

# Recharging the 15-Minute City: How e-micromobility is expanding access

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## Abstract

The concept of the 15-Minute City has emerged as an idealized framework for sustainable, human-scale urban planning. It promotes access to essential services, such as schools, parks, grocery stores, and hospitals, within 15 minutes of active travel (walk or bicycle) from a resident's home. Much of the current scholarly and policy focus has centred on walkability, with limited attention to how new mobility modes such as e-micromobility services (e-scooters and e-bikes) are reshaping this accessibility discussion.

In this work, we address an important gap in existing literature by evaluating the role of shared e-micromobility in extending amenity access across five international cities: Berlin, Germany; London, UK; Paris, France; Wellington, New Zealand; and Washington DC, USA. Analyzing 24 million real-world e-micromobility trips collected between 2020 and 2024 and their relationship to OpenStreetMap points of interest (POI), we identify spatiotemporal patterns of access. The methodology involves calculating trip durations for walking and e-micromobility between trip origins/destinations and five categories of amenities (hospitals, parks, schools, grocery stores, entertainment venues). Using an Inverse Distance Weighting interpolation approach, we generate fine-resolution duration surfaces for each transport mode, city, and POI type. The accessibility surfaces are then reclassified into three temporal thresholds, under 15 minutes, 15-30 minutes, and over 30 minutes, with the goal of evaluating and comparing mode-specific accessibility.

Our results reveal that e-micromobility significantly enhances 15-minute accessibility, particularly in lower-density, car-centric cities. For instance, in Wellington, e-micromobility triples the percentage of the city that is reachable within 15 minutes for school access. Washington DC sees similar improvements across all POI types, with accessibility increases ranging from 10-20% compared to walking. In contrast, European cities such as Berlin and London, which already feature high baseline walkability, report modest gains, especially for shorter trips. Importantly, we find that accessibility enhancements are not uniform across amenity types. Schools and parks benefit most from e-micromobility, while access to hospitals and entertainment venues shows greater variability depending on spatial distribution. Furthermore, improvements are most noticeable in peripheral and under-served areas, demonstrating e-micromobility's potential to address spatial inequities and fill access gaps in the urban periphery.

DOI: 10.5281/zenodo.16883495

**Keywords and phrases** micromobility, connected community, 15-minute-city



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