

GENDER WISE WALKING PREFERENCE OF CHILDREN TO SCHOOL: A STUDY OF PUNE CITY

Ar. Amruta Kakirde

Research Scholar, School of Doctoral Studies, Ajeenkya D.Y. Patil University, Pune
amruta.kakirde@adypu.edu.in

Prof. Dr. Gouri Desai

Professor & Head, Centre for Learning & Teaching, Ajeenkya D Y Patil University, Pune
Gouri.desai@adypu.edu.in

Abstract

Trips taken for walking to school differ from those taken for job or recreation in several ways. There have been a lot of research on school travel in western European and North American countries. Except for a few studies conducted in China. These have not been looked into in developing countries, such as Iran, even if there are a lot of kids. Daily commuting to school is common in India, but little is known about their travels. This study offers a thorough examination of the differences between genders in school children's walking preferences in Pune City of India. Mixed method approach is used to collect the data. After completing literature review, parameters for the study are finalised and one zone in Pune city is selected. Five PMC Schools from same campus are shortlisted for the purpose of conducting primary surveys. Primary surveys of school children in west zone of Pune city were conducted in order to understand their walking preference. Statistical analysis of the data was carried out. Finally, this paper reveals the gender wise walking preference of children to school.

Introduction

The preferences and behaviours of school children are of significant concern when it comes to walking within urban environments in today's rapidly urbanizing Indian cities. As the nation experiences unprecedented urban growth and development, the need to create safe and accessible pedestrian infrastructure has become paramount. This infrastructure not only promotes physical activity and independence among school children but also plays a crucial role in ensuring their safety and overall well-being. Understanding the gender differences in walking preferences of school children and how these preferences align with the available pedestrian infrastructure is essential for crafting sustainable and child-friendly urban environments.

Background

In the context of India, where urbanization has been accompanied by increasing traffic congestion, air pollution, and concerns about road safety, the manner in which children commute to and from school has profound implications. School children, who are among the most vulnerable road users, often rely on walking as their primary mode of transportation. Therefore, their preferences regarding pedestrian infrastructure are pivotal in shaping not only their daily experiences but also the urban landscape itself.

This study investigates into the walking preferences of school children in Pune city by examining how the existing pedestrian infrastructure influences their walking choices and experiences. By shedding light on these preferences, researchers aim to provide valuable insights for urban planners, policymakers, and stakeholders, enabling them to design cities that prioritize the safety, health, and well-being of our future. In doing so, we hope to contribute to the creation of more child-centric urban environments that promote active and safe mobility for school children across Pune city.

Methodology

This research encompasses a comprehensive review of existing literature, recent studies, and empirical data collected through surveys and observations. This research employs a mixed-methods approach, combining surveys and interviews to gather both quantitative and qualitative data from a diverse sample of school children, parents, and school authorities. Using a five-point Likert scale, a survey of PMC school children in Pashan area of Pune city between age of 11 to 15 years was conducted. Interaction with School Principals and Teachers helped in understanding different areas from where children are coming to school. The study explores the various aspects of walking preferences among school children, including their age, gender, mode of travel, factors influencing their choice of walking over other modes of transportation, pedestrian infrastructure, safety concerns, difficulties faced while walking to school.

Study Area Details

The study area is located in west zone of Pune City. Area is highlighted in Figure 1. Five PMC schools located in same campus were selected from Baner Pashan Link Road. Figure 2 represents catchment area around selected schools. After interaction with School Principals and teachers, areas from where children are walking to school has been noted. Catchment area around selected PMC school is defined by taking radius around school from where children are walking to school. This area is west part of Pune city including Pashan, Sus road, Baner and Baner Pashan Link road area.

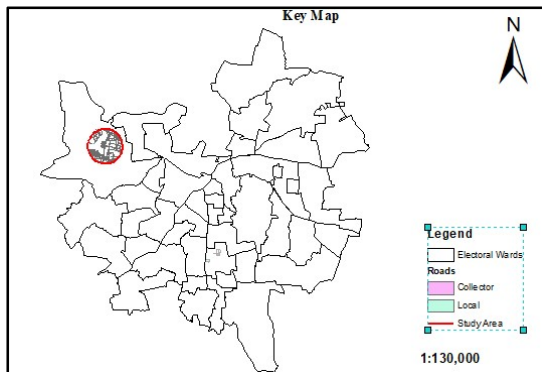


Figure 1- Key Map Pune Municipal Corporation

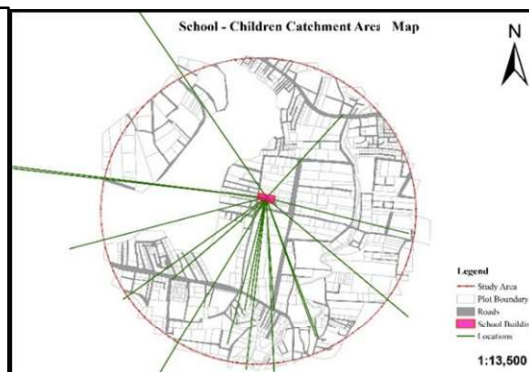


Figure 2- Catchment Area around school

Figure 3 shows landuse map of study area which was prepared on the basis of primary survey.

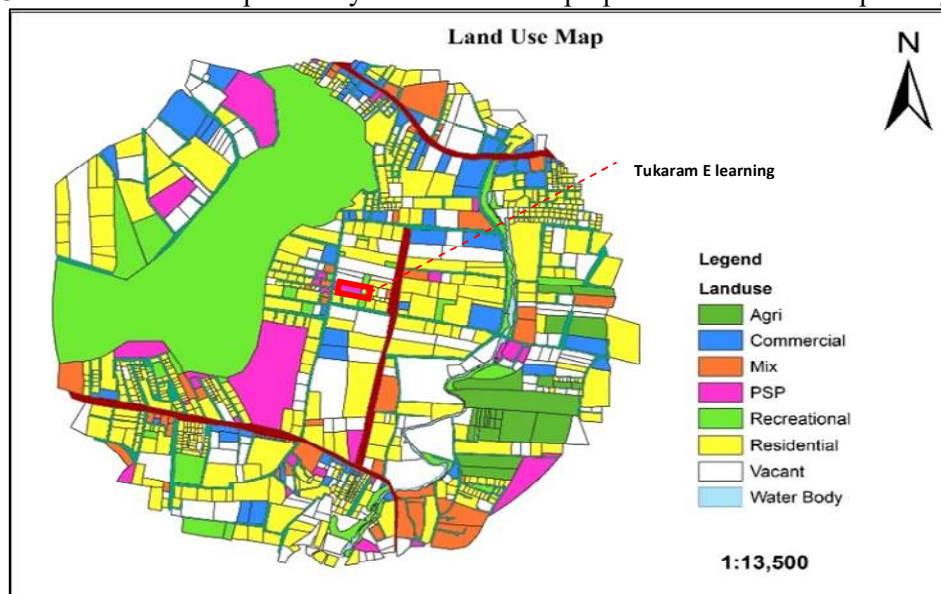


Figure 3- Landuse Map of Study area

Figure 4 shows Landuse classification of study area prepared on the basis of landuse map. This is predominantly residential area followed by green area as Pashan Tekadi is part of this area. Some Institutes, schools, preschools area available and mixed landuse development is observed. Construction work is also going on in the area on some vacant lands

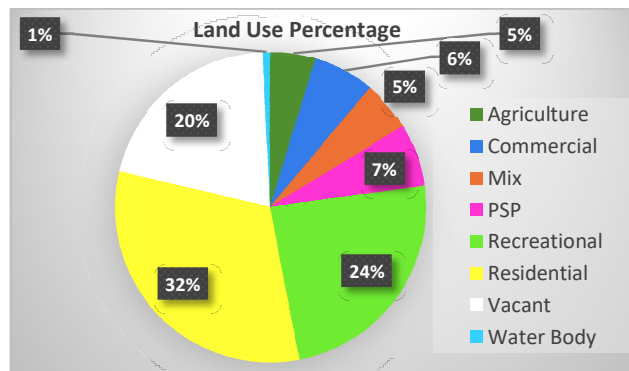


Figure 4-Landuse Classification of study area

Following photographs shows school children walking to school with available pedestrian infrastructure.



Figure 5- Photos from study area

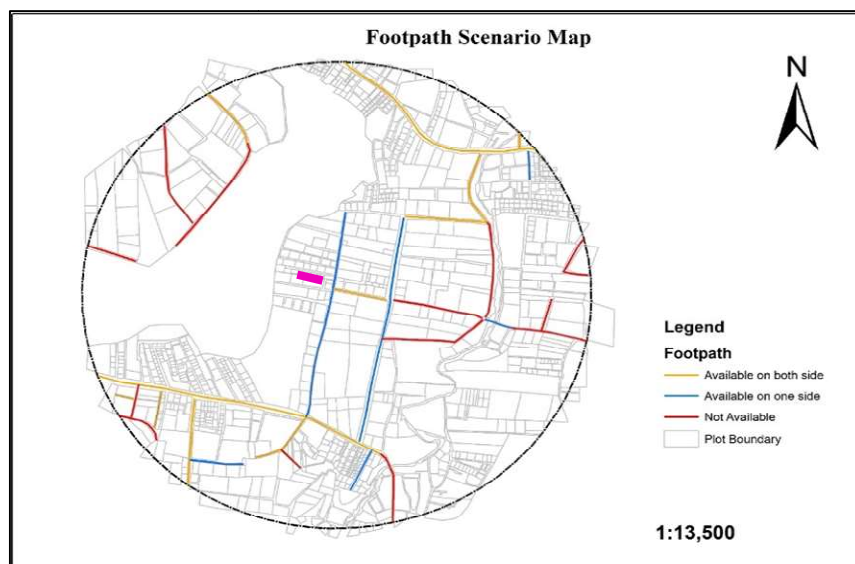


Figure 6- Footpath Network Map of study area

Footpath network plan of catchment areas prepared by conducting primary survey in study area as shown in Figure 6. Classification of the same is shown in Figure 7. It shows study area was having 81% Footpath either on one or both the sides. 19% of area is not having Footpath. Absence of Footpath makes it difficult to walk, cross the road through heavy traffic.

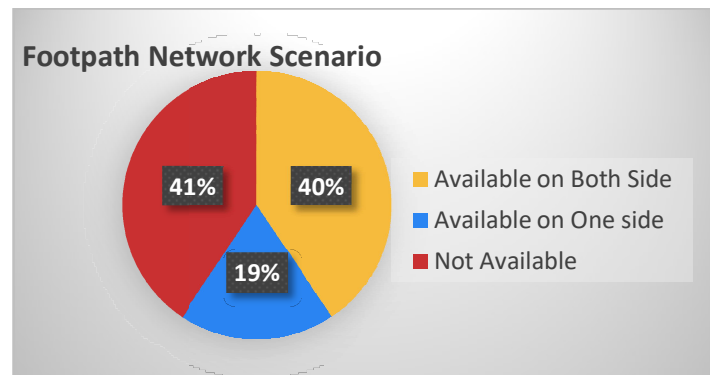


Figure 7- Footpath availability in study area

Data Analysis

The data collected from primary surveys of school children about difficulties faced while walking to school includes uneven footpath, absence of ramps, absence of shaded areas along footpath, garbage along footpath, parking on footpath, electric boxes on footpath, encroachment by hawkers, polluted air due to automobiles, lack of safety for girls, stray dogs. Following are photos from study area are depicting condition of footpath near selected schools on Baner Pashan Link Road , Pune.



Figure 8- Construction Material dumped on footpath

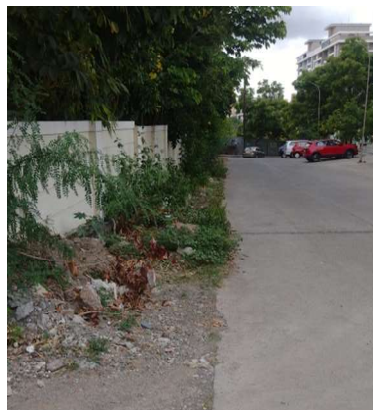


Figure 3- Absence of Footpath



Figure 10- Electric box obstructing walking space on Footpath



Figure 11- Parking of Buson Footpath obstructing Walking



Figure 12- Obstruction while walking due to pieces of broken tree



Figure 13- broken Footpath

Mann-Whitney test was used to find the difference between perception of girls and boys on difficulties faced while walking to school. Table 1 describes statistical analysis from the said test. According to Mann Whitney test analysis, there is no significant difference ($p > .05$) between girls and boys in the difficulties faced while walking to school except for road width where there is a significant difference ($p < .05$). It is highlighted in table 1.

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Road crossing is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.178	Retain the null hypothesis.
2	The distribution of Road width is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.039	Reject the null hypothesis.
3	The distribution of Lack of Pedestrian Crossing Signals is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.785	Retain the null hypothesis.
4	The distribution of Zebra Crossing is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.579	Retain the null hypothesis.
5	The distribution of Cars Block View is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.184	Retain the null hypothesis.
6	The distribution of Trees and objects block view is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.300	Retain the null hypothesis.
7	The distribution of Need ramps is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.590	Retain the null hypothesis.
8	The distribution of Ramps need repair is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.778	Retain the null hypothesis.
9	The distribution of lack of foot over bridge is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.509	Retain the null hypothesis.
10	The distribution of Total is the same across categories of Gender.	Independent-Samples Mann-Whitney U Test	.425	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 1-Statistical Analysis Table by SPSS

Table 2 ahead is showing results of pedestrian audit survey. The details of footpath and road, pedestrian infrastructure in front of the school was collected via primary Survey.

Sr. No.	Parameter	PMC Schools, Pashan
1	Road Width	7 meters
2	Road Characteristics	Two way Undivided
3	Availability of Footpath	One side
4	Footpath width	1.0 meters
5	Footpath Height	15 cm
6	Broken Footpath	At some point
7	Benches	Not Available
8	Street Light	Available on both sides of road

9	Signages	Available at some point
10	Zebra Crossing	Available at some point
11	Presence of Dustbin within 500 meters	Not Available
12	Shading/ Tree canopy	Yes
13	Bus Stop Availability within 500 meters	No
14	Cycle Track	Not Available
15	Parallel Parking	Not Available
16	Street Vending	Low

Table 2-Pedestrian Infrastructure Analysis of Baner Pashan Link road

Conclusion

This Research reveals that there is disparity in perception about road width in front of school by boys and girls. Perception about road crossing, lack of pedestrian crossing signals, availability of zebra crossings, obstructions while walking, lack of footover bridges is found to be similar. In summary, understanding the gender differences in walking preferences among school children is a crucial step toward creating transportation systems and policies that are both equitable and environmentally sustainable. By addressing these disparities and promoting safe and active transportation options for all, we can contribute to the well-being of children and the broader community.

Further research is needed to explore the underlying reasons for these gender differences and to develop targeted interventions that encourage all children, regardless of gender, to engage in active transportation. Longitudinal studies could provide valuable insights into how these preferences evolve over time.

References

1. Cerro-Herrero, D., Prieto-Prieto, J., Vaquero-Solis, M., Tapia-Serrano, M. Á., & Sánchez-Miguel, P. A. (2022). Analysis of Variables That Influence the Walkability of School Environments Based on the Delphi Method. *International Journal of Environmental Research and Public Health*, 19(21).
2. Gallimore, J. M., Brown, B. B., & Werner, C. M. (2011). Walking routes to school in new urban and suburban neighborhoods: An environmental walkability analysis of blocks and routes. *Journal of Environmental Psychology*, 31(2), 184–191. <https://doi.org/10.1016/j.jenvp.2011.01.001>
3. Giles-Corti, B., Wood, G., Pikora, T., Learnihan, V., Bultsara, M., van Niel, K., Timperio, A., McCormack, G., & Villanueva, K. (2011). School site and the potential to walk to school: The impact of street connectivity and traffic exposure in school neighborhoods. *Health and Place*, 17(2), 545–550.
4. Kim, H. J., & Heinrich, K. M. (2016). Built Environment Factors Influencing Walking to School Behaviors: A Comparison between a Small and Large US City. *Frontiers in Public Health*, 4.
5. Lu, W., McKyer, E. L. J., Lee, C., Goodson, P., Ory, M. G., & Wang, S. (2014). Perceived barriers to children's active commuting to school: A systematic review of empirical, methodological and theoretical evidence. *International Journal of Behavioral Nutrition and Physical Activity*, 11(1), 1–20. <https://doi.org/10.1186/s12966-014-0140-x>
6. Macdonald, L., McCrorie, P., Nicholls, N., & Ellaway, A. (2016). Walkability around primary schools and area deprivation across Scotland. *BMC Public Health*, 16(1), 1–8.
7. Macdonald, L., McCrorie, P., Nicholls, N., & Olsen, J. R. (2019). Active commute to school: does distance from school or walkability of the home neighbourhood matter? A national cross-sectional study of children aged 10-11 years, Scotland, UK. *BMJ Open*, 9(12), 1–10.
8. Rodriguez, N. M., Arce, A., Kawaguchi, A., Hua, J., Broderick, B., Winter, S. J., & King, A. C. (2019). Enhancing safe routes to school programs through community-engaged citizen science: Two pilot investigations in lower density areas of Santa Clara County, California, USA. *BMC Public Health*, 19(1), 1–12.

9. Rothman, L., To, T., Buliung, R., Macarthur, C., & Howard, A. (2014). Influence of social and built environment features on children walking to school: An observational study. *Preventive Medicine, 60*, 10–15.
10. Tetali, S., Edwards, P., & Roberts, G. V. S. M. I. (2016). How do children travel to school in urban India? A cross-sectional study of 5,842 children in Hyderabad. *BMC Public Health, 16*(1), 1–7.
11. Vanwollegem, G., D'Haese, S., Dyck, D. van, Bourdeaudhuij, I. de, & Cardon, G. (2014). Feasibility and effectiveness of drop-off spots to promote walking to school. *International Journal of Behavioral Nutrition and Physical Activity, 11*(1), 1–11. <https://doi.org/10.1186/s12966-014-0136-6>
12. Zhao, J., Su, W., Luo, J., & Zuo, J. (2022). Evaluation and optimization of walkability of children's school travel road for accessibility and safety improvement. *International Journal of Environmental Research and Public Health, 19*(1).