

# OUTDOOR OPEN SPACES AS A CATALYST FOR A SENSE OF COMMUNITY: REFERRING TO URBAN MIDDLE-INCOME MASS HOUSING IN COLOMBO, SRI LANKA

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## Abstract

*Researchers have discovered the "Sense Of Community" (SOC) possesses certain curative qualities that can be applied to alleviate a variety of contemporary societal issues. Simultaneously during recent years, residential real estate developers around the world have seized upon the mystical qualities of "community" with a passion that has baffled them. Given the intangible nature of communities, it is questionable whether the urban mass housing projects are capable of successfully utilizing Outdoor Open Spaces (OOS) as a catalyst for SOC.*

*However, the role of socio-spatial characteristics of OOS in such projects, especially in the middle-income category, has not been emphasized in the current literature on SOC. Against this backdrop, this study explores and evaluates the connection between SOC and the physical features of OOS in Urban Middle-income Mass Housing (UMMH).*

*This study delves into the subject via three case studies set in the city of Colombo, Sri Lanka; through a mixed research methodology. The evaluation is based on a four-factor theoretical framework on socio-spatial dimensions of SOC adapted from the work of Kim & Kaplan (2004). Each case study was further examined through four interactive categories of OOS.*

*The utilisation of OOS was analysed by referring to place theory, place attachment, place identity and sense of place. The outcomes depict how people's shared idealisation of the term "community" gives the concept of "sense of community" a concrete form by utilising the available OOS by creating meaningful functions and identities. These outcomes enable professionals to make community-centric decisions and designs that benefit the communities they serve.*

**Keywords:** Outdoor open spaces, sense of community, middle-income mass housing, urban neighbourhoods

## List of abbreviations

MHS	- Maligawatte Housing Scheme
BF	- Bambalapitiya Flats
OOS	- Outdoor Open Spaces
RO	- Research Objective
RQ	- Research Question
SCI	- Sense Of Community Index
SOC	- Sense Of Community
UMMH	- Urban Middle-income Mass Housing

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## Introduction

While there is an increasing awareness of the significance of OOS to the social well-being of the urban population referring to gardens, green spaces, parks etc., there is little research on the role of OOS inside urban mass housing establishments, particularly in the middle-income category and their ability to fostering a SOC. This study explores this topic using three case studies based in the city of Colombo, Sri Lanka.

- The scope of the research is limited to the middle-income social strata of Colombo city.
- This investigation relies upon a limited amount of research work in the Sri Lankan context in the selected social category and the built environment.
- The influence of individual factors affect to the SOC on the overall study design was not considered (The sample for data collection was a random one, hence it is assumed that the outcomes represent the thinking pattern whole community in general.)
- Data collection and observations are restricted to the daytime.

## Research Questions

RQ 1: Do OOS have a catalytic effect in creating SOC in Urban Middle-income Mass Housing (UMMH)?

RQ 2: What are the general qualities of OOS that elevate SOC in UMMH?

RQ 3: What type of OOS has the highest effect on SOC?

## Research Objectives

RO 1: To determine the relevance of OOS in UMMH towards a SOC.

RO 2: To evaluate socio-spatial dimensions of OOS in UMMH.

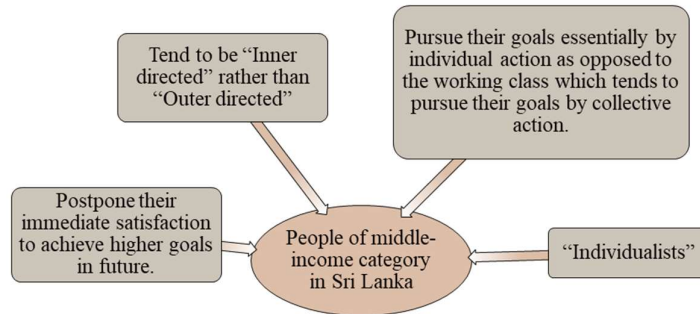
RO 3: To identify the features of SOC conducive OOS in UMMH.

## **Urban middle-income mass housing in Sri Lanka**

Mass housing is a series of repetitive housing units constructed in a variety of configurations, such as housing units, low-rise residences, multi-story walk-ups, and high-rise blocks (Mohanani, 2017). It is a quantitative rather than qualitative solution to housing, there is a compatibility issue among individuals and the sociological impacts of outdoor design are not adequately addressed in Sri Lankan context.

The 1970's were the heyday of mass housing in and around Colombo. Sri Lankan UMMH falls into two categories. The traditional housing developed by the government aimed the government workers and the more recent phenomenon, commercially developed UMMH by the private sector real estate developers. Back then in the 1950's the only UMMH initiation was the first category that this study based on.

The majority of Sri Lanka's population corresponds to the middle-income category which can be identified with its distinctive traits as in Fig 1.



**Figure 1:** Distinctive Traits of the Middle-Income Category of Sri Lanka

Source: Adapted from Jayawardhana, K. V. G. K. S. (2007). Facilitating spaces for social interaction through architecture: an examination with special reference to middle-income housing schemes in Colombo and suburbs (Doctoral dissertation).

### Outdoor open spaces in mass housing

The importance of quality OOS to healthy functionality of a community was not given sufficient attention in earlier mass housing developments in Sri Lanka. Although later designs placed a premium on public open areas, they were underutilised by residents. There are instances in which spaces are utilised contradictory to the original intent of the designers (H. Wickramaratne, personal communication, August 14, 2022).

Mass housing developers must reserve 10% of the property for OOS. In many cases, these areas shrink with time due to illegal encroachments and constructions by residents. From the perspective of the user, open spaces can be defined as a location that allows for a variety of activities, including necessary, optional, and social activities (Gehl, 1987). Gehl (1987) further states that life between buildings consists of more than pedestrian traffic, leisure activities, and social interactions. Life between buildings encompasses the complete spectrum of activities that contribute to the significance and attractiveness of urban and residential public spaces

### The functionality of outdoor open spaces

**Physical function** - Mahmoudi Farahani (2016) claims that OOS has historically been an integral component of a community. In contemporary societies, it remains an important factor in formation of local communities.

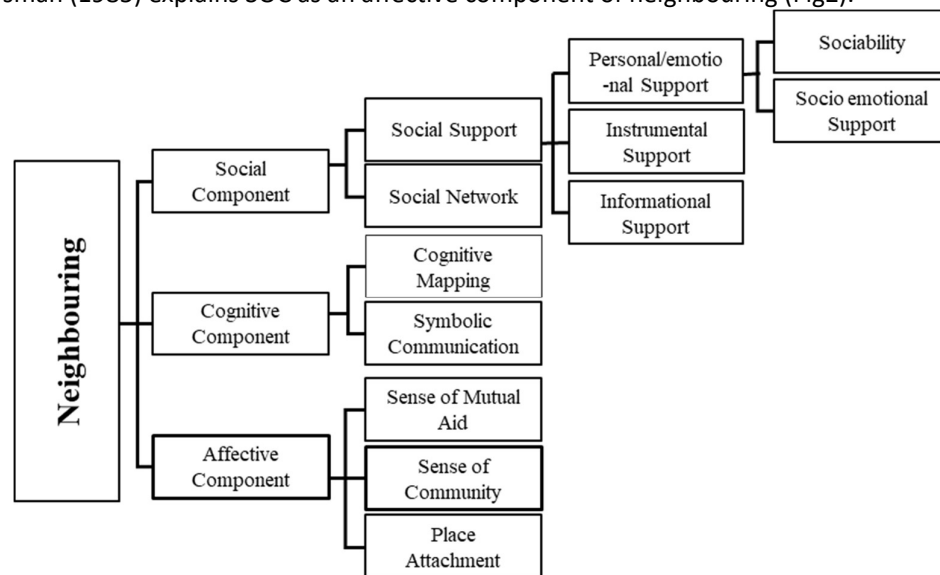
**Psychological function** - "Meeting of people is also a basic need since man has been defined as a social animal" (Rapoport, 1969, p.68). OOS has a great impact on psychological well-being at the individual level and community levels. Gehl (1987) indicated walking around the neighbourhood brings residents closer to the community, providing chances for improved social involvement, enhanced identity and strengthened connections.

**Social function** - When constructed and maintained appropriately, open spaces bring communities together, provide gathering places, and develop social bonds, which have been decreasing in many neighbourhoods and cities. These venues form the cultural identity of an area, contribute to its unique characteristic, and provide residents with a sense of place. The residents take pride in the area in which they reside (Woolley, 2003).

## Defining the neighbourhood

“Neighbourhood” can define in two concepts; the first one being the physical concept indicating the place in which people live – district; and the second one is the social concept characterising the people who inhabit there – community (Briggs, 1997, p.208; Galster, 2001). Therefore, the physical and social environment inside a mass housing project is the residents' local neighbourhood. Cochran & Minaker (2020) states that planners can protect and enhance a neighbourhood's SOC by employing both social policies and physical design tactics. It is identified that neighbourhood environments and social networks are becoming obsolete because technology and extensive mobility.

The vicinity of neighbours gives an extraordinary opportunity for social interaction and assistance (Ife, 1995). Neighbours can be a source of stress due to noise, invasion of privacy and competition for resources, so it is important to develop surroundings that promote neighbourly aid and safeguard against stressful situations (Unger & Wandersman 1985; Halpern 1995). Unger & Wandersman (1985) explains SOC as an affective component of neighbouring (Fig2).

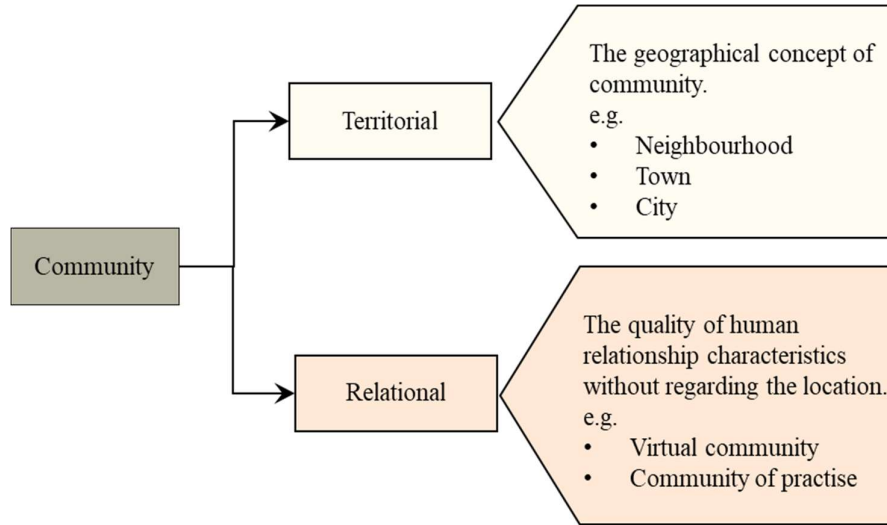


**Figure 2:** Components of SOC

Source: From Unger, D. G., & Wandersman, A. (1985). The importance of neighbours: The social, cognitive, and affective components of neighbouring. *American journal of community psychology*, 13(2), 139-169.

## Community and the sense of community concept

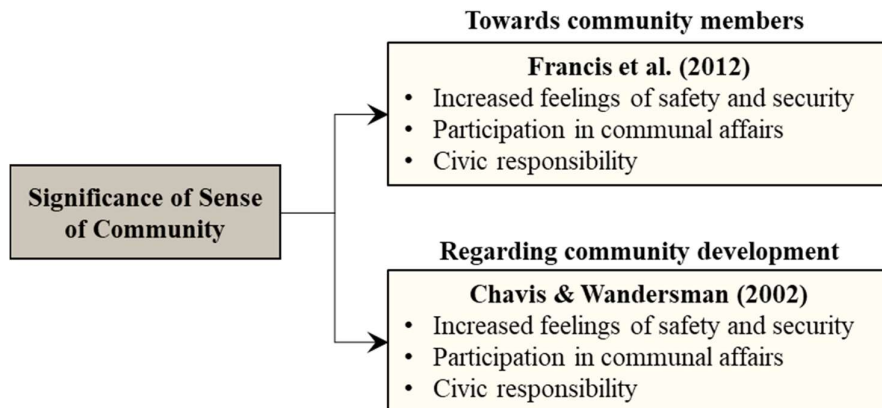
Crow & Allan (2004) define the term “community” as an umbrella term to cover one's close social relationships outside the family. People feel that "community" is either an ideal concept or a reality, or occasionally both at the same time (Cohen, 2013). This conceptual issue in scholarly discussions stems from the duality of the term "community," as defined in Fig 3. This indicates that people can create communities in their neighbourhoods, but can also belong to other communities consisting of religious and common interests-based groups. Community has curative qualities that can be used to address societal issues, such as enhanced emotions of safety and security, participation in communal affairs and civic responsibility (Bryson & Mowbray, 2005, Francis et al. 2012).



**Figure 3:** Duality of the Term "Community

Source: Adapted from Gusfield, J. R. (1975). Community: A critical response. New York: Harper & Row.

Kim & Kaplan (2004) describes the SOC as an asset of new urbanism; which is a fundamental concept in community psychology that describes a "sense that one was part of a readily available, mutually supportive network of relationships upon which one could depend and as a result of which one did not experience sustained feelings of loneliness" (Sarason, 1974, p.1) At present, it is frequently expressed as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan & Chavis, 1986, p. 9). Hummon (1992) states that despite local circumstances, individuals will seek to foster a SOC.

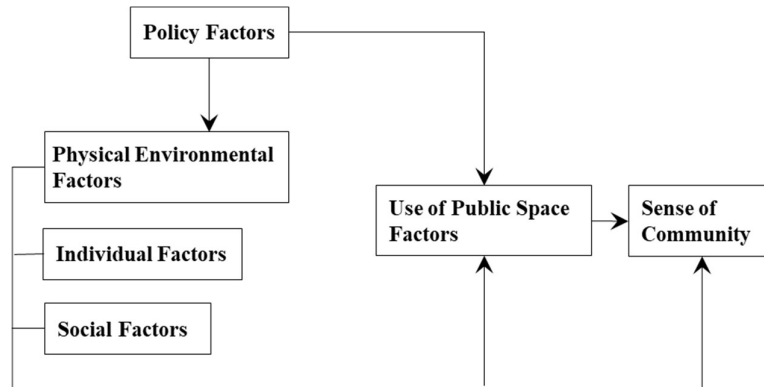


**Figure 4:** Significance of SOC

Source: Author

### Sense of community as a spatial construct

The relationship between SOC and spatial attributes is not much addressed in prevailing literature. However, it is possible to classify OOS in UMMH as urban public spaces based on fundamental similarities of their use. Francis et. al. (2012) developed a conceptual model depicting the relationship between public open spaces and SOC as in Fig 5 which provides insights into further studies on the relation of UMMH, SOC and OOS.



**Figure 5:** Conceptual Model of the Relationship Between Public Space and SOC

Source: From Francis, J., Giles-Corti, B., Wood, L., & Knuiaman, M. (2012). Creating a sense of community: The role of public space. *Journal of Environmental Psychology*, 32(4), 401–409.  
<https://doi.org/10.1016/j.jenvp.2012.07.002>

### Socio-spatial domains of sense of community

SCI-II is the most commonly used approach for evaluating SOC within neighbourhoods (Pooley et al., 2005). But its indicators do not address physical attributes. Kim & Kaplan (2004) developed a theoretical framework to combine physical and psychological indicators that comprised four areas highlighted in the literature.

### Theoretical background

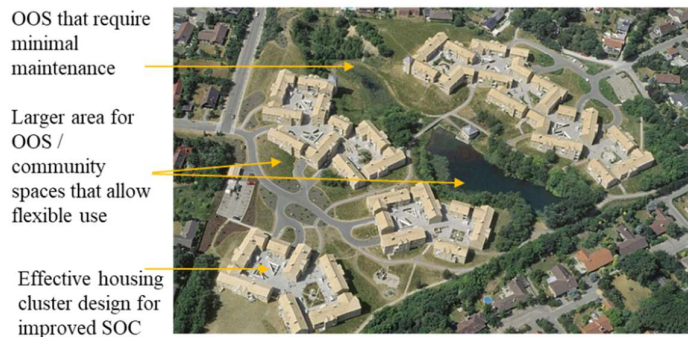
- I. **Place Theory** - Gehl (1987) discussed place theory referring to historical, cultural, and natural contexts with human needs stating that a place is a space with a particular personality that is generated by a synthesis of environmental elements, including society. Scholarly work on place theory enhances the physical environment by including forms and qualities that are intrinsic to its context.
- II. **Place Attachment**  
Kamalipour et al. (2012) identified open spaces as a positive predictor of neighbourhood-level place attachment. It develops behavioural, affective, and cognitive links between an individual or group and their socio-physical environment. These relationships frame individual and societal identity and are both constant and adaptive (Mohammed, 2018).
- III. **Place identity** - In environmental psychology, place identity is defined as “a substructure of the self-identity of the person consisting of, broadly conceived, cognition about the physical world in which the individual lives” (Proshansky & Fabian, 1983, p. 59). Feldman (1990) used the term "settlement identity" (which can also be interpreted as “community identity”) to emphasise the notion that everyone has an identity tied to a certain form of settlement.
- IV. **Sense of place** - Sense of place is viewed as a broad notion characterising the relationships between individuals and their physical environments (Jorgensen & Stedman, 2001). It is frequently used as an umbrella term for place attachment, place identity, and place dependence (Duany & Platerzyberk, 1992). Urban theorists have defined a sense of place as “the extent to which a person can recognise or recall a place as being distinct from other places” (Lynch 1981, p.131).

## Fostering a sense of community in mass housing – global approaches

The global approaches discussed here may not be identical to Sri Lankan context-specific initiatives, but they can be used to design humancentric, socially and environmentally sustainable urban communities, allowing for the unrestricted formation of diverse activities and engagements to foster SOC.

### Sandbakken, Denmark

Sandbakken (Fig 6) is a mass housing complex located south of Aarhus, Denmark atop the undulating site of a former brickworks, which is bisected by two different, deep valleys.



**Figure 6:** Specific Spatial Characteristics of Sandbakken Layout

Source: Adapted from Sandbakken - Projects - C.F. Møller. (n.d.). Retrieved November 2, 2022, from <https://www.cfmoller.com/p/Sandbakken-i40.html>

### Tinggården, Denmark

Tinggården is a paradigm for low-rise, high-density residential architecture. It is a successful non-profit housing experiment that uses architecture to restore residents' democracy and SOC (Tinggården - Communal Building, n.d.-b).

The open floor concept and facade compositions (Fig 7) encourages residents to participate actively in the neighbourhood, allowing them to improve a SOC. Sturdy, minimalist homes have flexible walls that allow for further alteration, limiting illegal encroachments. (Fig 8)



**Figure 7:** Tinggårdens Purposefully Designed OOS that Promotes Social Life and a SOC

Source: Tinggårdens - Communal building. (n.d.). Retrieved August 28, 2022, from <https://vandkunsten.com/en/projects/tinggaarden>



**Figure 8:** Altered Houses in Tinggårdens to Expand the Space with Zero Illegal Encroachments

Source: Tinggårdens - Communal building. (n.d.). Retrieved August 28, 2022, from <https://vandkunsten.com/en/projects/tinggaarde>

## Theoretical framework

The relationship between OOS in UMMH and SOC is a multifaceted topic, and the theoretical framework was designed accordingly as in Fig 9.

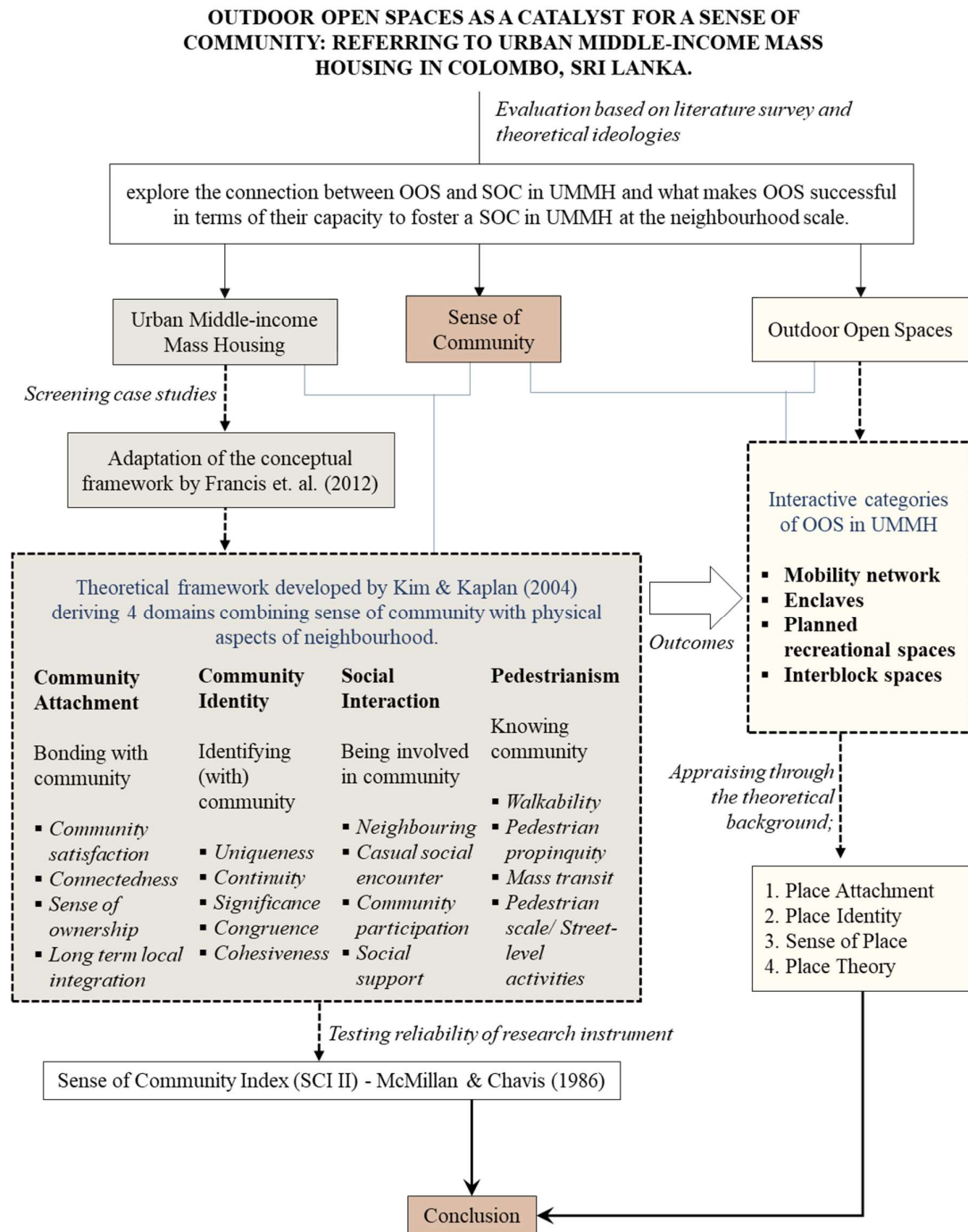


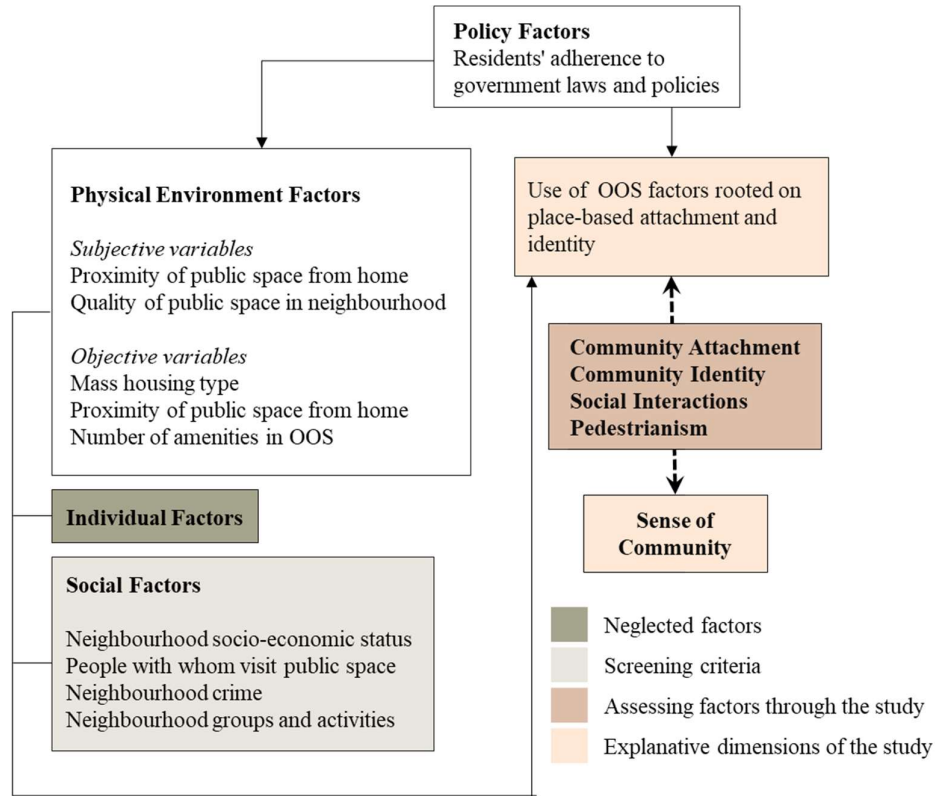
Figure 9: Theoretical Framework of the Study Source: Author



### Research methodology

This study began with a comprehensive literature review to determine what was previously known about OOS in mass housing environment and carried out as a mixed methodology research. The twofold approach of the study explores the relevance of socio-spatial dimensions of SOC in three case studies in the first stage and the specific characteristics of successful OOS referring to selected theories in next stage. Due to novelty and complexity of this study, literature from many disciplines were used. These fields include urban planning, architecture, social and environmental psychology.

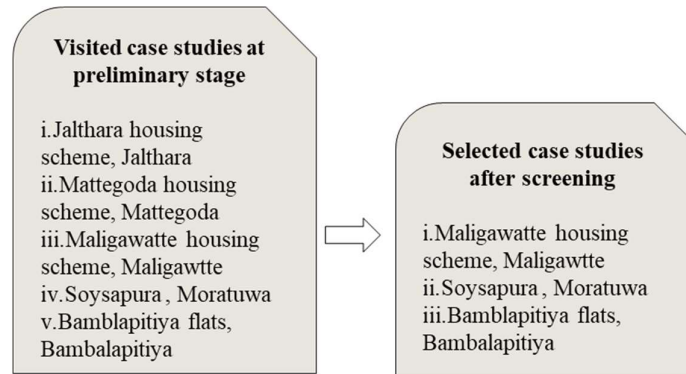
The screening was conducted to select 3 case studies with similar social backgrounds to examine RO 1 and RO 2. Case study selection through screening was done according to Fig 10.



**Figure 10:** Conceptual Model - Use of OOS Factors Rooted in Place-Based Attachment and Identity Towards a SOC

Source: Adapted from Francis, J. (2010). Associations between public space and mental health in new residential developments (Doctoral dissertation, University of Western Australia).

Physical and policy factors for case studies are considered definite (All case studies are government-initiated housing developments, and they are governed under the Condominium Management Authority's laws). Individual factors affecting SOC were neglected as a study limitation. At preliminary stage, UMMH projects mentioned in Fig 11 were visited and the case study screening outcomes are depicted in the same diagram.



**Figure 11:** Results of Preliminary Case Study Screening  
 Source: Compiled by author

Data collection was done in two phases, with 12 residents (4 per UMMH) participating in test Questionnaire 1. Six of the 126 residents who completed the questionnaire were excluded as they left too many questions unanswered. 120 residents from all 3 case studies comprised the refined sample (40 respondents from each case study).

#### Desk study

Respondents' answers to each questionnaire section and Likert scale scores were analysed. The questionnaire included a map of the UMMH neighbourhood to mark specific OOS of use. The OOS were then classified into 4 categories for further analysis in phase 2.

**Table 1:** OOS Classification

OOS Category	Description
Mobility network	The circulation network in the selected case study consisting of pathways, streets and alley ways that are either people-made or provided in design layout
Enclaves	The immediate outdoor environment of physical representations of cultural or religious niches within the community – shrines, multifunctional spots
Planned recreational spaces	Play grounds and children's parks
Interblock spaces	Unclassified spaces in-between blocks

Source: Author

#### Data collection - Phase 2

Focus groups were conducted with an experienced civil engineer to discuss the research topic.

#### **Reliability of testing materials**

SCI II standard questionnaire developed by Mcmillan & Chavis (1986) was distributed among 45 residents to validate previous questionnaires and analyse RO 1.

### Scoring procedure

For the analysis or comparison of the data obtained for a factor, the answers obtained were assigned a scoring index "i". (If a respondent mark 5, it will calculate as 5)

Ex: A = Pedestrianism

$$A = \frac{\text{calculated total index}}{\text{number of participants} \times \text{number of questions} \times \text{highest score}} \times 100\%$$

$$A = \frac{\text{calculated total index} \times 100\%}{40 \times 4 \times 5}$$

### Sampling method

Because population lists for each case study were unavailable, data collection samples were chosen on-site using systematic sampling which selected respondents based on predetermined 10-minute intervals.

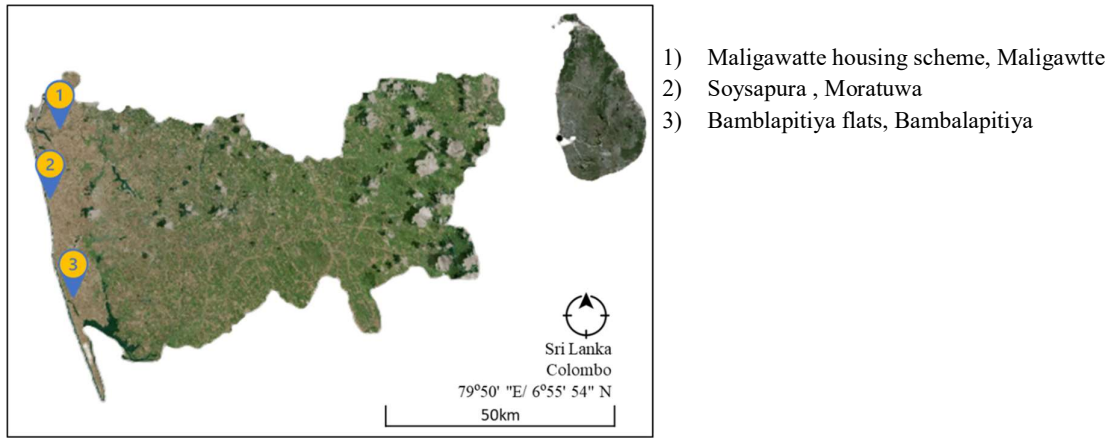
- No specific age group is targeted when collecting data (However, residents under the age of 15 were not chosen as respondents due to the possibility of not understanding the questionnaire's base)
- Data collection was limited to permanent residents of the case studies.

### Research instruments

- i. Existing literature, maps and resource persons - The secondary data regarding the context of the three case studies were collected through existing literature, documents, booklets and maps from National Housing Development Authority.
- ii. On-site observations and documenting - According to the attributes identified, to collect data regarding the adaptability and landscape character, observational studies were done in the open spaces and surrounding areas of the study area. Photographs and notes were taken during observations.
- iii. Questionnaires - There were 3 questionnaires utilised in the study.
  - a. Questionnaires 1 - Designed to assess 17 subcomponents of socio-spatial domains of SOC by Kim & Kaplan (2004)
  - b. Questionnaire 2 – Brief assessment on interactive levels of the residents.
  - c. Questionnaire 3 - The standard SCI II by (Mcmillan & Chavis, 1986) to test the reliability of SOC measures taken in questionnaire 2 in each case study.
- iv. On-site interviews - Both structured and unstructured interviews were used to get in-depth information from the respondents and resource persons.
- v. Focus Groups - Three focus groups were conducted among 3 groups for 3 case studies (10 residents per case study) to gather extensive information. They were conducted to gain insight into how people create meaningful spaces and create more SOC.

## Introduction to case studies

The selected 3 case studies are in Colombo District, Sri Lanka (Fig 12).



**Figure 12:** Location Map of the Case Studies in the Colombo District  
Source: Author

## Maligawatte housing scheme, Maligawatte

MHS (Fig 13,14) is an urban public space with government institutions, commercial spaces, and public roads. It is accessible via Jayantha Weerasekera Mawatha and Colombo – Kandy A1 road. The territory of this housing scheme is more of an urban public space as some government institutions, commercial spaces, and public roads are located within the housing scheme. The site is accessible via Jayantha Weerasekera Mawatha and Colombo – Kandy A1 road.



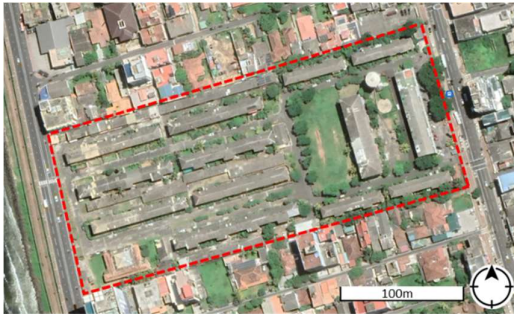
**Figure 13:** Satellite Image of the MHS  
Source: Adapted from  
<https://earth.google.com>



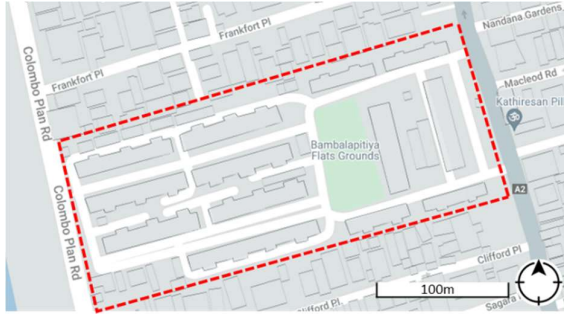
**Figure 14:** Site Boundary and Access Ways of MHS  
Source: Adapted from  
<https://snazzymaps.com/>

### Bambalapitiya flats, Bambalapitiya

BF (Fig 15,16) differentiates itself from other case studies as it has a physically demarcated boundary which creates a more private feeling among the residents. It is accessible via Colombo – Galle A2 road.



**Figure 15:** Satellite Image of BF  
Source: Adapted from <https://earth.google.com>



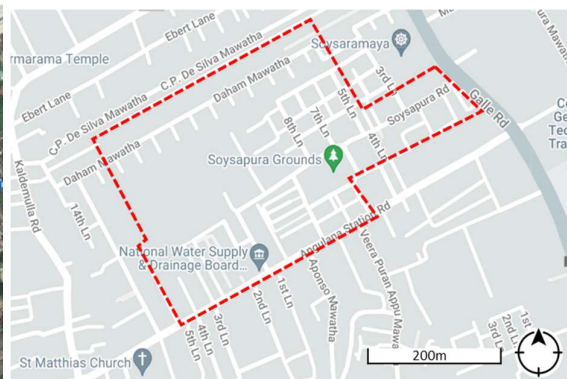
**Figure 16:** Site Boundary and Access Ways of BF  
Source: Adapted from <https://snazzymaps.com/>

### Soysapura, Moratuwa

This UMMH was constructed in 1970 on land owned by the Soysaramaya temple which now acts as the main religious place of the housing scheme. Soysapura is accessible via Angulana road and Soysa road (Fig 17,18). The project consists of 1264 housing units spread around 44 four-storey blocks. The current playground was added subsequently, in 1997.



**Figure 17:** Satellite Image of Soysapura  
Source: Adapted from <https://earth.google.com>

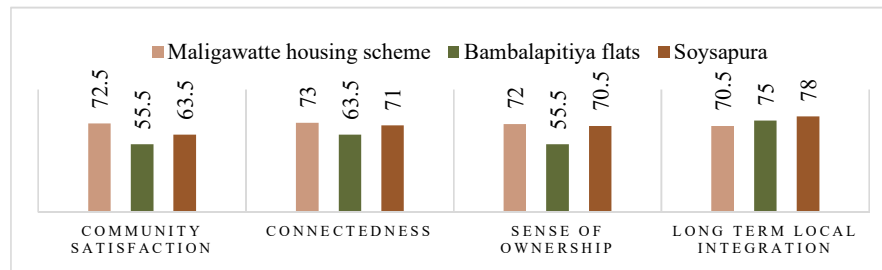


**Figure 18:** Site Boundary and Access Ways of Soysapura  
Source: Adapted from <https://snazzymaps.com>



## Findings on socio-spatial domains of SOC

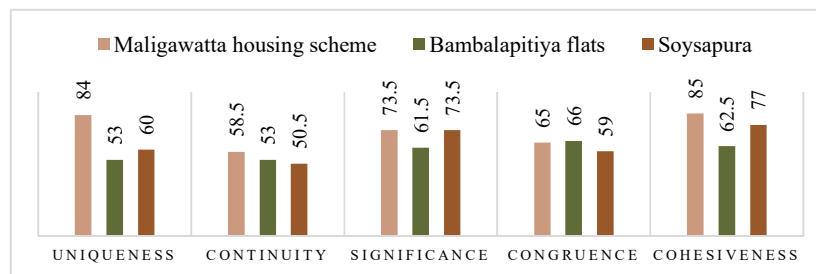
### Community attachment



**Fig 19:** Community Attachment Subfactor Levels Across the Case Studies  
 Source: Author

Semi-structured interviews revealed that residents of MHS preferred the scheme as the place of residence, feeling connected to their places and satisfied with the OOS. A sense of ownership can increase community attachment, but illegal encroachments can affect OOS quality and structural stability. The floor area of the early-built UMMH was large enough to comfortably accommodate a family of 4-5 members, but the addition of new blocks increase land scarcity, resulting in less floor space per unit. BF had a well-maintained OOS with no illegal encroachments, and residents preferred their location due to easy access to work. Community attachment was more reserved than in other two case studies, with a neutral attitude toward the sense of ownership and connectedness. Residents of Soysapura had a higher sense of ownership over their outdoor spaces, which were used for community needs. Interblock spaces were not assigned to a specific function, but residents utilised them for community needs.

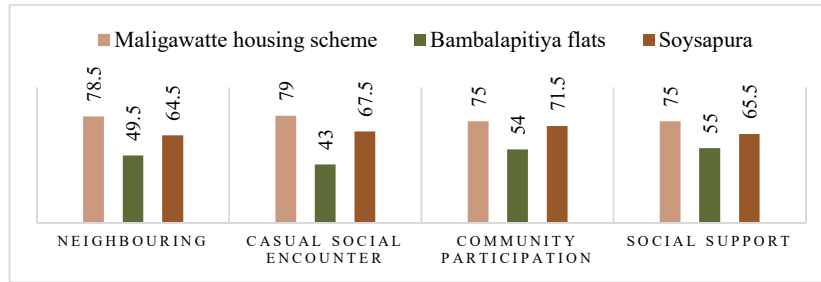
### Community identity



**Figure 20:** Community Identity Subfactor Levels Across the Case Studies  
 Source: Author

Having the most vibrant and unique identity, the Maligawatte community has built a physical environment that symbolizes its uniqueness. But design shortcomings and poor maintenance of spaces have hindered its use. BF had the least variations in the outdoor environment, demonstrating a maintained community identity rather than a community-built identity. Residents have practised keeping existing OOS in a more arranged way, and some have adapted interblock spaces into gardening spaces. Soysapura has a serene nature to its identity. Residents' shared values on OOS can be seen through the way they utilise them.

### Social interactions

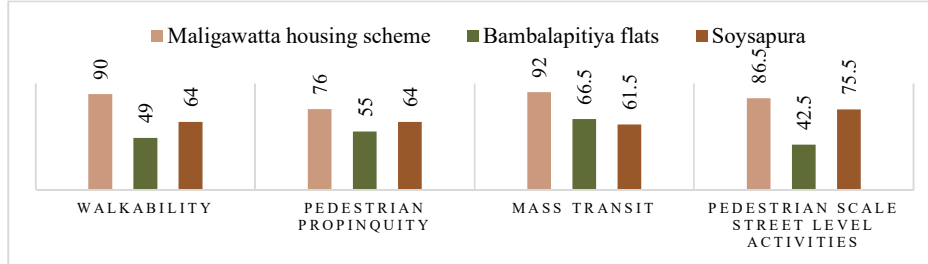


**Figure 21:** Social Interaction Subfactor Levels Across the Case Studies

Source: Author

A higher level of social interaction could be identified in MHS. The spatial layout and arrangement of outdoor spaces allowed more social contact among residents. The residents have diverse cultural backgrounds and events such as processions, almsgivings take place within the neighbourhood frequently. The questionnaire survey revealed that BF had the least level of social interactions due to lack of interactive OOS and lack of seating/rest spaces around the premises. There were indoor spaces dedicated to societies of the community, but they were reserved for more formal events, resulting in a low informal interaction level. Soysapura residents have various community events such as new year celebrations, Vesak celebrations, and casual encounters, compared to BF residents enjoy frequent encounters and a higher level of contact.

### Pedestrianism



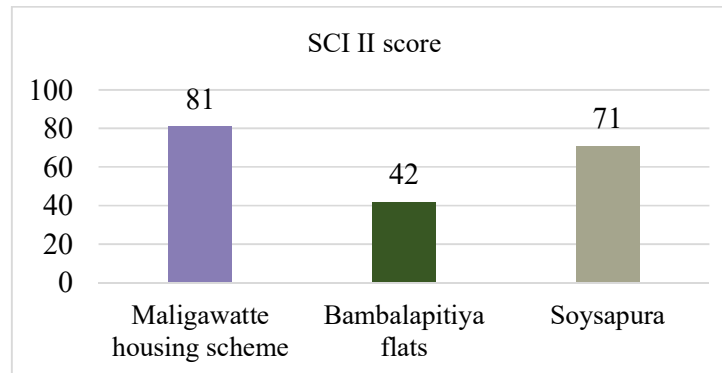
**Figure 22:** Pedestrianism Subfactor Levels Across the Case Studies

Source: Author

In all three case studies, extensive pedestrian activity is observed during weekends. MHS had a higher level of street-side interactions while in BF, it was far less. Street networks across all case studies were maintained properly. Pedestrianism is highly visible in MHS due to increased tree density, natural shade levels, and roads facilitating mass transit. The frequent streetside mobile shops have a higher level of interaction. The location of the BF facilitates easy access to public transit, but most residents use private transportation methods. The internal street network provides adequate space for vehicular activities, but there are no alleyways or pathways. Pedestrian scale activities are minimal, and residents prefer streets with more shade for street-level activities. Soysapura street network provided a variety of pedestrian-scale activities. Some residents are engaged in small businesses in street sides that does not disturb vehicular or pedestrian activity. Streets are in good condition and can be identified as safe and quality spaces.

## Outcomes of SCI II

The calculated scores of SCI II as follows.



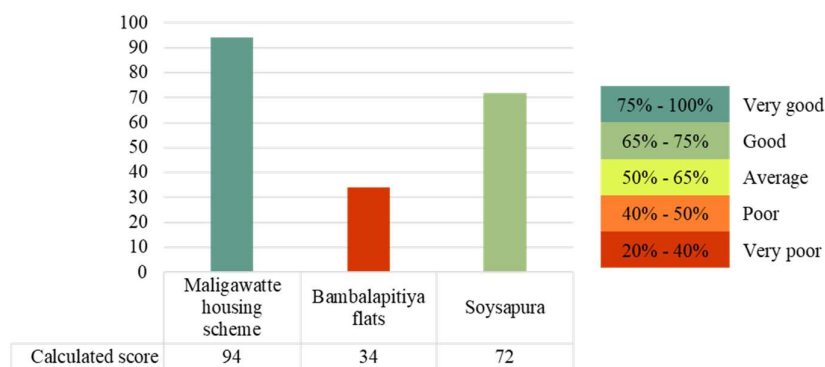
**Figure 23: Outcomes of SCI II**  
 Source: Author

## Features of sense of community conducive outdoor open spaces

This section qualitatively analyse the spatial characteristics OOS categories based on the results of questionnaire 2, focus group outcomes and observations.

### Mobility network

Streets define the boundaries and fabric of a neighbourhood, while being the dominant OOS category in UMMH, mobility networks facilitate various community activities. Together, their walkability and ability to shelter roadside activities form emotional bonds among residents.



**Figure 24: SOC Conducive Ability of Mobility Network**  
 Source: Author

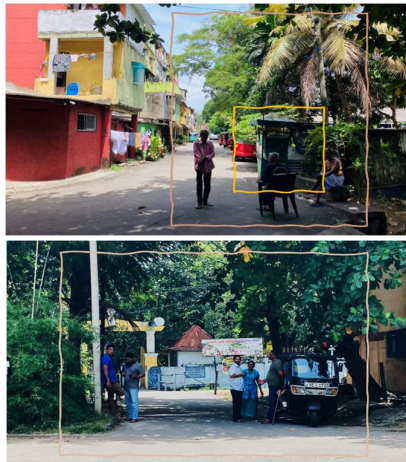
interactivity in the mobility network is highly visible in MHS, especially during weekends. The higher tree density/ natural shade levels have facilitated to an increased amount of pedestrian scale street-side activities (Fig 25).



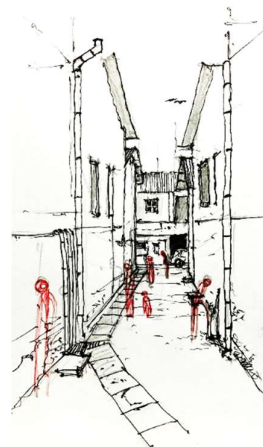


**Figure 25:** The Higher Level of Shade Along the Street Network in MHS and a Hindu Procession Happening in the Opposite Direction of the Same Street.  
Source: Author

People have formed their own short paths to minimize walking distances and informal interactive spaces have been observed (Fig 26,27). Small shops and mobile vendors occupy shaded roadsides and pathways while older individuals gather and exchange stories on roadsides. However, there is a lack of properly arranged seating and older men bring chairs or other movable seating to the roadside to communicate and interact with neighbours..



**Figure 26:** Interactive Spaces in Mobility Network with Roadside Shops and Temporary Parking  
Source:Author



**Figure 27:** A People-made Pathway Inside the MHS  
Source:Author

The grid-type internal streets are spacious but they do not contribute much towards social interactions. Lack of shade and sheltering nature of mobility network in BF is largely used for transit and does not provide opportunities for residents to interact during daytime (Fig 28). Focus group discussions revealed that residents did not express a need for informal social contacts.



**Figure 28:** Wide Streets Without Shade and No Streetside Interactions – BF  
Source: Author

Soysapura residents have created small resting and gathering places on the street sides with shade, which are clean and well-maintained. Street sides are spacious, and residents engage in social interactions and streetside activities, mostly in the evenings (Fig 29, 30).



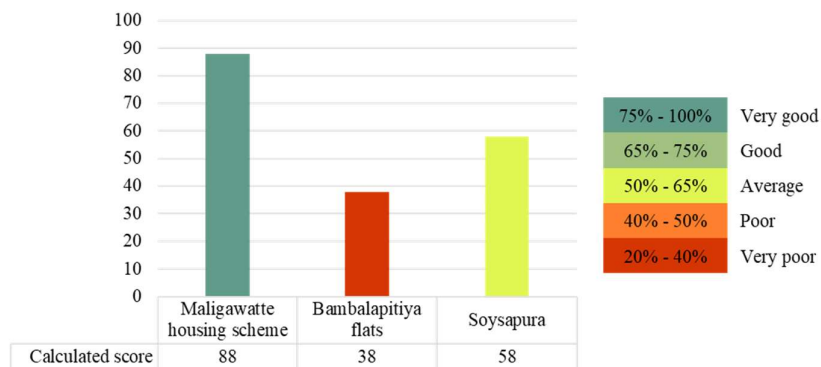
**Figure 29:** Clean and Well-maintained Mobility Network  
 Source: Author



**Figure 30:** Street-Side Resting Places Created by the Community  
 Source: Author

Residents who engage in jogging expressed the need for more informal resting spaces as the community is more sociable compared to BF's community.

### Enclaves



**Figure 31:** SOC Conducive Ability of Enclaves  
 Source: Author

The most functional and noticeable space in MHS is the main node of the community, which consists of two shrines (Fig 32,33). The shade is high and the location of small shops and shrines attract residents for individual needs. The placement of the spaces passively encourages interaction between people that use enclaves for different purposes.



**Figure 32:** A Buddhist Enclave Provided in Original Design – MHS  
 Source: Author



**Figure 33:** An Enclave, Street Side Shade and Streetside Small Shop that Generate More Interactions by Locating Close to Each Other – MHS  
 Source: Author

The placement and character of enclaves are determined by the cluster identity. The identity and character of different enclaves attract individuals of similar interests that make it easier to develop bonds. Residents expressed that they have created such spaces to match their identities. Enclaves with high-quality place identity make up the mental picture of the entire community making them an important part of the community. One such space is the Christian enclave located at the ramp that goes up to the tallest block in the MHS. The location, colour and character of that space speak a lot about the cluster identity of that block (Fig 34). There were no functional enclaves within the BF premises. A shrine was observed but it did not act as an enclave. The specific enclave observed in Soysapura attracted more young people due to its location (Fig35). Although there were not many interactions observed during daytime, residents mentioned that the space is highly occupied during late evenings.

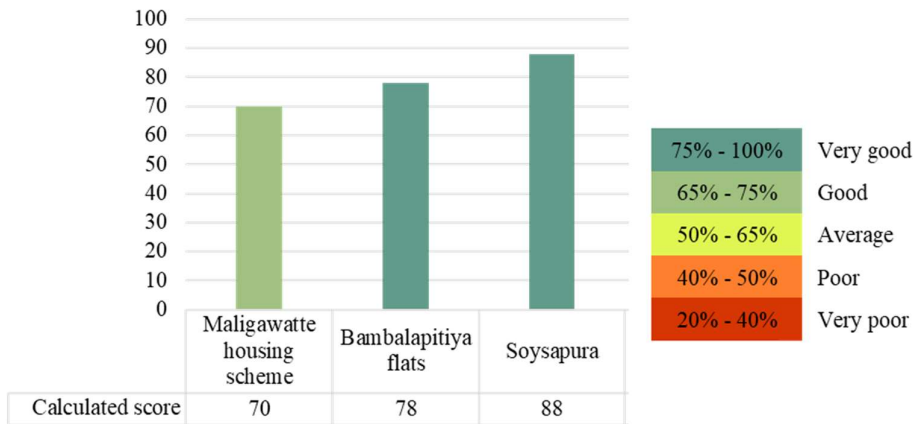


**Figure 34:** The Christian Enclave at the Edge of the Ramp; Place Identity that has Developed through Multifunctionality, Character of Space and Burrowed View of ‘Nelum Kuluna’ – MHS



**Figure 35:** Locating at a Node Right in front of the Playground – MHS  
 Source: Author

**Planned recreational spaces**



**Figure 36:** SOC Conducive Ability of Planned Recreational Spaces  
 Source: Author

Playgrounds and children's parks are the planned recreational spaces provided in the case studies. During focus groups discussions, playgrounds and open spaces were usually viewed favourably, but negative issues also arose.



The basketball court which acts as a general playground for children is occupied most of the day. Older residents revealed that they enjoy watching children play. Also, the location of the basketball court had high visibility. Residents were not hesitant to let their children stay there as they think the space is safe (Fig 37). There is another playground located at the edge of the housing scheme that is also high in function. The community park that was provided by the original design is currently not in use. Residents mentioned a lack of maintenance and poorly arranged resting spaces as a reason for not using the space (Fig 38).



**Figure 37:** The Basketball Court with High Visibility, Easy Access  
Source: Author



**Figure 38:** Abandoned Community Park at MHS  
Source: Author

The children's playground and public playground of BF had no interactive activity during weekday site visits, but some activities were happening in the late evenings. Not much character could be seen in terms of place identity in both spaces. Residents were satisfied with the spaces but noted the need for more play equipment and a lower level of sheltering nature (Fig 39,40).



**Figure 39:** Childrens' Playground of BF  
Source: Author



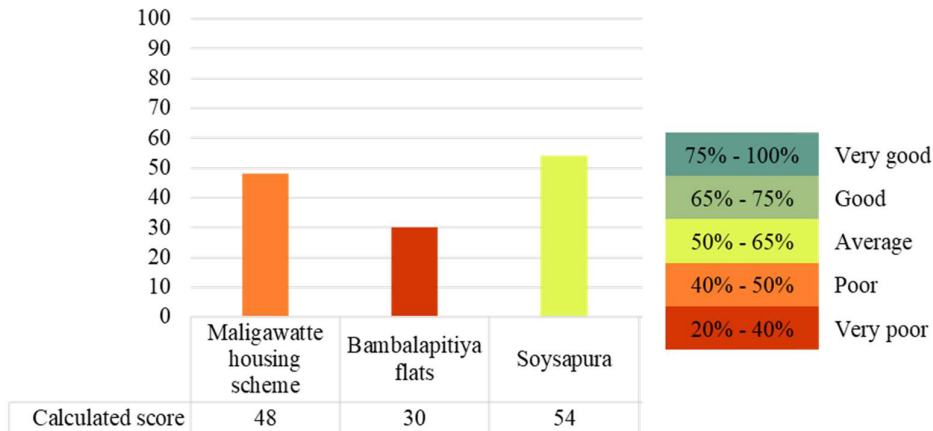
**Fig 40:** Public Playground of BF  
Source: Author

Soysapura is equipped with a large public playground which hosts various sports events (Fig 41). The large trees at the edge of the playground improve the sheltering nature of the space. The ground has a higher level of visibility and therefore residents expressed that they felt it safer even during the night-time. Maintenance of the ground was in a preferable state as identified



**Figure 41:** Public Playground of Soysapura  
Source: Author

**Interblock spaces**

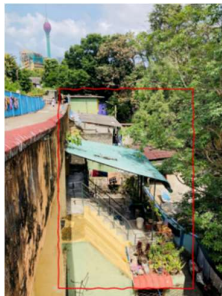


**Figure 42:** SOC Conducive Ability of Interblock Spaces  
 Source: Author

In most government-funded housing developments, neighbourhood OOS are merely residual spaces, as opposed to purposefully created activity or interaction places. Those interblock spaces do not foster positive social functions than providing ventilation requirements.

Illegal encroachments of interblock spaces are a major threat to reduction of OOS and outdoor environment quality in MHS (Fig 43). People have created extensions from home units to create one-of-a-kind spaces, demonstrating the need for elementary flexibility in UMMH planning. Residents on the first level are more engaged in gardening and yard chores due to their proximity to outdoor environments. In this instance, outdoor spaces served as extensions of the inside living space of the block.

Despite of the variety of block layouts, the overall project lacks a sense of proximity due to lack of private and dedicated OOS per block opposed to BF. There were some housing clusters which had better and more dedicated spaces. The residents of those blocks seem to be more reserved than the others. Residents of the BF praised the well-kept gardens, but they were often restricted to residents of a particular block and surrounded by iron wire fencing (Fig 44). Interblock spaces are used for various purposes in Soysapura housing scheme. One main and frequent use is gardening activities and the other utilisation is using them as play spaces by the children who live in immediate blocks (Fig 45).



**Figure 43:** Illegal Encroachments and Modifications Done by the Householders  
 Source: Author



**Figure 44:** Interblock Spaces in BF being Utilised as Gardening Spaces  
 Source: Author

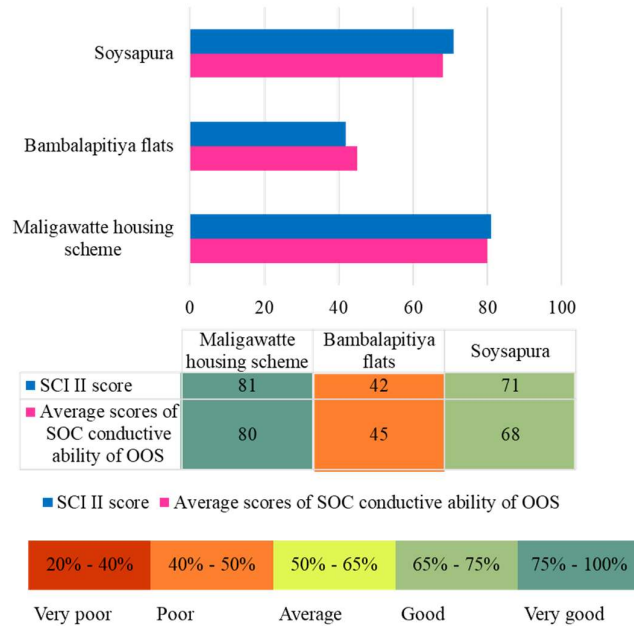


**Figure 45:** Use of Interblock Spaces as Home Gardens  
 Source: Author



## Discussion

- **Outcomes for RO 1:**



**Figure 46:** Comparison between SCI II Scores with Average Scores of SOC Conducive Ability of OOS

Source: Author

- **Outcomes for RO 2:**

**Table 2:** Evaluated Levels of Socio-Spatial Domains among the Case Studies

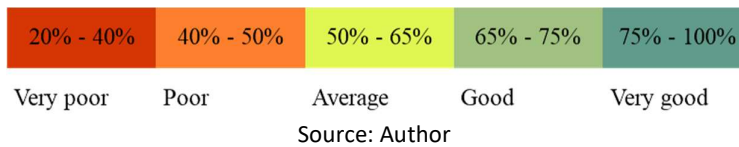
Theoretical dimensions of SOC		Community attachment				Community identity				Social interaction				Pedestrianism				
		Community satisfaction	Connectedness	Sense of ownership	Long term local integration	Uniqueness /distinctiveness	Continuity	Significance	Congruence or compatibility	Cohesiveness	Neighbouring	Casual social encounter	Community participation	Social support	Walkability	Pedestrian propensity	Mass transit	Pedestrian scale/street level activities
Research outcomes	Case study 1 (Maligawatte housing scheme)	72.5	73	72	70.5	84	58.5	73.5	65	85	78.5	79	75	75	90	76	92	86.5
		72				73.2				76.87				86.12				
	Case study 2 (Bambalapitiya flats)	55.5	63.5	55.5	75	53	53	61.5	66	62.5	49.5	43	54	55	49	55	66.5	42.5
		62.37				9.2				50.37				53.25				
	Case study 3 (Soysapura)	63.5	71	70.5	78	60	50.5	73.5	59	77	64.5	67.5	71.5	65.5	64	64	61.5	75.5
		70.75				64				67.25				66.25				

Source: Author

• **Outcomes for RO 3:**

**Table 3:** Effectiveness of Interactive OOS Categories in Creating SOC

Case study	Interactive OOS categories of UMMH			
	Mobility network	Enclaves	Planned recreational spaces	Interblock spaces
Maligawatte housing scheme	94	88	70	48
Bambalapitiya flats	34	38	78	30
Soysapura	72	58	88	54
<b>Average overall score</b>	<b>66.66</b>	<b>61.33</b>	<b>78.66</b>	<b>44</b>



**Table 4:** Features of SOC Conducive OOS

Interactive category of OOS	Features of SOC conducive OOS
Mobility network	Higher tree density/ shade level along the paths Flexibility for adaptation Physical quality Availability of streetside resting spaces
Enclaves	Unique and distinguishable character of space and identity Cluster identity of blocks Location
Planned recreational spaces	Visibility Appropriate shade levels Location
Interblock spaces	Flexibility of use Allowing more privacy

Source: Author

## Conclusion

Landscape architecture is a social art with a strong focus on social challenges. The landscape architectural output cannot meet the expectations of the public if the design does not meet the requirements of a community. A community's needs and preferences vary, so do the spaces they demand. Thus, they respond and react in response to changing needs by adapting their surroundings to better accommodate new options.

Numerous macro-level issues with UMMH neighbourhoods include the unsuitability of open spaces, the non-availability of informal identity, indifference to prevailing environmental conditions, and the absence of visual and spatial character.

Quality and sufficient OOS should be offered in urban mass housing developments. A built-up residential area alone cannot sustain the social needs of its population. OOS provide the ground for unrelated individuals who voluntarily combine their efforts to integrate aspects of their lives for the collective community's benefit.

As per the outcomes of this study;

- i. The SCI II scores fluctuated in harmony with SOC conducive ability of OOS. There were only slight differences between the scores. Therefore, it can be concluded that OOS act as a catalyst for a SOC in UMMH.
- ii. Out of four interactive categories of OOS, planned recreational spaces have the highest effect on SOC on average.
- iii. There are specific features of OOS in UMMH that elevate their SOC conducive ability (Table 4).

Also recognising and responding to the diversity of the communities, the sentimental values attached to OOS, and their identities are important facts of consideration during refurbishments of existing UMMH.

As a landscape component in UMMH, OOS have a huge potential in creating meaningful social connections. Although the planning and landscape architectural aspects connected with open spaces in urban public spaces are well-understood, there is still much to learn about why occupation and preference levels of OOS differentiate between communities and their effectiveness in terms of their capacity to foster a SOC in UMMH projects. Also, most of the existing work on SOC has overlooked the physical aspects of SOC.

## Contribution of the study and directions for further research

This study addresses the prevailing gap in research about spatial requirements for fostering SOC in UMMH. Since there is a limited number of research has conducted regarding the selected social and urban settings in the Sri Lankan context, this study provide directions for further studies in the OOS and community wellbeing as well as the adaptable OOS in mass housing projects.

This study guide for new directions to design more socially sustainable, human-centric outdoor spaces for UMMH projects. The outcomes enable landscape architects, architects and urban designers to make more community-oriented approaches in future developments. And provide a foundation for making decisions that will benefit the communities they serve. In addition, the



outcomes will contribute to the maintenance and correcting of errors of already established OOS in UMMH for resolving various social issues.

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