

Compact Urban form for Sociability in Urban Neighbourhoods

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Abstract—Cities with compact urban form are often associated with being sustainable. Among them are impacts on quality of life, improved access, neighbourhood satisfaction, as well as improved individual and community's wellbeing. This study is part of a bigger scope of study that looks into the relationship between urban form and social sustainability. This paper specifically explores the notion of compact urban form and how it impacts the aspect of sociability in urban neighbourhood. Objectives of the study are (i) to identify the extent of compact urban form on influencing community behaviour and (ii) to establish the type of social interactions as a result of residing in a compact urban form residential neighbourhood. Data was collected through the use of household questionnaire survey which was conducted in selected residential neighbourhood within Kuala Lumpur Metropolitan Region and supported by observation survey. Findings of the study reveals that residents of compact urban form tend to have higher chance to have social interaction with their neighbours either, of certain intention or unintentionally. It is through these social interactions that would lead to better social cohesion that would create safer neighbourhood environment.

Index Terms—Compact city, urban form, urban neighbourhood, social interaction.

I. INTRODUCTION

Cities with compact urban form are often associated with being sustainable. Compact urban form is regarded as the major form that can guide urban development to sustainability particularly in reducing the negative impacts of the dispersed development [1]. Aspect of sociability within an urban neighbourhood is one of the factors that determines the quality of a particular neighbourhood. It is deemed that an isolated community is seen as a failed neighbourhood [2]. Interactions among neighbours which would lead to better social ties and social cohesion have many advantages i.e. increase of sense of security, better neighbourhood satisfaction and sense of belonging.

This paper explores the aspect of compact urban form and its relationship with social sustainability, specifically focusing on social interaction - level of sociability within urban neighbourhood. This study focuses on aspects that would contribute to improve the level of sociability by

examining the role of urban form elements in influencing the social interactions among the local community of urban neighbourhoods in Malaysian cities. This study adopted a quantitative method approach and data will be collected through household questionnaire survey and observation survey. The findings of this study is expected to contribute in providing an indication for policy makers and planner to devise a framework to improve the quality of urban neighbourhoods to achieve livable city. It will also provide evidence of a significant association between the urban form elements and the type and frequency of social interaction among local residents of Malaysian cities that will further promote liveable and healthy cities. With the objective to assess urban form character of selected urban neighbourhoods, it is anticipated to provide scenario on the current status of urban living environment of Malaysian cities. Finally, the study is expected to provide significant contribution to stakeholders to guide the policy-making towards creating livable environment in line with the vision and mission of Malaysian government.

II. BACKGROUND

Creating sustainable and livable neighbourhood is important to ensure that the people's quality of living is protected. A well-planned neighbourhood has the potential to influence or initiate some kind of social interaction among the local communities. Many planners encouraged for compact urban form with mixed land use and pedestrian friendly streets in order to induce social interaction and provide some sense of the neighbouring community [3]. Lack of social interactions in urban neighbourhood would eventually lead to greater urban problems such as threat to the safety aspects and sense of security among the residents. As highlighted in the National Urbanisation Policy [4], Malaysian cities are experiencing a decline in the quality of living in terms of safety. Urban form elements claimed to have various significant impacts of sustainability. Several studies have explored the links between urban form and social sustainability in which urban form is able to improve access to facilities, social interactions, quality of life that would lead to a better neighbourhood satisfaction. Some suggested that social interactions tend to improve as it moves away from the city centre [5]. A better social interaction in a neighbourhood would have significant influence on individual's well-being as well as community [5], [6]. It also facilitates to reduce the feeling of fear in the neighbourhood hence able to live more comfortably [5]. Porta (2001) [7] have illustrated the relationship between urban form and components of urban sustainability that also include the

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social component (see Fig. 1). It was explained that social interaction within the built form is an effect of street life of the urban form [7]. This is a result of how urban form affect the way people uses the space hence contributes to the various social interaction among the community.

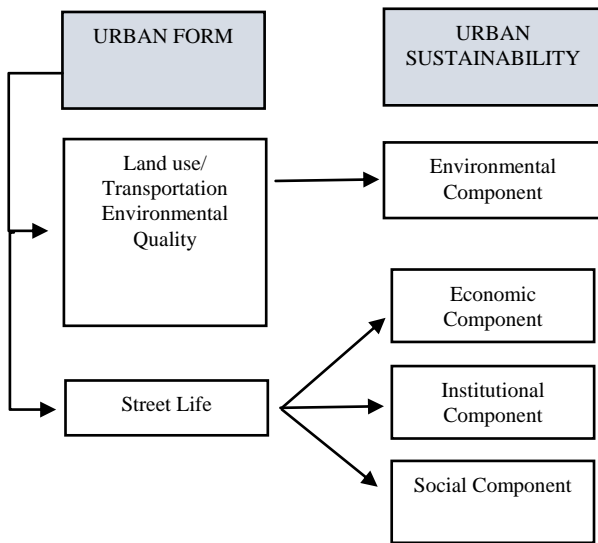


Fig. 1. The relationship between urban form and urban sustainability.

In the context of Malaysia, as documented in the Tenth Malaysia Plan, the government is committed to improve the overall quality of life. Malaysian government has emphasized the need to ensure urban areas are moving progressively towards building a vibrant and attractive living environment. This includes focusing the effort to ensure means of transportation are designed to move people, equitable access to services and facilities and people feel safe with their neighbourhood environment [8]. It was also realized the important role of physical form and character of living space to facilitate high quality of living is achieved. In all development plans, emphasis has been given to ensure that the quality of neighbourhood are protected to ensure

III. URBAN FORM AND SOCIAL SUSTAINABILITY

Previous research has revealed that urban form has significant implication for most aspects of urban sustainability with great emphasis on social sustainability (social equity, integration and cohesion) and environmental sustainability (energy reduction and travel patterns [5], [9]).

To understand urban form, in simpler terms it is defined as size, shape, and intensity of urban settlements and the spatial organization of different types of land use [9]. Urban form is referred to as the distribution and pattern of human settlement within the urban areas. Key variables to describe urban forms are density, shape, degree of dispersal or concentration and the quality of the infrastructure for public transport [10].

Social sustainability is closely related to the behaviour of people and how people respond to change in their surrounding environment. It also suggests that sustainability addresses the question of how societies can shape their modes of change so as to ensure the preconditions of development for future generations. In this context, there is a need to understand how people perceive the environment and

how they can actively participate in developing a quality environment. Social sustainability also refers to the viability of socially shaped relationships between society and nature over long periods of time [11]. It is also known to be a wide-ranging multi-dimensional concept focussing on the social goals of sustainable development [12]. A socially sustainable society is one that is just, equitable, inclusive and democratic, and provides a decent quality of life for current and future generations.

There are basically four aspects of social sustainability: equity, community safety, health and choice. Others have associated social sustainability with equity, community and participation [2], [3], [13]. Three core dimensions of social sustainability were identified which focussed on satisfaction of basic needs and the quality of life, social justice and social coherence [13]-[15]. It was suggested that social sustainability comprises two main dimensions, (i) social equity and (ii) sustainability of community [11]. The first dimension basically deals with the aspects of urban form focussing on access to services and opportunities such as local services, public transport and affordable housing. The second dimensions deals with broader aspects that include social interaction, satisfaction with the home and neighbourhood, safety, and participation [11]. In relation to the importance of the built environment to health and well-being, it was found that participation and empowerment in the neighbourhood environment had been identified as being essential to the overall social sustainability, particularly quality of life and well-being [16]. It was also stressed that the built environment plays a key role in influencing participation in local neighbourhood life [16]. Quality of life also relates to having a good relationship between housing and local employment, retail, education and health facilities. This relationship facilitates better social interactions and sense of community within the built environment [10].

Another important aspect connecting urban form and social sustainability is safety of the built environment. Safety within the built environment context is related to the extent people can use enjoy and move around the outside environment while feeling safe [17]. several categories of fear that relate to the built environment are fear of being attacked, fear of being run-over and fear of falling [17]. These feelings usually constrain people's willingness to participate and behaviour at a certain level in the outside environment. To ensure a safe environment, several aspects that need to be considered. Among them are: a mix of uses, pedestrians separated from traffic by trees; proper parking, designated bicycle lanes, spaces and buildings designed and adequate street lighting; wide, well maintained footways; and proper traffic calming measures [17]. To conclude, social sustainability directly impacts the quality of life. Hence, this paper focuses on social sustainability and how physical urban form may facilitate moves towards improving social sustainability.

IV. METHODOLOGY

This research explores compact urban form and its effect on social interactions in urban neighbourhood. Quantitative

method approach was used to primarily in the data collection and analysis stage. All variables used in this study were made quantifiable in order to facilitate the process of data collection and data analysis.

A. Data Collection

Data was collected through questionnaire survey. The samples were households within selected urban residential schemes within Kuala Lumpur and Putrajaya, Malaysia. Stratified random sampling method was used to select the samples. The samples were stratified according to the different level of compactness through the use housing density variable i.e. low density housing medium density, medium high and high density housing.

This study was also supported by an observation survey. The observation survey is considered significant for this study since direct contact with the neighbourhood and local people involved in the case studies permits the researcher to obtain information which would have otherwise been unavailable.

B. Method of Analysis

Data from the questionnaire is analyzed quantitatively and supported by findings derived from the observation survey. To ensure that the samples from the household survey were representative, the researcher performed sample weighting. Sample weighting is one of the steps that the researcher has undertaken to ensure that the data are reliable. Generally, in statistics, weighting is used to correct disproportional sample size and used to correct for differential response. By performing weighting, the researcher able to adjust the collected data to represent the population better. In this study, the researcher weighted the samples based on the response rate of the three sub areas (inner, intermediate and outer). In performing the analysis, among the techniques applied were, frequency distribution, cross-tabulation and deriving mean score. The researcher further explored the relationship of the data using several statistical tests.

V. FINDINGS AND DISCUSSION

A. Socio-Demographic Profile

A large majority of the respondents were from the age group of economically active population with an average of 84% for Kuala Lumpur and 96% for Putrajaya. The reason behind this is because of the design of the survey that targeted only the head of household or their spouse or partner. Findings regarding the age group distribution for both case study cities reveal a higher proportion of economically active age group as compared to the actual distribution. According to the census for both cities, based on the most recent data, majority of population falls under the economically active group with 67% for Kuala Lumpur and 61% for Putrajaya [18], [19]. For the elderly age group, there are higher proportion in Kuala Lumpur (4%) compared to Putrajaya (0.6%) [18], [19]. For Malaysia as whole, the pattern is quite similar. It was recorded that percentage for young dependants are 26%, economically active are 68% and elderly dependant are 16% for year 2010 [20], (see Fig. 2).

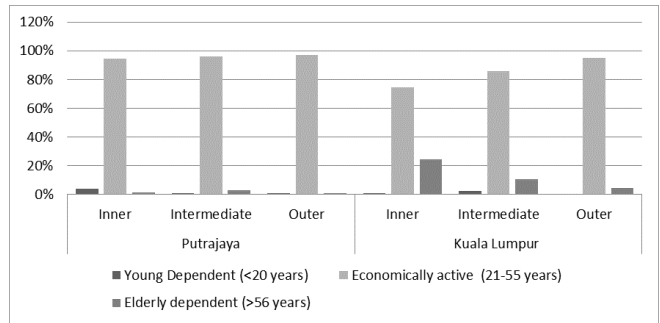


Fig. 2. Age group distribution.

In terms of average household size, a great number of the respondents for all areas have approximately 2-5 occupancy. Looking at the distribution pattern, Putrajaya does not have any single occupancy household except for the outer area (a slight 1%), (see Fig. 3). There is also pattern for more than 5 occupancy household. It appears to be that as it move further from the core area, there would be fewer households with more than 5 occupancy. This finding is expected as it also reflects the Malaysian's national average household size of 5.

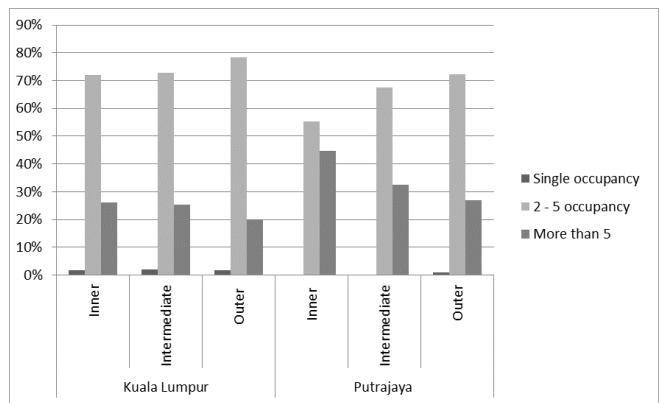


Fig. 3. Household size of study area.

In terms of home ownership, majority of the respondents in Putrajaya are renting in all sub area with an average of 92% (see Fig. 4). The pattern is different for Kuala Lumpur where, the distribution is quite evenly spread, especially in the outer area. On average, in Kuala Lumpur, it was reported that 29% owns the house with mortgage, 33% owns outright and 39% are renting. However, it is noted that in the inner area of Kuala Lumpur, percentage of owning the house outright is slightly higher at 41% as compared to other type ownership and in other subarea location throughout the survey areas.

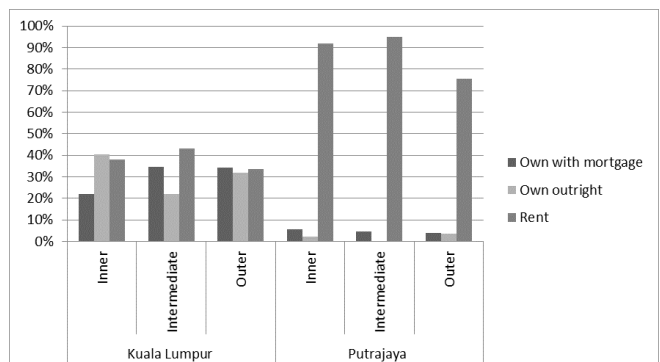


Fig. 4. Home ownership.

B. How Compact Form Impacts Sociability

Social sustainability is related to aspects of how people behave within the physical environment. It is claimed that mixed land use and pedestrian friendly streets are important measures in order to induce social interaction and provide some sense of neighbouring community [3]. This concept has been applied in the New Urbanism concept that supports among others mixed use and pedestrian-friendly streets. People would interact and behave differently when they are in different kind of environment. In compact urban form, people are expected to have the opportunity to achieve better sociability due to the proximity. This is because they would have greater opportunity to meet one another either intentionally or unintentionally. Assessment on the compact urban form on sociability was conducted by exploring the compact form related variables with sociability variables. This is achieved through the evaluation of several urban form variables i.e. (i) land use mix, (ii) density and (iii) housing type. Variables related to sociability are (i) frequency of meeting, (ii) how well they know their neighbours and (iii) how they interact with their neighbours.

Generally, in terms of level of sociability within the sub-area locations, the researcher investigated the matter by approaching the respondents with several questions in the questionnaire survey form. The respondents were prompted to provide information on the level of interaction based on different scenarios. 5 point Likert scale was used to capture the information with score 1 represents “None” and score 5 represents “All”, hence, higher score represents better social interaction. Table I presents the findings of the 3 variables that summarises the level of social interaction among the respondents within the case study areas. The finding indicates that the levels of social interaction among the community in the areas are quite wide-ranging. On the aspect of meeting socially on average of once a week, it was reported to be more common in the inner areas (both cities). In terms of having a chat or greeting, for both cities, it was revealed to be better in the outer areas. Previous studies revealed that social interactions tend to improve as location moves away from the city centre [5].

TABLE I: LEVEL OF SOCIAL INTERACTION WITHIN SUBAREA LOCATIONS

	You see socially on average once a week		You have a chat with/ greet		You would ask to borrow food / tools from	
	Mean	SD	Mean	SD	Mean	SD
Kuala Lumpur						
Inner	2.81	1.05	2.88	1.00	1.54	0.82
Intermediate	2.55	1.07	2.64	0.93	1.98	0.90
Outer	2.56	1.03	2.90	0.79	1.96	1.15
Putrajaya						
Inner	2.57	0.80	2.54	0.77	1.53	0.79
Intermediate	2.41	0.86	2.46	0.84	1.57	0.84
Outer	2.54	0.89	2.69	0.88	1.73	0.95

In taking account the urban form variables (see Table II), social interactions within high density areas seem to be better as compared to low density areas. This finding correspond well with previous literature that have proven that high density where close proximity is one of the factor that can initiate interactions among the urban-dwellers. Compact

form also relates to having some sort of mixed of land use. Areas with some land use mix means that people would have the chance to participate more within the neighbourhood residents would not require to travel far to go to services such as banks, retail outlets and other related services. Findings of the study on this aspect have proven that social interaction improves in areas with some land use mix. In terms of *having social meeting at least once a week*, areas with some land use mix were reported better at 95% significance level and was reported significant at 99% for *having the convenient to chat with*. On the other hand, for the different housing types, those living in terraced housing were reported to have generally better sociability level among the neighbours at 99% significance level.

TABLE II: LEVEL OF SOCIAL INTERACTION ACCORDING TO DIFFERENT COMPACT FORM VARIABLES

	You see socially on average once a week		You have a chat with		You would ask to borrow food/ tools from	
	Mean	SD	Mean	SD	Mean	SD
Density						
High	3.07**	0.87	3.07**	1.03	2.00**	1.10
Medium	2.72**	0.93	2.82**	0.88	1.81**	0.97
Low	2.39**	0.95	2.51**	0.86	1.56**	0.81
Land use						
No - Single use - Residential	2.57*	0.89	2.63**	0.87	1.71	0.92
Yes - some mixed of use	2.62*	1.06	2.79**	0.93	1.68	0.89
Housing Type						
Detached/ Semi-detached	2.73**	0.84	2.72**	0.88	1.76**	0.93
Terraced	2.74**	0.94	2.85**	0.89	1.83**	0.99
Flat/ Apartment	2.42**	0.96	2.54**	0.87	1.56**	0.81

** indicates 99% significance level.

* indicates 95% significance level.

VI. CONCLUSION

The focus of this paper was to explore the relationship between compact urban form and social sustainability, specifically focusing on social interaction within urban neighbourhood. Findings of the study have shown that areas with some land use mix have better sociability level as compared to areas with only single residential use. This supports the claim by Jacob that physical environment with mixed land use encourages social activities as compared to single-use areas [3]. In terms of density, social interactions within high density areas seem to be better as compared to low density areas. This corresponds well with previous studies where it has proven that among the advantages of higher density are larger concentration of people hence it would create demand for communal services that would lead to greater chance for social interactions [10] [21]. However, it is also important to note that there should be a limit to encourage high density neighbourhood or settlement for sustainability. Empirical research have proven that too high density will eventually lead to overcrowding hence initiate all sorts of social problems and is also associated poor social interaction, high crime rates. Hence, policymakers and

planners need to identify the ideal density and other compact urban form characteristics that would give benefits to the overall sustainability of the neighbourhood.

The implication of this study is it contributes to providing valuable knowledge needed for urban planners and policymakers to meet the challenge of urban growth more effectively and to devise a framework for sustainable urban form to ensure it is socially sustainable. The research findings also contribute to the existing knowledge in such a way that future development and growth in metropolitan regions in developing countries can be guided in a manner that enhances long-term sustainability. Finally, it is hoped that with this indication, policy makers and planner able to make vital decisions to further improve the neighborhood areas for better sociability with the aim to improve the overall quality of life.

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REFERENCES

[1] S. Chen, B. Mulgrew, and P. M. Grant, "A clustering technique for digital communications channel equalization using radial basis function networks," *IEEE Trans. on Neural Networks*, vol. 4, pp. 570-578, July 1993.

[2] E. Burton, M. Jenks, and K. Williams, *The Compact City: a Sustainable Urban Form?* Routledge, 1996.

[3] H. Barton, *Sustainable Communities: The Potential for Eco-Neighbourhoods*, London Earthscan, 2000.

[4] J. Jacobs, *The Death and Life of Great American Cities*, Random House LLC, 1961.

[5] M. Government, *National Urbanization Policy*, F.o.T.a.C.P. Department, Editor, Malaysia, 2006.

[6] N. Dempsey, C. T. A. Brown, S. Raman, S. Porta, M. Jenks, C. Jones, and G. Bramley, *Elements of Urban Form*, in *Dimensions of the Sustainable City*, Springer Netherlands, 2010, pp. 21-51.

[7] E. Talen and L. Anselin, "Assessing spatial equity: an evaluation of measures of accessibility to public playgrounds," *Environment and Planning A*, 1998, vol. 30, no. 4, pp. 595-613.

[8] S. Porta, *Formal Indicators: Quantifying the Contribution of Form to Urban (Social) Sustainability*, in *Australia: Walking the 21st Century*, 2001: Perth, Western Australia, pp. 67-79.

[9] M. Government, *Tenth Malaysia Plan 2010*, Malaysia.

[10] G. Bramley and K. Kirk, "Does planning make a difference to urban form? Recent evidence from Central Scotland," *Environment and Planning A*, 2005, vol. 37, no. 2 pp. 355-378.

[11] H. Barton and C. Tsourou, "World Health Organization, Regional Office for," *Healthy Urban Planning: a WHO Guide to Planning for People*, Published on behalf of the World Health Organization Regional Office for Europe by Spon, 2000.

[12] G. Bramley, N. Dempsey, S. Power, C. Brown, and D. Watkins, "Social sustainability and urban form: evidence from five British cities," *Environment and Planning A*, 2009, vol. 41, no. 9, pp. 2125-2142.

[13] N. Dempsey, "Quality of the Built Environment in Urban Neighbourhoods," *Planning Practice and Research*, 2008, vol. 23, no. 2, pp. 249 - 264.

[14] O. Yiftachel and D. Hedgcock, *Urban Social Sustainability: The Planning of an Australian City*, Cities, 1993, vol. 10, pp. 139-157.

[15] K. Jacobs, "Key themes and future prospects: Conclusions to the special issue," *Urban Studies*, 1999, vol. 36, pp. 203-213.

[16] B. Littig and E. Griessler, "Social Sustainability: A Catchword between political pragmatism and social theory," *International Journal of Sustainable Development*, 2005, vol. 8, no. 1-2, pp. 65-79.

[17] B. Sen, *The Relationship between the Built Environment and Wellbeing: a Literature Review*, V. H. P. Foundation, Editor, 2000.

[18] E. Burton and L. Mitchell, *Inclusive Urban Design: Streets for Life*, Routledge, 2006.

[19] P. Corporation, *Laporan Pemeriksaan, Draf Rancangan Struktur Putrajaya (Technical Report, Draft Structure Plan Putrajaya)*, Malaysia, 2009.

[20] K. L. C. Hall, *Local Plan, Kuala Lumpur 2020 City Plan*, Kuala Lumpur City Hall Malaysia, 2008.

[21] D.o.S. Malaysia, *Population ('000) by Age Group, Malaysia*, D.o.S. Malaysia, Editor, 2010, Government of Malaysia: Malaysia, 1963 - 2010.

[22] G. Towers, *An Introduction to Urban Housing Design: at Home in the City*, Architectural Press, 2005.



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