Beyond Urban Proximity: The 30-Minute Region as a Framework for Accessibility in Rural Areas

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Abstract. The 30-minute region (30mR) builds on proximity-based planning models, most prominently the 15-minute city (15mC), and adapts them to rural areas. It is grounded in the principle of just access to essential services, recognizing that accessibility is not only a matter of spatial distance but linked to mobility justice, social inclusion and territorial cohesion. This paper highlights the following dimensions shaping the 30mR: (a) Proximity frameworks reduce travel times and integrate daily needs for sustainability and resilience. (b) Rural realities introduce distinct spatial, demographic, and socio-economic factors that complicate the application of proximity principles outside cities. (c) Justice-oriented approaches add governance principles such as spatial justice, just transition, and accessibility rights. Based on this foundation, the paper outlines a stepwise analytical approach comprising four stages that translate the normative concept into an evidence-based structure. Taken together, these insights demonstrate that the 30mR offers a holistic approach to rural accessibility, integrating proximity with social, economic, and spatial realities to support just rural development.

Keywords: Regional planning · Mobility justice · Demographic change · Proximity · Rural areas

1 Introduction

Traditional mobility planning focuses on efficiency but often neglects climate change, inequality, and urban sprawl. In response, new concepts are gaining ground that prioritize proximity, accessibility, and social inclusion [1, 2]. A current prominent example is the 15-minute city (15mC), which aims to ensure that daily needs (housing, work, education, healthcare, shopping, and leisure) are reachable within 15 min by foot or bicycle [3]. While urban areas are increasingly benefiting from these holistic frameworks, rural regions still lack an equivalent guiding model. This is concerning given that rural areas increasingly face structural challenges. Demographic decline, urban migration, spatial dispersion, and the dismantling of public infrastructure have led to a growing dependency on private vehicles, reduced regional attractiveness, and increasing challenges in accessing basic services. Vulnerable populations, such as elderly and youth are particularly affected while their participation in daily life can be constrained [4, 5]. Addressing these inequalities calls for inclusive and future-oriented mobility solutions. To achieve

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this, a better understanding of the specific challenges of rural environments must be developed by actively involving the affected population in planning processes [6, 7]. Many current interventions in rural mobility remain fragmented, short-term, and narrowly focused on demand-responsive transport (DRT) or digital platforms. These often lack social fit, sufficient participation, or long-term viability [8, 9]. What is missing are integrated and strategic approaches that consider mobility alongside spatial structures, public service provision, and social participation given the distinct challenges of rural areas.

To address this gap, we aim to introduce the concept of the 30-minute region (30mR) into the scientific debate on rural mobility and accessibility. While the idea has been referenced in popular discourse, notably by Moreno [10], it has not yet been systematically developed as a framework in the academic literature. The 30mR applies the principle of proximity-based planning to rural and peripheral contexts by scaling it up from the level of an urban neighbourhood to that of an entire region. It proposes that essential services should be accessible within 30 min via multimodal transport systems, while acknowledging the continued role of private vehicles in low-density areas. Conceptually, the 30mR builds upon existing frameworks, such as the 15-minute city and Sustainable Urban Mobility Plans (SUMPs), by adapting them to rural conditions and explicitly integrating social and equity considerations. Our novel framework is natively designed to integrate not only spatial criteria but also economic and social equity considerations. It synthesises international scholarly work from the last ten years on proximity-based planning, rural sustainability transitions, and justice-oriented mobility debates. It also develops the 30mR as a framework for addressing accessibility challenges beyond urban contexts.

2 Background

2.1 Planning Frameworks and Proximity-Based Urbanism

Proximity-based urbanism has gained attention as a strategy for enhancing accessibility and spatial equity through reduced travel times. One of its most well-known expressions is the 15mC, which seeks to ensure that essential services such as housing, work, shopping, healthcare, education and leisure are reachable within 15 min by active modes [3]. It builds on a long lineage of planning traditions including the Garden City [11] or Isobenefit Urbanism [12]. Related models to the 15mC such as the 20-minute city, and chrono-urbanism further reflect a growing interest in organizing cities around time-based accessibility [13]. Despite this variety, questions remain about applying proximity-based planning outside dense urban cores. The 15-minute logic works best where high population density supports service provision. Yet roughly half of the global population lives outside cities, raising challenges and opportunities for adapting proximity to rural areas [14]. This raises fundamental questions about how proximity can be applied in low-density, dispersed contexts. These challenges underpin the 30-minute region approach and necessitate a closer examination of rural realities in the subsequent section.

2.2 Rural Realities and Their Relevance in Socio-Ecological Transitions

The 30mR builds on the idea of proximity but applies it to different contextual realities than urban-focused frameworks. Rural territories differ not just longer travel times but by distinct spatial, demographic, and socio-economic structures and are marked by low population density, scattered settlement patterns, and unique geomorphological features [15–17]. These conditions mean greater distances to services, jobs, and leisure, which can undermine liveability by eroding cultural values and weakening social ties [18–20]. Mobility patterns reflect these spatial realities: high car dependency and longer travel distances are common, as dispersed settlements make the continuous provision of public transport financially unviable [14, 16, 21]. Those without a car, especially low-income households and older adults, face disproportionate barriers, leading to social exclusion [22, 23]. In addition, economic factors strongly shape accessibility. Rural households often face higher mobility costs, as trips to essential services are longer and public transport options limited or expensive [17, 24]. Car ownership, while structurally necessary in many rural areas, imposes a substantial financial burden, particularly on low-income households and vulnerable groups. These costs, both monetary and time-related, interact with routines and household budgets: Recent studies emphasize that affordability is not just about price but about how transport costs interact with household budgets, routines, and available alternatives [17, 25]. Addressing affordability is therefore critical when adapting urban proximity concepts to rural contexts. Such findings illustrate that a one-size-fits-all proximity metric may not serve diverse geographies equitably. A central issue is demographic change: population decline, ageing, and youth out-migration leave fewer working-age residents to support growing elderly cohorts [16, 26]. Limited access to services such as healthcare or education further undermines participation and social cohesion [5]. Notably, these immanent structural challenges are exacerbated by ongoing sustainability transitions, which create new pressures and opportunities for rural regions. Rural regions are often frontline sites for renewable energy projects or bear the brunt of carbon-intensive industry decline, as seen in Ireland's peat phase-out [27]. These dynamics contribute to what Camarero & Oliva [16] call the "rural gap": Disparities in habitat structures, accessibility, and, affordability. Rural areas have fewer employment and service opportunities, face stronger work-family conflicts, and often experience a "desertification of services," as basic services concentrate in urban centres [16]. These dynamics highlight that the challenges of rural accessibility extend beyond spatial constraints and must be understood in terms of equity, justice and territorial cohesion. These issues are discussed in the following section.

2.3 Beyond Proximity: Justice, Transition, Accessibility and Territorial Cohesion

Contemporary debates in planning emphasize that justice, accessibility, cohesion, and equity must be embedded in order to make such concepts socially and politically robust. A 30mR should guarantee fair access to services and opportunities, address territorial inequalities and distribute the benefits of sustainability transitions in an equitable way. Four interrelated justice-oriented frameworks offer valuable guidance: spatial justice, just transition, accessibility planning and territorial cohesion. **Spatial justice** highlights

the fair distribution of resources, services and opportunities while ensuring that communities have a voice in shaping their futures [28, 29]. Though developed in urban contexts, this perspective is increasingly applied to rural regions, where it reveals internal disparities often masked by generalized narratives of rural crisis. Unequal access to schools, healthcare, broadband and other services correlate with social disadvantage and depopulation [30–32]. Addressing these disparities requires both distributive outcomes that ensure physical and digital access and procedural fairness through participatory planning [7, 33]. Closely connected is the notion of a **just transition**, which emerged from climate and labour debates and insists that sustainability transformations must be fair and inclusive [34]. It combines distributive and procedural justice by asking who wins or loses from structural change, how decisions are made and how historical inequities can be addressed. For a 30mR this means embedding equity and resilience planning from the outset so that peripheral or disadvantaged areas are not left behind. On a more operational level, **accessibility** planning complements justice frameworks by shifting attention from sheer mobility, how far or fast one can travel, to the question of whether people can realistically reach the services within a reasonable time and cost [3, 35]. This approach integrates transport and land-use planning, fosters local service hubs and leverages digital connectivity. **Territorial cohesion**, anchored in EU spatial policy, adds a governance perspective. It seeks balanced development and equal opportunities across regions and stresses coordinated multi-level governance with targeted investments in under-served areas [30]. In this way, the 30mR can serve as a concrete expression of territorial cohesion, translating normative principles into measurable accessibility outcomes.

3 The Conceptual Framework of the 30-Minute Region

The 30mR is a planning framework linking accessibility with social equity, service provision, and governance. Sustainable regional development places everyday essentials such as healthcare, education, food retail and leisure at the centre, ensuring that environmental goals do not come at the expense of well-being. Accessibility is understood as a social right and a prerequisite for participation and decent living standards, which demands attention to physical, economic and technological barriers. Also the 30-minute threshold is treated as a normative but adaptable orientation for regional development, flexible enough to account for diverse service structures and geographies. Translating this vision, the concept needs to be operationalised through analytical components. Each linking to indicators serving as the empirical backbone of the 30mR framework that capture the complexity of rural accessibility. To assess and apply the framework, five analytical dimensions are proposed (Fig. 1). **Spatial structure** captures the physical preconditions of accessibility shaped by settlement patterns, distances, and infrastructure distribution [16, 18, 30]. **Socio-economic conditions** reflect social and economic determinants of accessibility, inequality and participation capability, focusing on vulnerability and affordability [22, 24, 25, 36]. **Transit services** refer to public transport, which in rural areas is often temporally limited, characterized by infrequent schedules and a lack of adequate alternative mobility services such as sharing options or DRT [16, 21]. **Institutional capacity** encompasses multi-level governance, coordination, and participation mechanisms that shape the implementation of equitable accessibility strategies to

address regional disparities [15, 29, 30]. And lastly **digital infrastructure** addresses the enabling role of digital technologies in bridging physical gaps and enhancing mobility and service access [27, 29]. Each dimension reflects a distinct facet of accessibility and corresponds to the key themes outlined in the background section. Together, these establish a multidimensional perspective that moves beyond simple distance-based measures and helps identify concrete levers for improving rural mobility and service provision.

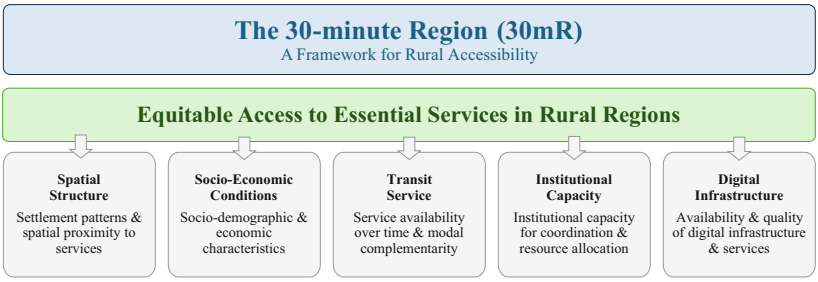


Fig. 1. Analytical framework of the 30-Minute Region (30mR) for rural accessibility

Each dimension encompasses multiple possible indicators that together capture the multifaceted nature of rural accessibility. Spatial indicators, for instance, reflect aspects such as distance or travel time to essential services and settlement density, while socio-economic indicators highlight vulnerabilities, affordability constraints, and levels of car dependence. Transit service indicators shed light on service frequency, temporal availability, and multimodal connectivity, and institutional capacity points to coordination capacity, planning resources, and participatory arrangements. Digital indicators further complement this picture by considering broadband coverage, access to digital services, and the potential for substituting or enhancing physical mobility. Altogether, these indicators illustrate how the 30mR framework can be translated into empirical analyses and applied in planning practice, remaining adaptable across different rural contexts and data availabilities.

As an initial application of the 30mR framework, we propose a stepwise analytical approach comprising four interrelated stages: spatial accessibility mapping (i), socio-economic contextualization (ii), derivation of tailored solution pathways (iii), and evaluation with institutional embedding (iv). Together, these steps could translate the normative concept of the 30mR into an evidence-based analytical structure. This approach draws on proposed dimensions in a cross-cutting manner without assigning them to single steps in a one-to-one fashion. Rather than being a linear procedure, the framework is conceived as an iterative process in which insights from later stages can inform and recalibrate earlier analytical steps. Initially, (i) spatial accessibility should be mapped by relating the distribution of essential services to transport networks and identifying populations inside and outside a 30-minute threshold. Secondly, (ii) identified accessibility gaps have to be filtered using socio-economic indicators to prioritize areas where limited access coincides with structural vulnerability. Thereafter, (iii) prioritized gaps are translated into tailored intervention pathways by linking spatial deficits and target groups to integrated mobility, service, and digital solutions. Finally, (iv) proposed measures

should be evaluated for feasibility and long-term viability with regard to institutional capacity, stakeholder perspectives, and governance conditions. Overall, the four-stage approach structures the development of context-sensitive intervention pathways based on the identification of accessibility deficits. By integrating the proposed interrelated steps, it provides a differentiated evidence base for comparing and prioritising measures.

4 Discussion and Conclusion

Overall, the 30mR not only adapts an urban concept to rural realities but also establishes a forward-looking, measurable framework that guides evidence-based planning, strengthens equity and resilience, and informs policy strategies for sustainable rural development. It adapts urban proximity concepts to rural realities, emphasizing just access to essential services and integrating mobility with public service provision and social participation and advances the current literature by combining insights from spatial proximity, rural realities and territorial cohesion. Key dimensions for implementation include mobility, public services, social participation, and governance, with particular attention to vulnerable groups. By combining spatial, socio-economic, institutional, transit, and digital indicators, the 30mR provides a multidimensional, evidence-based framework for identifying service gaps and designing tailored mobility solutions. Despite its potential, several challenges remain. Risks include reproducing existing inequalities if infrastructure and governance are not inclusive, and affordability constraints that may limit access for vulnerable populations. Digital innovations offer opportunities but may also exacerbate exclusion. Future research will explore these limitations in detail, presenting a systematic analysis. Furthermore, ongoing research is currently pursuing the application and iterative development of the framework. Thus, comparative studies across regions, pilot projects, and strategies for policy transfer are needed to validate and scale the concept. Policymakers are encouraged to prioritize improvements in rural accessibility, promoting alternatives to car use such as rural bus services, unconventional public transport initiatives, and targeted support, echoing Gray [22].

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