

Regional rail stations as catalysts and barriers for 15-minute-neighbourhoods. Transit-oriented or transit-adjacent development in the Munich Metropolitan Region?

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The concept of the 15-minute city aims inter alia to improve and create dense, mixed-use neighborhoods that make it possible to cover everyday journeys as locally as possible with short distances and little effort, thus minimizing the occurrence of traffic. However, as completely self-contained neighbourhoods are neither desirable nor realistic, the concept also highlights the need for inclusion of and proximity to high-quality public transport to encourage sustainable mobility for those journeys that transcend the neighbourhood level up to the city-regional scale.

This research aims to shed further light on this complex and not always conflict-free (Silva & Altieri 2022) interplay between local (pedestrian and cycling) and regional (rail systems) accessibility in urban environments. Following the methodology first applied by Vale (2015), it first combines a node-place-analysis (Bertolini 1999) for 500+ rail stations in the Munich Metropolitan Region (Wenner et al., 2020) with a walkability analysis of the station surroundings. The primary hypothesis is that while the public transport system provides high regional accessibility at many stations, this locational advantage is often wasted through 'last-mile' inefficiencies due to poor pedestrian and cycling accessibility – surprisingly often also at major transit hubs. Improvements of local walkability and cycling infrastructure may hence in many cases represent a more cost-effective measure for overall accessibility than the construction of new rail infrastructure.

At the same time, poor walkability around stations is strongly related to local barrier effects of rail infrastructure, causing what in urban design is addressed as the 'frontside/backside'-problem of rail stations. In terms of the 15-minute-city-concept, these cases represent problematic situations that would however be relatively easy to improve.

The study advances methodology by analyzing the characteristics of areas within walking and cycling distance to stations compared to areas that are spatially close but inaccessible from the stations, in terms of structure and dynamics of population, firms, and amenities. The hypothesis here is that proximity to stations influences the type of land use and economic activities, with knowledge-intensive services and households being drawn to accessible areas, while inaccessible areas show "transit-adjacent" instead of "transit-oriented" development, or no development at all. The study aims to advance beyond existing research by considering not just the absolute radius but also the 'built radius', thus focusing more accurately on urban characteristics rather than just measuring 'rurality'.

As a second step, the study will present in-depth analyses of a limited number of cases that exhibit a particularly rewarding combination of strong regional and poor local accessibility, focusing on their genesis and current developments, as well as subjective dimensions of local accessibility, methodologically based on site visits and document analysis.

The research aims to highlight crucial areas for intervention to improve walkability, connectivity and permeability in line with the goals of the 15-minute-city-concept. The findings may lead to a reevaluation of urban planning priorities, emphasizing the importance of integrated local and regional accessibility in fostering sustainable urban development. The outcome is expected to offer practical insights for urban planners, policymakers, and stakeholders in creating more accessible, efficient, and sustainable urban environments.

References

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