Block Level Social Contacts in Low-Cost Flats

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Abstract

This study evaluates the spatial properties of flats block, where daily social interactions often take place, in order to identify socially encouraging layouts. It attempts to establish any significant relationship between spatial properties of flats layouts and the local network of social relations among the residents. It employed network mapping to measure social contact sizes and utilized syntactical software to compare visibility and integration levels of various flats configurations. Findings showed possible relationship between flats spatial properties and the size of social contacts.

Keywords: Flats configuration; Local Social Contact; Outdoor Near Home Space; Visibility; Integration.

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1.0 Introduction

Economic constraints and strict building standard shaped the types of low- cost housing built. In Malaysian urban fringes, walk-up flats become one of the most viable forms of low-cost housing due to the relatively low construction and maintenance costs. Lower density and better opportunity for social encounters and informal social control are advantageous properties for families with children (Kosman, Long, Abdul Manan, Mohd Tazilan, & Mohamad Rasdi, 2008, pp. 14-15). Understanding social implication of such housing should accompany efforts to fulfill the housing demand as housing is an essential planning instrument for sound community development (Paim & Yahaya, 2004). Since economic constraints are decisive in low-cost housing development, marginal effects of variation in planning could enhance social performance of housing. Building configuration not only organizes the dwelling units, but also provides spaces for routine circulation and domestic functions, as well as casual encounters and interaction (Abdul Aziz, Ahmad, & Nordin, 2012). Subsequently, such active outdoor space would influence the extent to which the residents are connected to each other. This comparative study investigates the influence of flats block layouts on residents' local social contacts. It explores the effects related to visibility of outdoor near home spaces (ONHS) and integration among the units.

2.0 Literature Review

Insufficient space in low-cost units renders the adjacent ONHS as an extension for activity (Abdul Aziz, et al., 2012). Recurring informal encounters, and the resulting familiarity, promote collective actions in a community (Adriaanse, 2007). Abu Ghazzeh (1999) found that ONHS often substitute large open space for social functions as people value opportunities to walk around their homes and sit in small groups, forming local friendship and nurturing existing relationship. Such potential social engagement and the resulting potential social contacts are particularly valuable in low income residential area (Boyce, 2006). Therefore, ONHS contains essential information to understand how local community develops and sustains

Spatial conditions of the outdoor space, including visibility and spatial arrangements, are essential factors influencing decision of residents to engage in interpersonal interaction. Social interaction could be influenced by spatial configuration of the ONHS which regulate visual access and exposure. Adjustments of social behavior depend on the ability to monitor surrounding activities and awareness of emerging opportunities (Archea, 1999). Arrangement of the physical environment regulates the distribution of such information.

Numerous studies indicated the possibility of relating visibility and integration with local social contacts. Residents segregated in the top level dwellingunitsofahigh-riseblockhadlessopportunityforsocialencounters. They showed smaller size and spread of social contacts (Raman, 2010). Proximity of dwelling units and visibility of plazas, organize co-awareness and co-presence within the community, which facilitated and controlled social encounters (Beckwith, 2010). Higher visibility among the dwelling units helps expand local social network among the residents (Raman, 2010). Nonetheless, it is unclear how varying visibility and integration levels of different flats configurations could affect such relationships.

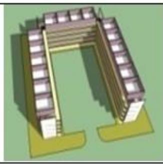
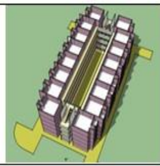
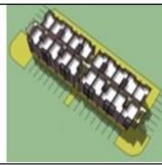
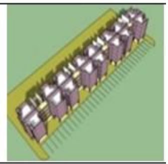
Neighborhood social interaction includes neighbor recognition, knowledge about others, socializing, and friendship patterns (Bridge, Forrest, & Holland, 2004). Formation of friendships and emotional connections among local neighborhood members begins through knowing others. Being aware of fellow residents, knowing them, and developing neighboring relationships are crucial factors in the development of sense of community (McMillan, 1996). Friendship formation and awareness of others' presence helps develop the sense of belonging and potential social support. Despite advanced means of communication and transport, daily local social contacts are still significant factors of richness and vitality of social life (Argent, 2008).

3.0 Methodology

3.1 Case Selection

Four low-cost walk-up flats sites in Johor Bahru were selected based on the configurations (Table 1).

Table 1. Summary of selected flats types

	FT-1	FT-2	FT-3	FT-5
Near Home Outdoor Space Characteristic	Open corridor with large central court	Open corridor with narrow air well	Single internal corridor	Cluster around staircase
Block configuration				
Year of occupation	1998	2002	2000	2000
No. of units per block	80	80	80	64
Nett Density (units/acre)	30.76	39.02	45.45	47.06
No. of units per floor	16	20	20	16
% of majority ethnic group	86%	84%	72%	76%

They were screened to control for building height, year of occupation, racial homogeneity, and population size. FT-1 is a u-shaped single-loaded open air corridor flats with units on ground level. In FT-2, two rows of unit face each other across a narrow central air well. In FT-3, a single internal corridor runs between two rows of facing units. FT-4 represents the most recent flats type containing clusters of units organized around staircases with minimal corridor space. All areas contain six blocks five-storey flats. Covered common courts occupy the ground levels of FT-3 and FT-4. In terms of the development period, FT-1 is the earliest form of walk-up flats while FT-4 represents the recently most common type in Johor Bahru. FT-2 and FT-3 represent the sequential reduction in the near home space, as well as decrease in exposure as we progress from FT-1 to FT-4. The footprint areas also shrink as we move from FT-1 to FT-4, which increase the nett density. In sum, the organization of FT-1 to FT-4 represents the increasing optimization of space and privacy.

3.2 Visibility and Integration Values

UCL Depthmap visibility graph analysis was conducted in to evaluate visual interrelationships of all points in a space in order to identify the most visually connected points and the least visually connected ones (Turner, 2001). This will illustrate how the ONHS are comparatively visible, which could lead to socially significance spaces (Peponis, Wineman, Rashid, Bafna, & Kim, 1998). Different flats configurations could also integrate or isolate the dwelling units spatially. Convex map analysis was conducted to measure mean spatial distance among the units to illustrate integration or segregation levels (Hillier, et al., 1987).

3.3 Social Survey

Network mapping measures the size of residents' social contacts in the respective blocks. On the provided floor plans, respondents identified locations of: 1) their own units, 2) the neighbors whom they know prior to moving to the current location and, 3) the neighbors whom they know by name after moving to the current location. The size and distribution of social contacts were examined using the average scores within three spatial boundaries: 1) the same floor, 2) the other floors, and 3) the whole block. Mean number of known neighbor acquaintances and neighbors the respondents could recognize within these different spatial boundaries were also elicited. The data was normalized according to the actual number of occupied units in the respective blocks. 328 residents participated in the survey including 89 in FT-1, 80 in FT-2, 84 in FT-3, and 75 in FT-4.

4.0 Results And Discussion

4.1 Visibility Level in the ONHS

Figure 1 illustrates the visibility levels across four flats types. The overall ONHS of FT-1 displayed the highest mean visual integration value of 36.30, which widely ranged from 7.28 (min.) to 47.17 (max). The flanking corridors contained most visible spaces with high visibility values while the central corridor displayed a slightly lower range. Meanwhile, FT-2 showed a lower mean visual integration value (18.33) as well narrower value range (8.88-20.37). The middle areas of longer corridor contain spaces of the highest visibility measure (max. = 20.37). This space was highly visible to the other spaces within the corridors as well as from the dwelling units. The mean visual integration value of the ONHS was further reduced in FT-3, with a mean value of 8.60. Only small sections of the internal corridor space were visible from the surrounding dwelling unit. Nonetheless, having a single central linear corridor, the visual integration value along the corridor was uniform (range: 8.96- 9.52). Spaces with the highest values were the landing areas of the middle staircase. The ONHS of FT-4 exhibited the lowest overall mean visual integration value (7.71). The corridors recorded a mean value of 8.85. The mean difference was significantly lower even when compared to that of FT-3 (t=5.893, p=0.000). The four dwelling units attached to the corridor space had no fenestration, except for the front door. There was no visual connection at all between corridors of different clusters, even on the same floor.

4.2 Spatial Relationships among Dwelling Units

Dwelling units in FT-1 recorded a mean spatial integration value of 0.855. Within the same floor level, the most integrated units were those in the middle corridor (0.990) while those in the two flanking corridors had low value of 0.810. At the block level, the mean integration value was lower (0.763). Dwelling units located on the second floors middle corridor exhibited the highest spatial integration value (0.867) while those in the top flanking corridors were the most isolated units (0.686). Within the floor level of FT-2, all the units recorded the same mean integration values of 0.852, attributed to the ring form of the layout. On the other hand, at the block level, the mean integration value was low (0.732) with a range of 0.265. The most integrated dwelling units (0.853) were located on the second floor while those on the top floor were the least integrated (0.588).

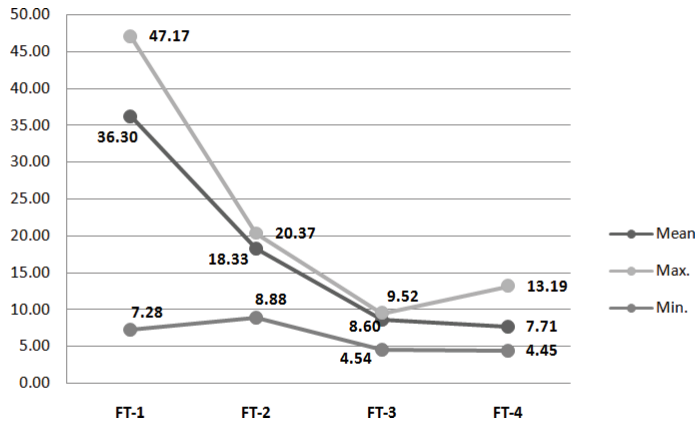


Fig.1. Visual integration of ONHS

FT-3 recorded the highest mean integration values both within the floor (1.225), and within the block (0.839). The single central corridor and the three staircases integrated the units closely. Units on the second floors were the most integrated ones while those on the top floor were the most segregated. Mean integration value of all the dwelling units was found to be the lowest in FT-4 (floor level = 0.443, block level = 0.473), indicating that the units were isolated from each other. Within the same floor, the units in the end clusters were the least integrated (0.402) while the most integrated units were in the middle cluster (0.483). In contrast, at the block level, units on the first floor, middle clusters displayed the highest integration value (0.535) while those on the top level, end clusters were the most isolated

(0.413).

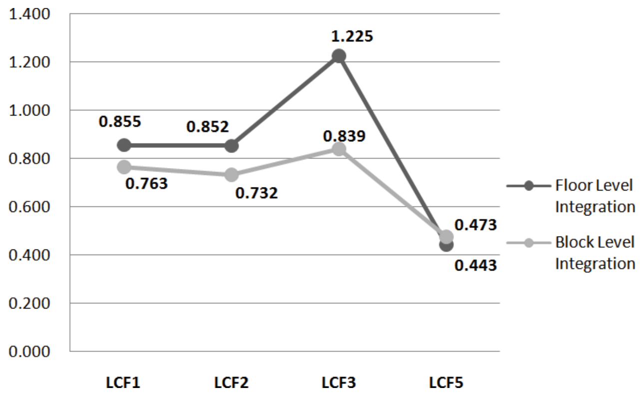


Fig. 2. Integration among dwelling units

4.3 Knowing Neighbors

Residents in FT-4 reported the least number of people known in the blocks. The results of t-tests analysis indicated that the differences were significantly low (0.182) when compared to all other flats types. FT-1 displayed the highest score of 0.475, which was significantly higher than FT-2 (0.307) or FT-3 (0.266). The mean scores for knowing neighbors in the same floor were higher than the scores for knowing neighbors in the whole block, implying that they knew almost everybody on the same level. The majority of respondents in FT-1 (0.720), FT-2 (0.716) and FT-3 (0.643) knew their respective neighbors from the same floor significantly more than those respondents in FT-4 (Figure 3).

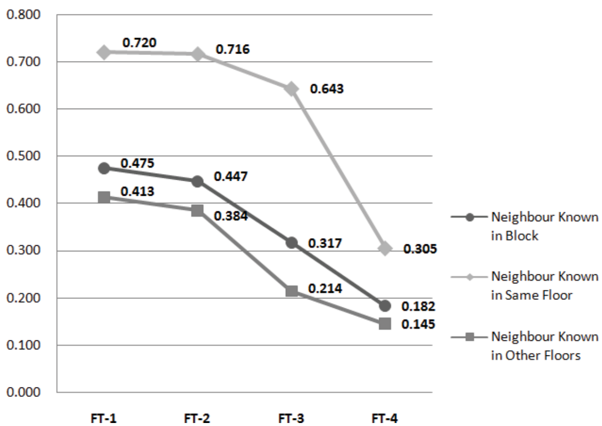


Fig. 3. Mean scores for neighbors known

The differences found between FT-1, FT-2, and FT-3 re not significant. This suggested that the residents in FT-4 had lesser opportunity to interact with neighbors. The cluster arrangement of FT-4 disconnects the residents on the same floor levels. Overall, the mean scores for social contacts from other floors were lower than those in the whole block and the same floor (Figure 3). The mean scores decreased progressivly from FT-1 to FT-4. Participants in FT-1 showed higher mean of social contact size than those in other flats. However, the differences were only significant against FT-3 (t=4.411, p=0.000) and FT-4 (t=6.828, p=0.000). The low score of 0.384 in FT-2 was not significant when compared to that of FT-1. Both had similar levels of social network size. However, the lowest mean score of social contact size (0.145) in cluster type housing (FT-4) revealed that the residents had less opportunity of knowing their neighbors in other floors. FT-3 showed a similar result to that of FT-4 despite the higher score (t=1.886, p=0.061).

4.4 Recognizing Neighbors

More than 30% of the respondents reported that they could recognize 60% to 100% of their neighbors in the same block in both FT-1 (31%) and FT-2 (30%). Meanwhile, only 19% and 3% of respondents in both FT-3 and FT-4 could say the same. Respectively, 40% and 60% of respondents in FT-3 and FT-4 indicated that they could recognize less than 20% of their block neighbors compared to only 19% and 24% of respondents in FT-1 and FT-2. The residents in the cluster type flats (FT-4) gain the least opportunity to be visually aware of neighbors. Majority of respondents in FT-1 (54%), FT-2 (45%), and FT-3 (39%) could recognize 80% to 100% of their same floor neighbors (Table 10). Two sample t-tests revealed that the differences among FT-1, FT-2 and FT-3 were not significant. FT-2 had the least number of respondents (1%) who were able to recognize less than 20% of their neighbors on the same floor. The score of FT-2 was significantly lower than that of the open corridor flats of FT-1 (9%, t=2.220, p=0.028). Similarly, the same score was significantly lower than that of the double loaded corridor of FT3 (14%, t=3.075, p=0.003). Variation between FT-1 and FT-3 was not significant. In linear corridor flats, bringing people closer in physical distance, while keeping the high visibility among the units, could possibly improve neighbor relations on the same floor. In cluster flats (FT-4), 73.3% of the respondents knew less than 40% of their same floor neighbors. In highly visible open corridor flats (FT-1 and FT2), residents had greater opportunities to recognize their neighbors from different floors. However, 76% of participants in FT-4 indicated that they could recognize less than 20% their other floor neighbors. The score in FT-3 (65%) did not differ significantly to that of FT-4 (t=1.449, p=0.149). Meanwhile, in FT-1 and FT-2 respectively, 29% and 39% (t=1.209, p=0.229) of the participants reported that they could recognize less than 20% of their neighbors from other floors. These findings indicate possible relationship between visibility and ability to recognize neighbors.

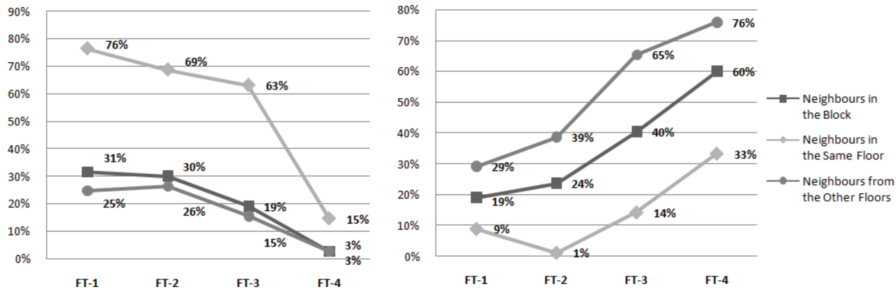


Fig. 4. Recognizing (a) 60%-100% of neighbors, (b) 0-20% of neighbors

5.0 Summary

The relations of the dependent variables to changes in the different layout designs were significant in some comparative analyses. Spatial analyses conducted established that population density and privacy increase when the visibility values of the ONHS decrease as we progress from FT-1 to FT4 (Figure 5). The subsequent comparative analyses revealed that social contact sizes vary significantly with these changes. Overall, the results showed that the residents knew less of their neighbors, and could recognize less of their neighbors in the same block, as we progress from FT-1 to FT-4. There was more possibility of relation between social contacts and the decreasing level of visibility from FT-1 to FT-4 than the changes in unit integration values. Possibilities of visual access and exposure in the residential ONHS promote visual or social encounters, thus, encouraging informal social interactions and development of social contacts. On the other hand, the mean size of social network shrunk as we move from FT-1 to FT-4. The possibility of recognizing less than 20% of neighbors increased as we move from FT1 to FT4 which indicated an inverse relationship to the visibility values of the ONHS.

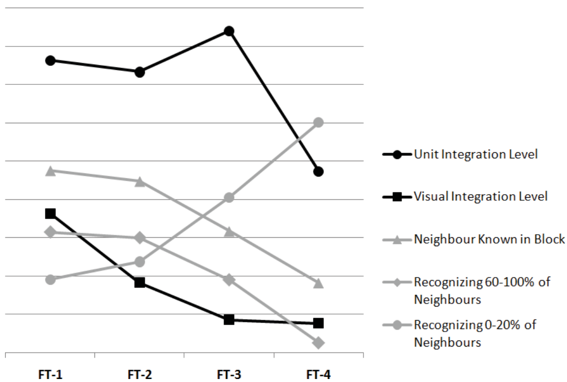


Fig. 5. Summary of main variables

Limitations

The current trend of reducing the ONHS, despite leading to more privacy, not only affects the social use of the ONHS, but also negatively affects the visibility and integration level. Such changes corresponded to the differences in the size of local social contacts. Nonetheless, such finding should realize the tradeoff between privacy and visibility as two ends of residential needs that require compromise through design innovations.

The study did not imply causative effect of visibility. Social interaction depends on how the residents perceive its importance and benefit. However, the study has shown that, all other things being equal, changes in the configuration has an apparent relation to the change in the size of social contacts. While acknowledging that physical forms can only condition social relationships when occupants dismiss the importance of such connections, the significant differences in the comparisons shown in this study cannot be dismissed.

The greatest challenge of this study was to acquire perfectly matched comparisons, despite the thorough selection process employed to control most of the pertinent compounding variables. Nonetheless, a more focused comparison along some attributes and conditions, as well as inclusion other configuration variations, could improve the outcome. Overall, in view of all the caveats, this study emphasizes the possibility the social impacts resulting from designers' selection of flats types.

5.0 Conclusion

Potentials for social encounters and interactions, which influence social engagement and reinforcement of social relations, seemed to relate to the visibility level of the different flats configurations. In this respects, the configurations of flats blocks affect the visual access and exposure which possibly enhance or inhibit opportunities for social encounters and interactions, and thus, influencing the residents' ability to recognize neighbors and generate social contacts. This was illustrated by the significant variations of social contacts size measured among the four sites. There is possible interrelationship, prompting further correlation analysis, between the level of social network size and the visibility of the ONHS, as well as the physical connectivity among dwelling units. Understanding the significances of flats configurations and the resulting ONHS could potentially facilitate efforts of local community integration.

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