

Useful Transit: Bridging the Gap between the Vision and Reality of Transit-Oriented Communities

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Center Name: Center for Equitable Transit Oriented Communities (CETOC)

Research Priority: Preserving the Environment

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Project Partners: Denver Regional Transportation District (RTD)

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Project Start and End Date: 10/1/2024 – 9/30/2025

Project Description: Transit-oriented communities (TOCs) have long been championed as a sustainability solution, promising reductions in vehicle miles traveled, greenhouse gas emissions, car ownership rates, and household transportation costs. However, empirical evidence suggests that TOCs often fall short of such outcomes with many residents still owning cars and still driving to most destinations (Rodier et al., 2019). For example, TOCs tend to emerge along stops near new large-scale transit investments, particularly along new rail corridors (Cervero et al., 2017). These new rail corridors often focus on bringing travelers to and from downtown destinations – with high frequencies during peak hours – or to other major land uses such as airports (Walker, 2024). But with increased remote work and more of a reliance on gig economy jobs, such destinations may not be as essential as they used to be (Kahn, 2022). Moreover, travelers needing to access other destinations such as schools, healthy food options, or health care facilities – especially during off-peak hours – rarely receive an equitable level of transit service (Muley et al., 2007). This lack of a useful, more general transit service can force residents near these stops into car ownership or into regularly using ridesharing or other such services. While myriad factors play a role in this lack of success with respect to the above sustainability-related outcomes, the relative usefulness of the transit itself is often taken for granted and remains an under-researched issue. Using the Denver region as our initial case study, this project first seeks to understand why some transit-oriented communities may be meeting their sustainability goals while others do not. We will then assess transit usefulness in order to understand its contribution to the relative success or failure of the TOC while simultaneously considering differences related to age, gender, race, and income. To be more precise, we will gather data on transit ridership, mode shares, car ownership rates, household transportation costs, demographic information, land use patterns, employment distribution, access to essential

services, and other relevant variables. We will then: 1. Identify the factors contributing to the over- or under-performance of TOCs in achieving sustainability outcomes; 2. Evaluate the usefulness of transit in TOCs in facilitating access to a diverse range of destinations beyond downtown area for a diversity of users; 3. Create a new type of transit map that accounts for variables such as headways and the variety of destinations in order to focus on the usefulness of transit instead of raw transit coverage; and 4. Analyze the collected data to identify factors contributing to the performance of TOCs in achieving sustainability goals. We will use these results to propose strategies that will enhance the effectiveness of TOCs and our transportation investments in them. By collaborating with Denver's regional transit provider, we will also include a significant technology transfer component that may lead to changes in transit supply and our future ability to empirically test the strategies that our results suggested.

USDOT Priorities: **Equity:** By analyzing disparities in the usefulness of transit services in TOCs, focusing on how these transit investments serve – or fail to serve – diverse populations and needs, especially during off-peak hours, we aim to uncover inequities in transit service delivery that disproportionately affect populations such as lower-income residents. By collaborating with Denver's regional transit provider for technology transfer, the project proposes actionable strategies to make TOCs more inclusive and equitable. **Climate and Sustainability:** By providing transit agencies with the information needed to reconfigure transit systems to meet the diverse needs of our diverse populations, particularly beyond peak travel times, we should be able to enhance the effectiveness of TOCs. The results can then help us reduce reliance on personal vehicles and thereby decrease vehicle miles traveled, greenhouse gas emissions, and transportation costs.

Outputs: 1) At least two conference papers to be submitted to Transportation Research Board Annual Meeting; 2) At least one peer-reviewed journal publication; 3) Development of an online, public-facing map series focused less on transit coverage and more on transit usefulness.

Outcomes/Impacts: 1. Transportation system impacts: By creating a new type of transit map that accounts for variables such as headways and the variety of destinations, the project could improve the predictability and dependability of public transportation, making it a more viable option for daily living. A focus on the actual usage of transit systems and the factors contributing to the success or failure of TOCs could also lead to more durable, long-term transportation solutions that better meet the needs of communities. We might also see financial benefits such as reduced car ownership rates and lower household transportation costs. 2. Changes in practice and policy: The project's more comprehensive approach to evaluating the success of TOCs and the role of transit in these communities can provide an empirical basis for informing and shaping future transportation policies and investments. The results could help shift how cities and transportation authority's plan and implement transit services, focusing on a more comprehensive and holistic approach that considers the diverse needs of the population. The project's findings could also inform local, state, and national transportation policies by highlighting the importance of transit service diversity beyond peak hours and major destinations. Doing so could lead to more equitable transit systems. The project stands to significantly impact the transportation system by helping make it more useful, and in turn, more sustainable and more equitable.

Final Research Report: (Link to be provided after project completion).