PHYSICAL STREET ATTRIBUTES AND WALKABILITY: A STREET-LEVEL ANALYSIS OF JAFFNA CITY CENTRE

Ms.Tharisini Uthayakumar

(219547H)

Degree of

Masters of Spatial Planning Management and Design

Department of Town and Country Planning

Faculty of Architecture.

University of Moratuwa

Sri Lanka

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DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

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The above candidate has carried out research for the Master's thesis under my supervision. I confirm that the declaration made above by the student is true and correct.

Name of Supervisor: Prof. P.K.S Mahanama

Signature of the Supervisor: Date:

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Abstract

Walkability is a vital component of sustainable urban development, yet pedestrian environments in many South Asian cities are declining due to rapid urbanisation and motorisation. Jaffna City Centre presents a unique context where walking is deeply embedded in daily life through cultural practices, religious activities, and compact urban form. This study examines how physical street attributes influence walkability in this culturally sensitive urban area.

A mixed-methods approach was adopted, focusing on three arterial roads—Hospital Road, Stanley Road, and Kasthooriyar Road. Data were collected through questionnaire surveys (n = 100), field observations, pedestrian behaviour studies, interviews, and spatial analysis using QGIS and Space Syntax. Physical street attributes such as sidewalk continuity, pedestrian crossings, traffic volume, on-street parking, and street greenery were assessed using urban design qualities—safety, comfort, accessibility, connectivity, and attractiveness—as indicators of walkability.The findings reveal substantial deficiencies in pedestrian infrastructure. Continuous sidewalks are absent in 89% of street segments, and 72% of pedestrian crossings lack adequate signage or signalisation. Vehicular encroachment occupies approximately 43% of pedestrian space during peak hours, while limited shading intensifies thermal discomfort under Jaffna's hot climatic conditions. These shortcomings significantly reduce pedestrian safety and comfort despite the city's strong cultural reliance on walking.

The study highlights the importance of culturally sensitive, pedestrian-oriented street design and contributes context-specific evidence to walkability research in under-studied South Asian cities.

Keywords: Walkability, Cultural Sensitivity, Physical Street Attributes, Urban Design, Jaffna City Centre

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LIST OF ABBREVIATIONS

AASHTO: American Association of State Highway and Transportation Officials

GIS: Geographic Information System

QGIS: Quantum Geographic Information System

SPSS: Statistical Package for the Social Sciences

UN-Habitat: United Nations Human Settlements Programme

WHO: World Health Organization

MC: Municipal Council

USD: United States Dollar

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