

BARCELONA

Towards a Car-Lite Future, One Partnership at a Time

TEXT: VICTORIA SEE AND SHAWN TAN

By prioritising climate change, public health, and transport safety and equity, Barcelona has taken deliberate steps to embrace sustainable mobility modes and transform its residents' living experience. Come explore the city's innovative approaches to partnerships that have enabled their streets to come alive!

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Shawn Tan
Deputy Director, Centre for Liveable Cities

Shawn is Deputy Director of Research at the Centre for Liveable Cities, focusing on research strategies, knowledge development and international partnerships. He was previously with the Urban Redevelopment Authority (URA) as an urban planner (2010–2021). Shawn holds a Master's degree in Spatial Planning from the University College London and a Bachelor's degree in Sociology from the National University of Singapore.



Victoria See
Manager, Centre for Liveable Cities

Victoria is a researcher at the Centre for Liveable Cities, where she focuses on topics related to urban planning and design, foresight and sustainable mobility. She holds a Bachelor of Arts in Architecture from the National University of Singapore, and a Master of Architecture from the University of Michigan.



Aerial view of Barcelona.
Image: Logan Armstrong / Unsplash



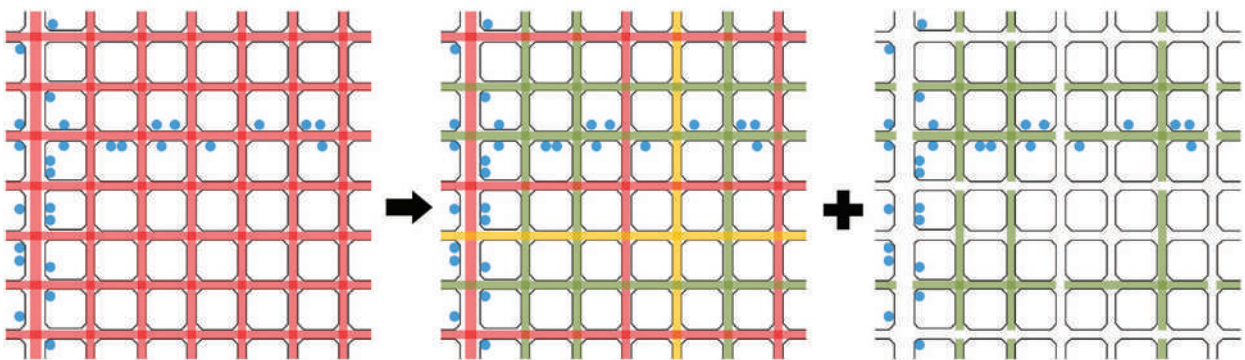
More widely known for their Superblocks urban concept, Barcelona has also established close partnerships among its metropolitan and city administrations, and the public to roll out a suite of complementary, high-impact sustainable mobility initiatives that aim to increase its walk, cycle and public transport mode share to 82% by 2024 (from 77% in 2018). In November 2022, an inter-agency delegation comprising the CLC, the Urban Redevelopment Authority (URA) and the Land Transport Authority (LTA), visited Barcelona to learn more about their unique approaches to sustainable mobility, and the important role of strategic partnerships.

Despite having one of the highest car ownership rates amongst European Union cities at about 6,000 private vehicles per km², Barcelona enjoys a high percentage of trips made by foot (34% in 2018). Nevertheless, the city has not rested on its laurels and continues to strive towards becoming less car-reliant through its Urban Mobility Plan—a 5-yearly planning exercise that was first introduced in 2014. Motivated by environmental sustainability, urban efficiency and social equity goals, the Urban Mobility Plan 2019–2024 comprises 60 lines of action and 300 measures that seek to make the streets of Barcelona friendlier for pedestrians of all ages, and reduce tendencies to drive.

From Superblocks to Green Streets: Benefitting the Larger Community through City-Local Partnerships

The Superblock concept consolidates nine urban blocks into one “Superblock” by converting interlocking streets into pedestrian-priority streets through tactical urbanism and road repurposing. This model has been rolled out in a few locations since 2016, such as the Poblenou neighbourhood and Eixample district.

Today, passing pedestrians are able to navigate the reclaimed public spaces with ease and confidence. Seniors and adults often linger on the street furniture provided to enjoy a snack and watch the world go by, while children fill the space with their self-organised play. The City Council recorded 32 community cultural, sports or market events held along these redesigned streets at the pilot sites since 2019, up from a total of 5 prior to the implementation of the Superblocks. This has been accompanied by other positive externalities such as improved air quality, reduced noise pollution and increased revenue for surrounding businesses. However, these outcomes did not occur organically; they were the fruits of well-planned and sustained partnerships.



Barcelona's shift from a vehicle-centric urban grid to a car-lite Superblock model.
Image: Ajuntament de Barcelona

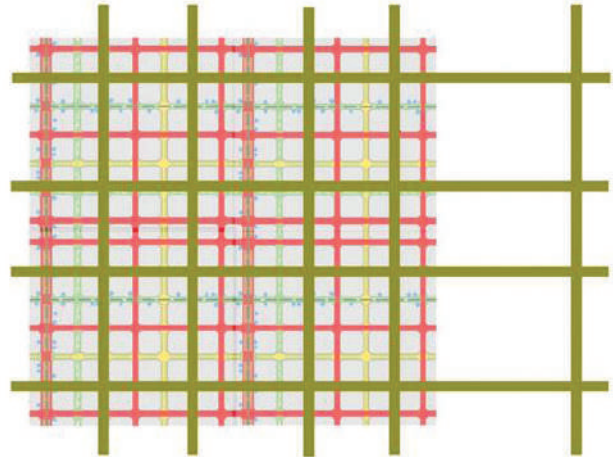
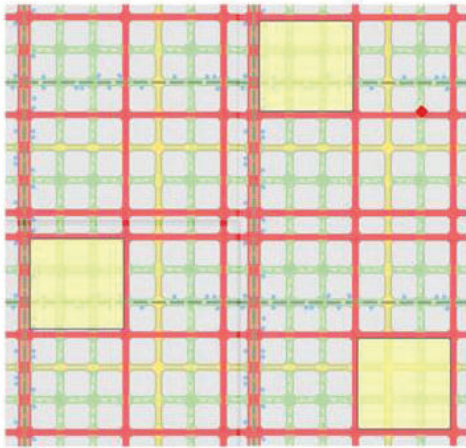


Tactical urbanism in the form of a playground and public space on a road intersection within the Superblock in the Poblenou neighbourhood.
Image: Victoria See / Centre for Liveable Cities

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To socialise the public to the eventual benefits, and potential near-term costs and inconveniences of such transformative projects, the City Council concurrently rolled out a public engagement programme to the tagline of “Let’s Fill the Streets with Life!” Through a series of townhall meetings, workshops, site visits and community events, the City Council engaged with local residents, business associations, social organisations and the authorities to share preliminary concepts, identify existing pain points and co-create draft plans. Stakeholders were also provided with timely updates on the outcomes and impacts of implementation through quantifiable data. After almost two years of trials, the local community began to experience first-hand benefits of the Superblocks model, which resulted in them becoming more accepting of the changes.

Together with the authorities’ courage to push ahead with what they believed to be good for the city despite initial pushback, this positive engagement model has helped to build trust



The shift from the Superblock concept (by zones) to Green Streets with Green Squares (by streets).

Image: Ajuntament de Barcelona



Artist's impression of a Green Street.

Image: Ajuntament de Barcelona

and lay fertile groundwork for longer term partnerships to occur. The City Council continues to build on and refine its approach as it rolls out the Superblocks and other sustainable mobility projects throughout Barcelona.

Even though the Superblocks model has been heavily premised on Barcelona's unique grid structure, its strategies of tactical urbanism and road repurposing can be translated to different urban contexts, and therefore provide a strong basis for the shift towards more sustainable mobility modes. In fact, arising from public feedback and findings from its pilots, the City

Council is now exploring the application of these strategies at a wider scale along linear streets across the city, instead of confining it to the local urban blocks.

With aims to extend its benefits across a wider range of neighbourhoods and to create city-wide ecological corridors while minimising the negative externalities from traffic diversion, this evolution and scaling up of the Superblocks programme is testament to the well-founded basis of its approach—strong city and local-level partnerships.

Fostering a Conducive Cycling Culture: Partnerships-Enabled Programming to Scale Up Local Initiatives

Besides reclaiming road space for pedestrians and public space, Barcelona has also accelerated the expansion of its cycling network and public bicycle-sharing system, Bicing, over the last decade. The city aims to have 308 km of completed cycling paths by the end of 2023, a 40% increase from 2019. The whopping 93 million bicycle trips made within the city in 2021, up from 67 million in 2018, provides strong evidence to the rising popularity of cycling as a viable mode of commute among locals. To further support this, three key cycling path design typologies are being introduced to make the cycling experience safer and more seamless:

- **Segregated cycling paths**—Dedicated lanes for bicycles and personal mobility devices, that are located on pavements, or at the same grade and next to regular vehicle lanes.
- **30 km/h streets**—Streets where bicycles have right of way over other vehicles, and all vehicles have speed limit restrictions.

- **Single platform streets**—Streets featuring a curb-less design to facilitate smoother rides for cyclists, and barrier-free access for pedestrians.

Besides providing adequate infrastructure to nudge commuting behaviour and preferences, Barcelona has also leveraged innovative programming to cultivate a cycling culture among its children and youths. One example is a community partnership initiative called “BiciBús” (or “bike bus”). Since early 2021, this citizen-led and City Council-supported project has enabled hundreds of children to cycle to school safely in a convoy escorted by a police car and parent volunteers. It has been documented that children wake up excited to cycle to school with their peers. What began as a modest idea involving a trial route in the Sarria neighbourhood has since exploded into a growing movement of at least 15 routes across the city. The project continues to ride on the combined efforts of parent volunteers, willing and open-minded parents, enthusiastic school children and the police department, and demonstrates the importance of sustained bottoms-up partnerships within the local community.



Cycling lanes at an intersection in Barcelona.
Image: Linus Ekenstam / Unsplash



A segregated bi-directional cycling “highway” located in the middle of the bi-directional Avinguda del Paral·lel in Barcelona.
Image: Victoria See / Centre for Liveable Cities

Imposing a Low Emissions Zone: Partnerships across Administrative Boundaries in Barcelona

With its location and availability of jobs, Barcelona city receives a large inflow of vehicular traffic from the larger metropolitan area, up to about 12,500 inbound vehicles daily. Moreover, due to its geography, inland pollutants, especially those generated at the street level known as “black carbon”, tend to be retained within the city’s urban boundaries. Therefore, the City Council has been partnering its metropolitan counterpart, the Àrea Metropolitana de Barcelona (AMB), to push the needle on its transition towards sustainable mobility in a bid to restore the quality of its living environment for future generations. One metropolitan-level initiative is the Low Emission Zone (LEZ) which began implementation in phases, starting in 2018.

The LEZ only authorises vehicles of less pollutive categories to enter the core city boundary during regular working hours, and leverages on Barcelona’s Ring Road structure to provide an alternative route for more pollutive vehicles to

bypass the inner city. Overall, the scheme seeks to discourage drivers from retaining older, more pollutive vehicles, or owning a private vehicle altogether.

Several regulations and incentives were also rolled out to complement the LEZ, including an individualised non-transferable, three-year free public transport pass offered to any car owner in the metropolitan area, who commits to selling off their old, pollutive vehicle, and refrains from any new vehicle purchase over the same period. Since the roll out of this scheme, the overall number of older, more pollutive vehicles in the metropolitan has decreased significantly (Figure 1). This is no small feat and is a strong indication of the close collaboration and coordination between metropolitan and city authorities, with a will to keep the larger common good in mind.

Barcelona: An Inspiration to Other Cities in their “Car-Lite” Journeys

Barcelona’s multi-pronged approach towards sustainable mobility has duly addressed one key challenge faced by many cities in their



Barcelona Ring Road with the LEZ at the right side of the image.
Image: Alex Motoc / Unsplash

	Mar 2017: Announcement of upcoming LEZ	Apr 2020: After full implementation of LEZ	Sep 2020: Prior to enforcement of punishment of LEZ	Dec 2021: After enforcement of punishment of LEZ
Percentage of old vehicles being used in the metropolitan	20%	8%	6 – 7%	2 – 3%
Nitrogen oxide concentration (gNO_x/km²)	0.7972	0.6175	0.4469	0.3887
PM10 concentration (gPM10/km²)	0.0449	0.0451	0.0385	0.0367
Carbon dioxide concentration (gCO₂/km²)	-	227.88	200.28	194.89
Black Carbon concentration (gBC/km²)	-	0.009	0.0072	0.0059

Figure 1. Chart of the effectiveness of the LEZ and its complimentary policies.
Source: Àrea Metropolitana de Barcelona

transition towards a “car-lite” future—they have managed to transform the city’s “hardware” in terms of physical mobility infrastructure, while also aligning its “software”, such as the public’s mindsets and behaviour. The city authorities have also not shied away from their own conviction and responsibility. They have been open with testing the various transformative infrastructural changes, actively involving key stakeholders before using it as a robust basis to scale up to a wider range of commuters, to navigate their own realities and build new commuting norms. These would not have been possible without trusted partnerships across various levels—local, city and metropolitan—that focused on the longer term and greater good.

Without a doubt, Barcelona’s strong city leadership, integrated governance structure, and experimental and collaborative spirit have served it well in their follow-through on

sustainable mobility. This is not the end; there are certainly more exciting outcomes to look forward to. This transformational story—characterised by the city’s willingness to embrace public opinion, to partner with peer organisations, and to continuously refine even well-received models—has truly given other cities the confidence to do likewise; alas, the journey continues. 🧭

This article was written based on the learning points gleaned from a recent study trip to Barcelona as part of a joint research collaboration on “Measuring the Socio-Economic Costs-Benefits of Sustainable Mobility” between CLC and the Centre for Innovation in Transport (CENIT).