Proceedings

Urban Activity and Children: Strategies to Promote Mobility

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Abstract: Inclusive urban design is essential to ensure the development of accessible cities with sustainable mobility and the integration of all age groups within public space. This research focuses on children and the environments surrounding public transport stops. At present, public transport settings lack planning and design approaches that address children's needs, despite their potential to function as nodes of social interaction and urban mobility.

Keywords: Sustainable Mobility; Inclusive Urban Design; Public Transport; Social Cohesion; Accessible Environments

1. Introduction

The present study offers a propositional reflection on the urban environments surrounding public transport stops—specifically the tram stops along Line 4 of the Valencia metro—and their capacity to encourage walking and cycling [1,2]. It is based on the hypothesis that urban activities related to children and families can act as drivers that stimulate mobility and the use of public transport [3].

Cities should move towards sustainable mobility models and, therefore, place greater emphasis on public transport environments, which are currently underused [4,5]. Encouraging children to use tram and bus services from an early age is part of an educational process aimed at ensuring that future generations adopt public transport as their primary mode of travel [6,7].

Using tram stops as reference nodes, a set of criteria affecting streets, facilities, and services is developed, shaping an environment with a strong presence of activities, where pedestrian streets, green spaces, and services prevail [8,9], thereby fostering interaction among users of the public realm and promoting the use of public transport.

1.1. *Identification of the knowledge gap to be addressed:*

Despite the growing interest in improving the design of these environments, the literature reveals a significant gap: there is no model that makes it possible to link the characteristics of these settings with the ways they are used by children and their caregivers.

1.2. *Objectives:*

Con la finalidad de responder a esta brecha, la investigación plantea dos objetivos principales:

- O1. To develop a child-centred evaluation framework for public transport stop environments through the synthesis of academic literature, public policy documents, and international design guidelines, incorporating exploratory participatory inputs from children to support and contextualize the resulting criteria.

- O2. To assess the applicability and diagnostic capacity of this framework through a mixed-methods evaluation of tram stop environments in Valencia, identifying spatial patterns, deficiencies, and priority areas for intervention that affect children's mobility and the everyday use of public transport.

2. Case study:

The urban environments surrounding public transport stops are analysed, specifically the metro stations along Line 4 in Valencia (Spain), a city selected for its urban diversity and the relevance of its public transport network. A set of criteria is proposed for application in the design of inclusive and functional urban spaces that promote public transport use from an early age. These stops are shown in Figure 1.
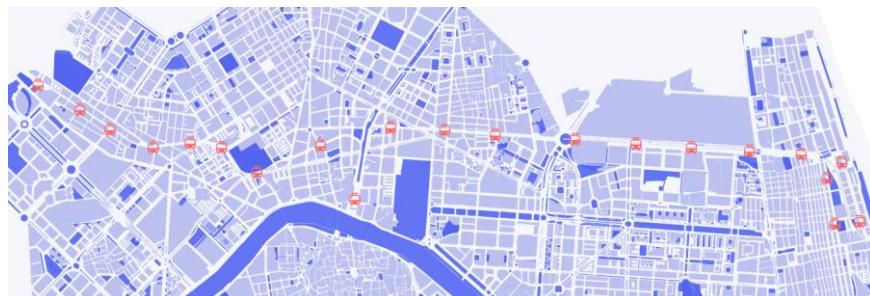
Figure 1. Valencia Metro Line 4 stop locations.

2. Sources and method:

From a methodological perspective, the study advances urban diagnosis through a mixed-methods approach, combining conventional methods—such as field observations, spatial analysis, and user surveys—with contemporary, user-generated digital data sources, including social media platforms. This integration enables a more comprehensive evaluation of urban environments by capturing both their physical configuration and their patterns of use and perception.

The methodological process was divided into four consecutive phases: (1) literature review, (2) development of a catalogue of criteria, (3) analysis of the study area, and (4) evaluation of stop environments. By linking a criteria-based evaluation framework with a multi-source diagnostic approach, the study addresses a key gap identified in the literature and provides practical and transferable insights for the design of more inclusive, child-friendly, and sustainable urban environments.

3. Results

The analysis of urban environments using cartographic data within a 15-minute walking radius reveals a marked territorial inequality in the distribution of infrastructure, green spaces, and services in relation to the child population.
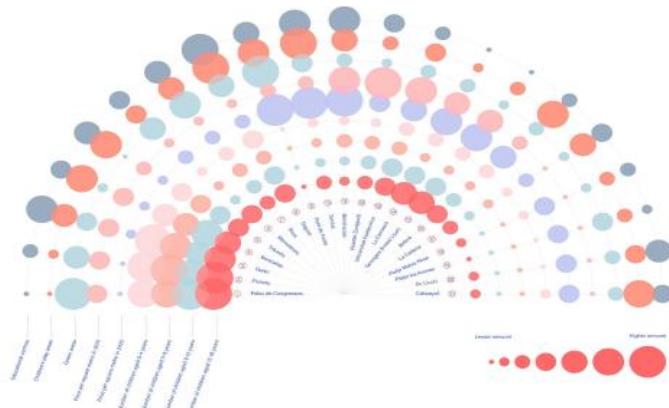
Figure 2. Results of the data analysis at the 21 tram stops – radial representation.

Stops located in central and coastal areas present higher land values and a lower presence of children, while peripheral areas concentrate a higher child population and, at the same time, show a significant lack of adequate urban facilities. This highlights unequal access to key infrastructures that support children's mobility and well-being.

Based on this overall analysis, four representative stops—Trànsits, Reus, Pont de Fusta, and Benimaclet—were selected for a detailed assessment of their immediate surroundings. The application of the developed criteria framework reveals a generally low level of compliance across all cases.
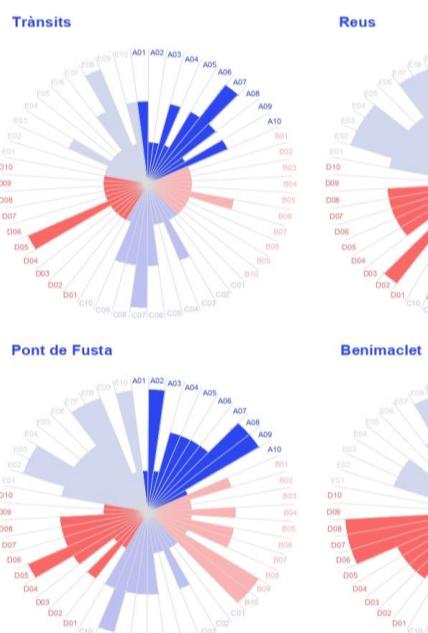
Figure 3. Results of criteria evaluation by stop.

None of the stops exceeds 50% of the maximum possible score, with Reus performing best and Trànsits showing the lowest level of compliance. Criteria related to sustainability and green spaces achieve the highest scores, while those linked to urban design, planning, and child-oriented visual communication are the least developed, confirming that the design of current stop environments does not incorporate strategies that promote the integration of the child population into urban space.

4. Conclusion

Through the literature review and field study, it is demonstrated that public transport stop environments should implement urban design strategies that promote the integration of children, increasing their mobility and autonomy.

This work presents a catalogue of criteria that brings together strategies and ideas drawn from different authors and projects on the design of child-centred stop environments, accompanied by a replicable evaluation method. The catalogue provides a tool to guide urban policies and plans that respond to children's needs and enhance the urban quality and attractiveness of spaces surrounding public transport stops. The evaluation method developed can be replicated in different cities, offering a basis for identifying shortcomings in the design of urban spaces. Its application to stops in Valencia reveals a clear inequality in access to infrastructure in the most peripheral neighbourhoods, where a higher concentration of children is found. It also shows that, in their current state, stop environments and urban development plans do not incorporate strategies that support the integration of children into the city.

This study advances knowledge on how child-friendly design of tram stop environments can contribute not only to the physical and social well-being of children, but also to urban environmental sustainability. Although not conclusively demonstrated, it suggests that transforming tram stops into nodes of urban activity encourages their use by children and caregivers, while promoting public transport use and the development of a habit of using it as a primary mode of travel from an early age. This helps reduce private vehicle use and mitigate environmental impacts and climate pressure in city centres.

Designing accessible, safe, and attractive stop environments for children is therefore a strategy that reinforces sustainable mobility, strengthens social cohesion, improves the urban environment, and promotes the use of public transport.

Conflicts of Interest: Declare conflicts of interest or state "The authors declare no conflict of interest."

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