is often misjudged and that active and public transport often play a much more important role than shop owners think. Customers that walk, cycle or use public transport have been found to often spend less money per individual trip but more in total as they frequent shops more often and represent a higher share of customers. Reallocating public space to these active modes have therefore been found to have a positive impact on the local economy.

⁴⁴ Accent. (2013). *Town Centres 2013*. Retrieved November 25th, 2021, from <https://content.tfl.gov.uk/town-centres-report-13.pdf>

⁴⁵ Lawlor, E. (2018). *The Pedestrian Pound. The business case for better streets and places*. Retrieved November 24th 2021, from <https://www.livingstreets.org.uk/media/3890/pedestrian-pound-2018.pdf>

⁴⁶ Lawlor, E. (2018). *The Pedestrian Pound. The business case for better streets and places*. Retrieved November 24th 2021, from <https://www.livingstreets.org.uk/media/3890/pedestrian-pound-2018.pdf>

⁴⁷ Hass-Klau, C. (1993). *Impact of pedestrianization and traffic calming on retailing. A review of the evidence from Germany and the UK*. Retrieved November 30th, 2021, *Transport Policy* 1993 (1). Retrieved from <https://asset-pdf.scinapse.io/prod/19731801/19731801.pdf>

⁴⁸ Arancibia et al. (2019). *Measuring the Local Economic Impacts of Replacing On-Street Parking With Bike Lanes - A Toronto (Canada) Case Study*. Retrieved December 2nd, 2021, *Journal of the American Planning Association*, <https://doi.org/10.1080/01944363.2019.1638816>

⁴⁹ Forschung Radverkehr international. (2011). *Mit dem Fahrrad zum Einkaufen*. Retrieved November 15th, 2021, from <https://nationaler-radverkehrsplan.de/de/file/14950/download?token=98QDN4uG>; European Commission. (1999). *Cycling: the way ahead for towns and cities*. Retrieved December 1st, 2021, from https://ec.europa.eu/environment/archives/cycling/cycling_en.pdf

4. Policy recommendations

The evidence presented above shows that low emission zones and other “Urban Vehicle Access Regulations” can be a win-win-win solution for clean air, the climate and the local economy. In order to maximise the positive impact, the following recommendations should be followed:

Ambitious low emission zones and a clear pathway to zero emission mobility by 2030

Clarity and predictability are crucial in order to allow citizens and businesses to stepwise adapt their mobility according to the French “Agency For The Ecological Transition” (ADEME)⁵⁰ and a best practice assessment by environmental consultancy CE Delft⁵¹. This includes clear communications on the concerned vehicles and area, paired with information on any financial support and applicable exemptions. City leaders should adopt ambitious low emission zones in order to curb air pollution and protect the climate. As cities need to be frontrunners of climate protection, they should also set a clear, gradual pathway towards fully zero-emission mobility by 2030. This transition to liveable, healthy zero-emission cities is supported by European city dwellers as a recent survey by the Clean Cities campaign showed.⁵²

Reallocating public space to active travel and public transport

More space should be given to active travel and public transport, which can have positive effects on the local retail sector. The measures adopted to contain the Covid-19 pandemic have opened a window into a possible future and city leaders should seize this opportunity to make space for walking, cycling, wheeling and public transport. This will ensure that the scarce space will be used most efficiently in cities.

This is also being increasingly acknowledged by shop and restaurant owners. A recent example from the Polish city of Gdansk illustrates this.⁵³ A group of restaurant owners in a car-dominated street demanded that the city turn the street into a

⁵⁰ Sadler Consultants. (July 2011). LEZ in the EU, paper for Ademe (Non-public)

⁵¹ [Les chercheurs d'air. \(2020\)](https://www.leschercheursdair.be/wp-content/uploads/2021/03/CE_Delft_200218_Air_pollution_and_transport_policies_at_city_level_Def-1.pdf). Air pollution and transport policies at city level. Retrieved from https://www.leschercheursdair.be/wp-content/uploads/2021/03/CE_Delft_200218_Air_pollution_and_transport_policies_at_city_level_Def-1.pdf

⁵² Clean Cities Campaign. (2021). *What European city-dwellers want from their mayors post-Covid – Survey*. Retrieved November 15th, 2021, from <https://cleancitiescampaign.org/2021/05/04/what-city-dwellers-want-from-their-mayors-post-covid/>

⁵³ In Gdańsk restaurant owners demanded the city turn their street into a pedestrian zone. (2020) T&E. Retrieved from <https://www.transportenvironment.org/discover/gda%C5%84sk-restaurant-owners-demanded-city-turn-their-street-pedestrian-zone/>

pedestrian zone during the Covid-19 pandemic, and the city agreed. A poll in Oxford showed that 64% of the respondents wanted to keep Witney High Streets closed to cars, with shop owners and a local taxi company speaking out in support.⁵⁴

Cities should make clean and affordable alternatives available

It is crucial that measures to reduce the use of (polluting) cars are combined with clean and affordable alternatives. When it comes to commercial vehicles, initiatives like the hugely popular diesel van scrappage scheme provided to small businesses and charities in London⁵⁵ can help organisations to purchase LEZ-compliant vehicles. Similar initiatives have been set up in Paris⁵⁶, Brussels⁵⁷ and in Germany⁵⁸.

Local councils should invest in infrastructure for public and shared electric mobility. Lille, France, for example in 2019 simultaneously prepared its LEZ and a 2 billion euros investment plan in public transport⁵⁹. The French Environment Agency lists best practice examples⁶⁰ including higher frequencies and capacities of public transport services.

Special attention should be paid to the mobility of lower-income households. They could be granted discounted or free access to public transport. Since 2017, the Metropolitan Area of Barcelona has provided over 12,000 metropolitan tickets to those that gave up their private vehicle.⁶¹ People with reduced mobility would clearly benefit from affordable taxi rides or on-demand services in barrier-free vehicles, such as the free electric mini-shuttles made available in the centre of Ljubljana, Slovenia.⁶²

⁵⁴ Norris, M. (2021) Public wants to keep Witney High Street closed to cars. [Oxford Mail](https://www.oxfordmail.co.uk/news/19628941.witney-residents-come-favour-keeping-high-street-closed-traffic/). Retrieved November 15, 2021, from <https://www.oxfordmail.co.uk/news/19628941.witney-residents-come-favour-keeping-high-street-closed-traffic/>

⁵⁵ TfL. (2020) [Scrapage scheme](https://tfl.gov.uk/modes/driving/scrappage-schemes). Retrieved November 15, 2021, from <https://tfl.gov.uk/modes/driving/scrappage-schemes>

⁵⁶ [Ademe](https://www.ademe.fr/sites/default/files/assets/documents/rapport-zones-faibles-emissions-lez-europe-ademe-2018.pdf). (2018). ZONES A FAIBLES EMISSIONS (LOW EMISSION ZONES) A TRAVERS L'EUROPE. Retrieved November 15, 2021, from <https://www.ademe.fr/sites/default/files/assets/documents/rapport-zones-faibles-emissions-lez-europe-ademe-2018.pdf>

⁵⁷ Brussels. (2021). *What are the alternative mobility offers offered by the Brussels region?*. Retrieved November 15, 2021, from <https://lez.brussels/mytax/en/alternatives?tab=Primes>

⁵⁸ German cities get more funding for air quality, but retro-fitting plans still to come (2018) [DW](https://www.dw.com/en/german-cities-get-more-funding-for-air-quality-but-retro-fitting-plan-still-to-come/a-46565361). Retrieved from <https://www.dw.com/en/german-cities-get-more-funding-for-air-quality-but-retro-fitting-plan-still-to-come/a-46565361>

⁵⁹ Elits. (2020). Combining the introduction of a restrictive low emission zone with a large investment plan for public transportation. Retrieved November 15, 2021, from <https://www.eltis.org/resources/case-studies/combining-introduction-restrictive-low-emission-zone-large-investment-plan>

⁶⁰ Sadler Consultants. (July 2011). LEZ in the EU, paper for Ademe (Non-public)

⁶¹ ELTIS. (2021). Barcelona issues annual public transport tickets to former car owners. Retrieved November 25th, 2021, from <https://www.eltis.org/in-brief/news/barcelona-issues-annual-public-transport-tickets-former-car-owners>

⁶² City of Ljubljana. (2021). Kavalir: getting around the city centre by electric car. Retrieved November 25th, 2021 from <https://www.visitljubljana.com/en/visitors/travel-information/getting-around/kavalir-getting-around-the-city-centre-by-electric-car/>

5. Conclusions

The analysis therefore demonstrates that low emission zones can be a win-win-win solution for clean air, the climate and the local economy:

- Low emission zones and similar policies that reduce car use have generally had positive effects on the turnover of the retail sector in cities,
- Retail vacancy (the number of empty shops) can be reduced.

This can be explained by several factors:

- Car use plays a less important role for customers than shop owners think,
- Customers that walk, cycle, wheel or use public transport spend more overall as they visit local shops more frequently and represent a higher proportion of all customers.

These results show that cities should fully take their responsibility for clean air and liveable cities, and these policies can support the local economy if properly implemented.

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Find out more

The Clean Cities Campaign is a European coalition of organisations hosted by Transport & Environment. Together, we aim to encourage cities to transition to zero-emission mobility by 2030, pushing European cities to become champions of active, shared and electric mobility for a more liveable and sustainable urban future.

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