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Editorial: From kerb to cloud: data-driven tools reshaping urban mobility infrastructure

Sebastian Seriani
Escuela de Ingeniería de Construcción y Transporte, Pontificia Universidad Catolica de Valparaíso, Chile (Corresponding author: sebastian.seriani@pucv.cl)

Vicente Aprigliano
Escuela de Ingeniería de Construcción y Transporte, Pontificia Universidad Catolica de Valparaíso, Chile (vicente.aprigliano@pucv.cl)

Rapid urbanisation, the climate emergency and a global appetite for seamless travel are forcing civil engineers to rethink the humble street (Soica *et al*., 2024). No longer a strip of asphalt, today's right-of-way is expected to host carbon-free vehicles (Mitsakou *et al*., 2021), car-sharing transport modes (Silvestri *et al*., 2021), agile public transport (Cheng *et al*., 2018), comfortable public realm and the digital services that bind them (Fumagalli *et al*., 2022). This issue of Municipal Engineer showcases five papers that—each from a different vantage point—demonstrate how data-rich methods are enabling that transformation.

We open at the metre scale, where Tanwar & Agarwal propose an accessibility index tailored to Indian cities and use a logit model to show how boosting feeder-bus coverage in Bhopal from 22% to 92% can all but eliminate first-mile penalties. Their work reminds practitioners that sophisticated metrics, when coupled with clear mode-choice evidence, can turn "last-mile" rhetoric into executable service plans.

Next comes the parking block. Parmar, Das & Dave marry Analytic Hierarchy Process with fuzzy logick to grade off-street facilities around Vadodara's CBD. The verdict is unequivocal: drivers value "ease time" (search + manoeuvre) above price or security. As cities debate repurposing car parks for housing or hubs, a user-centric level-of-service score such as theirs provides the quantitative honesty those decisions demand.

Stepping onto the highway, Yoo, Kim, Bencekri & Lee tackle range anxiety with an elegant two-piece solution: coils under congested lanes for dynamic wireless charging and autonomous robots that top-up vehicles on the move. Their optimisation shows a potential 27 500 h of charging time saved at 50% EV penetration—evidence that electrical and transport engineers must increasingly design as one profession.

Closer to the kerb, Yeon *et al*. use a deep Q-network to generate real-time routes for demand-responsive transit in Korean suburbs. Even under high demand the algorithm cuts waiting and in-vehicle time while lifting boardings, signalling that reinforcement learning has moved from laboratory novelty to deployable scheduling tool.

Finally, Kumar & Sarkar return us to fundamentals—sky-view factor (SVF). By testing thousands of rotation angles in an idealised canyon they show that, statistically, angle choice scarcely affects SVF. For planners wrestling with canyon geometry's impact on thermal comfort and energy use, the finding dispels a long-standing modelling anxiety and lets design teams focus on the dimensions that really matter.

What binds these contributions is a quiet but profound shift: geometry, behaviour and energy are no longer analysed in isolation but as intertwined datasets feeding optimisation engines. Feeder buses talk to parking models; kerb design informs charging layouts; micro-climate metrics close the feedback loop with building energy codes. The result is a more nuanced, systems-level understanding of streets—and a richer toolkit for the engineers who shape them.

As cities recover street space for people and decarbonised mobility, the research presented in this issue offers both caution and inspiration: data will not replace engineering judgement, but it can elevate it—turning the kerb into a nexus where sustainable mobility, resilient infrastructure and civic delight intersect.

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