Advancing Sustainable Urban Mobility: An Evaluation of Rio Verde Using the Integrated Planning Domain of the Sustainable Urban Mobility Index (IMUS)

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Abstract

Sustainable urban mobility is crucial for balancing development with environmental and social needs, particularly in rapidly growing cities such as Rio Verde, Brazil. This study employed the Sustainable Urban Mobility Index (IMUS), focusing on the Integrated Planning Domain, to assess the sustainability of Rio Verde's urban mobility. With an IMUS score of 0.601, the city demonstrated performance comparable to similar municipalities while identifying critical areas for improvement. The methodology involved a literature review, data collection, IMUS score calculation (a consolidated Brazilian methodology), and the development of a public perception survey. Data were gathered from municipal departments, satellite imagery, and public databases, addressing indicators related to manager training, transparency, land use, and infrastructure planning. Specific aspects evaluated included urban areas, public transportation, parks and green spaces, and the number of schools. The public survey further enriched these findings by capturing community perspectives on urban mobility issues, enabling comparisons between calculated scores and user perceptions. The findings revealed notable strengths in transparency and adherence to urban legislation, alongside high scores for mixed land use and urban vacancy management. However, deficiencies were identified in intermunicipal consortia, population density, and urban growth. Limitations in the professional training of urban planning personnel were also observed, indicating a need for enhanced capacity-building initiatives to strengthen the city's planning framework. Rio Verde's potential for improving sustainable urban mobility is significant, particularly through targeted investments in infrastructure and governance reforms. While the city has shown progress in areas such as mixed land use and legislative compliance, weaknesses in transportation infrastructure and urban planning highlight opportunities for development. This research contributes to the broader understanding of sustainable urban mobility by demonstrating the application of IMUS in medium-sized municipalities. It also provides actionable recommendations to address Rio Verde's specific challenges. Improving data availability, expanding public transportation networks, and fostering collaboration between municipal agencies are key strategies to align urban growth with sustainability goals. Additionally, addressing critical areas such as intermunicipal collaboration and population density management will strengthen Rio Verde's urban mobility framework.

Keywords

Sustainable Urban Mobility, Integrated Planning, Sustainable Urban Mobility Index (IMUS), Urban Sustainability Indicators.

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