

# Predictors of Overall Living Satisfaction in Medium Density Housing: Results from a Household Survey

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**Abstract:** This paper presents some findings from a survey undertaken in medium-density apartment housing in Fairfield, Sydney between September-December 2012 as part of a Ph.D. thesis. The paper also briefly reviews the existing literature and discusses the research methods used to survey the occupants of medium density housing. Furthermore, it justifies the adopted methodology and briefly discusses the survey challenges encountered and techniques used to address these challenges. Subsequently, the research findings are presented and the implications of the research findings for future design and planning are briefly discussed.

## Introduction and Literature Review

Medium density housing forms gained prominence in Australian metropolitan planning for major cities with the advent of urban consolidation policies in the 1980s (Forster, 2006; Troy, 1996). The terminology 'medium density' is a broad term used to denote a range of housing types other than the detached suburban homes in Australian housing scenario (Judd & Dean, 1983). Though medium density living, constantly ignites debates on the pros and cons due to design constraints, it is likely to have profound impact in shaping Sydney as 70% of the new housing stock could be through medium density forms with diverse building height and residential density (*Metropolitan Plan For Sydney 2036*, 2010). In particular, demand for flats and apartments are expected to reach 44.2% mark, more than for any other dwelling type (National Housing Supply Council, 2010).

Nevertheless, literature review suggests either reluctance in embracing apartments as a permanent housing choice or association of apartment life with a particular life stage due to poor design issues (Fincher & Gooder, 2007; Randolph, 2006). Other research suggests that apartment dwellers are subjected to issues and problems associated with design more than any other medium density dwelling type due to increased sharing of resources (Easthope & Judd, 2010). Therefore, the focus of this thesis was narrowed down to high-rise apartments, given its relevance for future housing provision.

My current PhD examines the residential satisfaction of people who live in medium-density apartment housing using Fairfield as a case study. The key research aim is to examine what is the residential satisfaction of the people who live in medium density apartment housing in Fairfield. The sub questions are:

- the predictors of overall living satisfaction index from the summative residential satisfaction scale.
- the effect of habitability on residential satisfaction.
- influence of accountability on residential satisfaction.
- effect of wellbeing on residential satisfaction.
- influence of demographics and socio-economics on residential satisfaction
- influence of the size of the development on residential satisfaction
- to correlate the residential satisfaction of people who lives in community housing and private housing developments.

But the focus of this paper is on the predictors of overall living satisfaction index. Before delving into the methodology adopted for this research, research methods adopted in three key existing researches in Sydney will be briefly discussed.

The most comprehensive existing primary research in medium density housing forms undertaken in Sydney, nearly thirty years ago used a face-to-face questionnaire survey method (Davies & Young, 1976). In addition, to high response rates, this method helps on the spot clarification of questions to avoid misunderstandings and also, prompts the respondent to answer more open-end questions (deVaus, 2002). Therefore, my research uses the same approach.

The Grattan Institute conducted a survey in three phases in Sydney and Melbourne (Kelly, Weidmann & Walsh, 2011). The initial focus group provided the variables needed for the quantitative online study, which explored topics related to convenience and access, attractiveness of environment, safety and security and dwelling features. Furthermore, a third online survey studied the trade-off people make in terms of dwelling location, size and type. The use of a focus group approach was appropriate because the participants didn't know each other. But within an apartment development, where residents might know each other, participants would be reluctant to share information. The key thrust of this research is about housing choice people make, rather than an attitudinal survey of residents in high-rise apartments.

Thirdly, the most comprehensive contemporary research into higher density living and strata management in Sydney (Easthope, Randolph & Judd, 2012) evaluates strata governance and management from the perspective of strata executive committee members, strata managing agents and strata owners in NSW, through an online survey. Though, survey is the first of its kind in Australia and provides useful information, many arguments could be raised against the sample quality as it is reliant on volunteer online respondents.

Participants in online survey tend to be people with strong views due to different reasons (deVaus, 2002; Duffy et al., 2005; Evans & Mathur, 2005). For example, the report admits that 60% of the respondents are active in executive committees, a group of elected strata owners, which suggest they are more active than the rest of strata owners population either due to dissatisfaction or personal interest. Therefore, their views are not representative and contradicts the statement in the report "the survey sample is broadly representative of strata owners in NSW" (Easthope, Randolph & Judd, 2012, pp. 37). Moreover, survey response rate is not mentioned.

Due to the above-mentioned limitations, my research deliberately adopts a face-to-face approach to survey the residents living in medium density housing apartment housing in Fairfield as the researcher has better control over the survey environment. Additionally, the survey incorporates tenants and homeowners and is primarily an attitudinal survey of high-rise residents in Fairfield city, located in South Western Sydney. Fairfield is distinguished by low SEIFA score of disadvantage, measured by Australian Bureau of Statistics on a range of issues like low education, high unemployment, low income and employment in jobs with lower skill levels. About half the population come from countries where English is not the primary language. Also, 26% of the dwellings are in the medium density sector (Fairfield City Council, 2013).

## **Methodology, Study Area and Challenges**

Access to the participants is the chief challenge in undertaking primary face-to-face survey amongst high-rise residents. The time and resource constraints meant the study area was limited to Fairfield, although it would have been ideal to survey three more areas as originally planned, viz. North Sydney, Randwick and Inner Parramatta. Fairfield was chosen for two reasons: lower socio-economic status (Australian Bureau of Statistics, 2013) and the assumption that high-rise apartments in lower socio-economics are likely to have more design and management issues. Additionally, availability of a community-housing landlord interested in research in Fairfield proved useful. All the high-rise apartments in 6 storeys and up in the Fairfield were determined by the combination of ABS data (Australian Bureau of Statistics, 2011), Fairfield City Council development applications (Fairfield City Council, 2012), Google Maps (Google Maps, 2012) and fieldwork.

The community housing building is a six-storey high-rise development, located in the heart of Fairfield and provides low rental accommodation for either aged or disabled residents. The majority occupants in this development spoke a language other than English. At a meeting organised by the community-housing provider, the researcher was introduced and the survey aims were explained. Subsequently, appointments were secured from participants for both pilot and main survey. Interview assistants were hired to help with other language surveys in this building. Ultimately, a total of 16 samples were procured across three languages, viz. English, Arabic and Vietnamese.

In the first private building, two initial attempts to gain permission from the body corporate to do survey yielded no response. Subsequently, Fairfield Advance, the local newspaper was contacted to publish a small article about the proposed survey to create some awareness among local residents. The copy of this article, with the photo of the research team was enclosed in the subsequent letter. Again, with no response,

in the next letter, a survey date in the building was mentioned and the body corporate was requested to raise any objections. With no objections raised from body corporate, a fifth letter to the body corporate was dropped simultaneously with the residents' letter.

Consequently, this three-time contact approach was used to contact body corporate for all remaining five buildings. They include initial information letter without any dates, notification one with a survey date and simultaneous notification two and letter drop in residents' letterboxes. The information package delivered contained the information letter with contact details, copy of the article, participant information sheet and copy of the residents' letter. Nevertheless, the body corporate did not respond in any of the six private buildings. The information package delivered for residents included an invitation letter with contact details to call for appointments, copy of the article and information sheet. Around 550 letters were dropped in the letterboxes of residents in six apartments.

A paired approach with main researcher and an interview assistant was adopted for safety reasons and undertook the surveys on weekends to maximise the response. Though, the original plan was to contact residents through the building intercom, this method was dropped as the response rate averaged 13% for two days. Unanswered intercoms were the major problem. Subsequently, face-to-face contact at the apartment entrance was adopted and the response rates averaged around 63% for two days. Big posters of A3 size newspaper article were stuck with blue tack on the glass doors at entrances, visible enough for residents entering the building. A4 hand-outs of the poster were handed out to residents exiting the building, inviting them to participate on their return. A temporary office space was set up with two chairs and a table at the entrance to attract more participants. All these efforts made face-to-face survey approach more appealing and less intimidating for residents. For all subsequent buildings, face-to-face contact approach at the entrance was adopted. The response rate averaged around 55% for twelve days, through rates in individual building would vary. Overall, 68 samples were procured from private buildings.

## **Theoretical framework for the Study**

Residential satisfaction is a popularly examined realm in the field of built environment and the urban planners and policy makers often use the results for future planning and design improvisations as it indicates the quality of life of an individual (Ge & Hokao, 2006). Residential satisfaction studies are grouped into two categories by (Amerigo & Aragones, 1997) following the Weidemann and Anderson's classification system. In the first approach as adopted in this thesis, the quality of the residential environment is evaluated and residential satisfaction is considered as a measure or yardstick and hence is a dependent variable. Meanwhile, the latter group considers residential satisfaction as an independent variable determining residential mobility.

Two assumptions underlined by (Marans, 2003) with reference to 'Marans and Rodgers model of residential domain satisfactions and quality of life' is adopted for the research. The assumptions are: the quality of residential environment could be assessed only through a fusion of multiple attributes and the evaluation of the quality of the residential environment relies on the subjective assessment of its occupants. These multiple attributes are referred to as 'domains' (Francescato, 2002, cited in Amole, 2009, pp.77) and the commonly studied attributes in the literature extant are: social or psychological; management or organizational and physical (Amole, 2009). In this thesis, all three attributes are examined through four-domain approach.

Residential satisfaction was thus defined as the satisfaction perceived by an individual (either positive, neutral or negative) in terms of four domains: habitability, location, accountability and wellbeing. The habitability domain measured residential satisfaction in relation to design aspects of the development. The location domain explored residential satisfaction with respect to proximity of various facilities or services. Thirdly, accountability domain evaluated residential satisfaction regarding management issues. Finally, wellbeing domain measured residential satisfaction in terms of safe and healthy residential environment.

All the subscale domains are derived from Robert's quintuple bottom line model. In this model five principal elements of the urban system: built, economic, governance, natural and social are linked to various dimensions of urban density. Thus indicators derived for perceived urban density are habitability, profitability, accountability, beauty and wellbeing (Roberts, 2007). The perceived urban density on a wider geographic setting like a city is measured by perceived residential environmental quality indices as illustrated in the works of (Bonaiuto, Fornara & Bonnes, 2003; Fornara, Bonaiuto & Bonnes, 2010; Walton, Murray & Thomas, 2008) in an Italian and New Zealand context respectively. Similarly, the subjective

measurement of residential satisfaction also could be ascertained through residential environmental quality indicators people naturally perceive in their living environment.

Therefore, thesis adopted the indicators of perceived urban density and modified them as domains for this study. Modifications enabled the suitability of domains to study micro urban form like apartments. Consequently, 'profitability' was swapped for 'location' and beauty and well being indicators were combined to form a single wellbeing domain and questions pertaining to four domains were developed as illustrated in Figure 1.

The survey instrument comprised of 30 scaling questions on a five-point Likert scale to measure aggregate residential satisfaction scale. The five responses ranged from: strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4) and strongly agree (5). Besides, comments column were provided for all thirty scaling questions. Additionally, closed-ended questions pertaining to demographics, housing history, health and an overall living satisfaction index were included. Thirty scaling questions formed part of four subscales, viz. habitability (12 items), location (8 items), accountability (4 items) and wellbeing (6 items). The domains and all the variables examined under each domain are shown in Table 1. The selection of the survey statements belonging to location and wellbeing domains were influenced by the attributes used to measure perceived residential environmental quality (Bonaiuto, Fornara & Bonnes, 2003; Fornara, Bonaiuto & Bonnes, 2010; Walton, Murray & Thomas, 2008). Meanwhile, the survey statements in the habitability domain and accountability domain were constructed to examine attributes within the immediate apartment setting, which are thought to be relevant in the literature extant (Davies & Young, 1976; Easthope & Judd, 2010). The domains and all the variables examined under each domain are shown in Table 1.

**Figure 1. Domains for the Study**



**Source: Adapted from (Roberts 2007) and modified by (author)**

**Table 1. Domains and Variables Measured in each Domain**

Domain	Variables in each domain
Habitability (12 items)	Dwelling size, Dwelling quality, Balcony, Privacy, Lifts, Night safety of lifts, Parking, Storage, Noise, Smell, Fire safety and Children's play area
Location (8 items)	Workplace, Shops, Recreational opportunities, Outdoor sports areas, Health services, Public transport, Neighbourhood parks and Nature views from balcony or windows.
Accountability (4 items)	Building maintenance, Rubbish removal, Strata levy or rent and Green area maintenance within the apartment development.
Wellbeing (6 items)	Friendly neighbours, Night safety within the apartment development, Vandalism in the building, Stigma if any experienced for living in that particular apartment, Pleasant building and Enough green areas within the apartment complex.

**Source: Survey Instrument Design (author)**

As mentioned earlier, this paper briefly explores the joint predictors of overall living satisfaction index as a model and discusses the findings of the predictor variables from the survey. The overall living satisfaction index was measured using the five point Likert scale: responses varied from strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4) and strongly agree (5). The Likert scale developed for the four-joint predictor variables and the overall living satisfaction index is exemplified in Table 2. Logistic regression analysis was used to identify which of the issues had the greatest impact on the overall living satisfaction score.

**Table 2. Specimen of Likert Scale Developed for the Survey Instrument**

To what extent do you agree or disagree with the following statements?	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Comments
Lifts are safe to use at night.	1	2	3	4	5	
There are enough green areas within the apartment complex.	1	2	3	4	5	
The neighbours are very friendly and good.	1	2	3	4	5	
It is safe to walk outside alone within the apartment complex at night.	1	2	3	4	5	
The overall living satisfaction in this apartment is very good.	1	2	3	4	5	

**Source: Survey Instrument Specimen (author)**

### Why a Logistic Regression Model?

A logistic regression model is used when the dependent variable is not a normal variable and if the predictor variables include a combination of normal and non-normal variables. Furthermore, it is essential to transform both the dependent variable and the non-normal predictor variables into dichotomous variables for analysis (Leech, Barret & Morgan, 2005). The normality check for overall living satisfaction index indicated that the distribution deviates from the normal pattern. The simple frequency distribution suggests, more than three-quarter population or 76% of the residents either agreed or strongly agreed with the overall living satisfaction index. Therefore, only a little under quarter population (24%) either disagreed or remained neutral with the overall living satisfaction index. Consequently, those who either disagreed or strongly disagreed or remained neutral with the overall living satisfaction were grouped into one category. Meanwhile, those who either agreed or strongly agreed were grouped into the second category. The justification adopted for grouping those who remained neutral with those who disagreed is, since 76% of the residents either agreed or strongly agreed with the overall living satisfaction index, those who remained neutral have a certain degree of disagreement at some point.

To determine the possible predictors for analysis, all four sub-scales were cross-tabulated with overall living satisfaction index to find out the statistical significance, which eliminated location scale. Also, two variables relating to children’s play area and fire safety were eliminated from analysis as they both had significant missing data. Therefore, a total of 20 items from the summative residential scale were included in the first stage of logistic regression analysis. In congruent with the grouping criteria of the dependent variable, all the predictor variables were transformed into dichotomous variables to standardise the analysis process. In doing so, though there is a potential risk in losing information from normal predictor variables, this process ensured homogeneity in the analysis process. Although, there were 8 statistically significant independent

predictors, only four jointly predicted overall living satisfaction index and the final model was derived in five stages.

The four joint predictor variables in the model derived through logistic regression analysis are:

- night safety of lifts
- friendly neighbours
- night safety within the apartment development
- enough green areas within the apartment complex.

The model is statistically significant at (chi-square = 31.17, degrees of freedom = 4, N = 84,  $p < .001$ ). They predict whether residents are likely to disagree to remain neutral or agree with overall living satisfaction index. Besides, the R-square estimates indicate that approximately 31% or 46% variance in whether the residents are likely to disagree to remain neutral or agree with overall living satisfaction index can be predicted from the combination of above-mentioned four independent variables.

## **Findings from the Predictors of Overall Living Satisfaction Index**

### ***Lifts are safe to use at night***

About 13% of the participants reported dissatisfaction with night safety of lifts, while 6% remained neutral and 81% agreed with the statement. The vast majority of the residents felt that lifts are safe to use at night. Three significant facts evolved regarding night safety of lifts are: residents hardly go out at night; if building is safe lifts are safe and thirdly, temporary black outs inside the lifts. Additionally, three of the many issues, which emerged from the preceding question related to lifts: 'lifts are easy and convenient to use', broadly overlaps with night safety of the lifts and is relevant in this context. And the issues are: lift break down; requiring emergency assistance and design issues. Therefore, all six relevant issues will be discussed below.

Firstly, very few residents go out at night and hence they assume lifts are safe to use at night. Secondly, some residents do worry about the night safety as building security is often compromised by resident complacency like leaving front doors or fire exit doors open inviting intruders into the development. Similarly, delay in fixing broken down roller shutters attract potential crooks through the car park into the development. Generally, swipe access restricted lifts were perceived to be safe by residents. Also, active surveillance inside lifts and buildings could give residents enhanced perception of safety. Thirdly, temporary black outs or blinking of lights inside the lifts is found to be scary for female residents in particular at night. Fourthly, lift break down, while in use can cause issues like panic attacks for elderly residents irrespective of day or night. Therefore, some residents are more critical of using lifts at night. Hence, some residents in community housing development, subjected to frequent lift break down were dissatisfied with night safety of lifts.

Fifthly, scenario requiring emergency assistance is equally valid at night in developments subjected to frequent break down. This might include people trapped inside lifts and requiring assistance to release them. Similarly, carrying sick patients through stairwell from upper floors by emergency service personnel is challenging, if the lift is prone to frequent malfunction as in community housing development housing elderly or disabled. Sixthly, long walks to access lifts through narrow corridors in big developments was raised as a safety issue by few residents.

### ***There are enough green areas within the apartment complex***

Only 30% of the residents agreed that there are enough green areas in the development, while as many as 24% disagreed with the statement. However, nearly 46% of the residents chose to remain neutral with regard to sufficient green areas within their developments. Six key facts discussed in this regard are: green areas are enough, green areas are not enough, green areas are not accessible and green areas have been closed down due to resident misbehaviour; difficulty in maintaining common areas and green areas are not maintained well.

The green areas in apartment developments ranged from tiny nature strip on the ground floor to multiple common gardens at various floors in some developments. Besides, some big developments also had roof top gardens. Firstly, many residents feel that green areas are enough, if it is maintained well and accepts that there are spatial constraints in the provision of green areas in apartment developments. Besides, green

areas on the ground floor and rooftop served as barbecue spots, which many residents used particularly during summer season. Secondly, an almost equal share of residents is unhappy about green area provision in apartments as they think it is not sufficient enough and more is to be done in this regard. Some residents think a garden with flowers would be good. Thirdly, in some cases access to tiny patches of green areas is denied to residents and they merely served as decorative purpose. Therefore, residents rarely used it and are even unaware there is provision for green areas within the developments.

Fourthly, in some developments green areas with barbecue spots have been closed down due to resident misbehaviour like: keeping the whole development awake throughout night due to noisy partying; throwing decorative pebbles in the roof top barbecue area to the adjacent streets jeopardizing the lives of people on the streets and not cleaning the common areas after parties. Fifthly for some residents maintaining common areas like courtyard was mentioned as a problem due to fallen leaves from common green areas. Finally, many residents feel that green areas are not maintained well. Lack of sufficient water for the green areas is the most common problem mentioned.

### ***The neighbours are very friendly and good***

Nearly three quarter of the survey population (70%) either agrees or strongly agrees with the statement. Only a minor proportion (3%) disagrees with the statement. Meanwhile, the remaining 27% remained neutral. Three key points emerged in this regard are: friendly contacts with neighbours; no contact at all with neighbours and problematic neighbours. Firstly, some residents have friendly contacts with their neighbours and knew their neighbours quite very well, often with neighbours on the same floor. Also, the residents in community development had more friendly contacts with neighbours on other floors, especially belonging to the same cultural background. Secondly, most residents had limited contact with neighbours, though they knew each other. This group of residents didn't encounter any problems with neighbours and are quite happy about it. Finally, some residents had to put up problematic neighbours. This ranged from partying noise to offences of more serious nature like running brothels.

### ***It is safe to walk outside alone within the apartment complex at night***

74% of the surveyed residents agreed with the statement about night safety within the apartment development as opposed to 8% who disagreed with the statement. Also, 18% of the residents chose to remain neutral with respect to safety within the development at night. The four key facts that emerged during discussion regarding night safety within an apartment development were: night safety varied between developments; residents refrained from going out; more needs to be done by the management and civic sense from the residents.

Firstly, safety within the apartment developments differed widely between developments. Generally, in community housing developments residents perceived it is totally safe to walk inside the development at night as it is well lit and some residents even go out at night after 10.30pm. In contrast, in one of the private buildings susceptible to drugs, guns and arson, it was perceived to be unsafe to walk outside within the development at night, particularly for women. Secondly, mostly residents refrained from going out late night due to apprehensions about safety associated with Fairfield. The management issues like delay in fixing broken down roller shutter and resident complacency issues like leaving building entrance doors or fire safety doors open discussed in the night safety of the lifts is equally significant in making developments safer at night for the residents.

### **Implications from the research findings**

The current Metropolitan Strategy (*Metropolitan Plan For Sydney 2036*, 2010) encourages high-rise apartments at strategic locations to accommodate the growing demands. Nevertheless, apartment living is often challenging due to myriad of reasons. Broadly, research findings could be grouped under five key themes.

- Design inadequacies- thoughtful design can eliminate many elements of dissatisfaction. For instance, long walks to lifts through narrow corridors in big developments are perceived to be a safety risk by few residents.

- Contrasting views- people are going to have different views on the same thing, even with the most efficient planning. For example, green areas in the apartment have been rated as adequate by some residents, while considered inadequate by some others.
- Different views from the same person- people's opinion about the same residential environment are affected by the circumstances at the time of the interview. For instance, in community housing development, where frequent lift break down has been mentioned as a problem, residents are happy when the lifts are working normally. In fact, that is the only complaint for most of the residents.
- Adequate response from body corporate or the management- it is essential to fix broken down roller shutter or lifts quickly to keep the development a safe and happy place to live for all the residents.
- Civic responsibility from residents is required to ensure harmonious living in apartments;

## **Conclusion**

High-rise living is inevitable to address the growing population and sustainability issues in Sydney. Therefore, it is essential to make apartment living more resident friendly in terms of design and management. The research findings indicate people do not dislike apartments per se, but more needs to be done in regard to address design inadequacies and poor management. Equally important is to raise awareness among the residents for increased tolerance and to shoulder more civic responsibility in coexisting peacefully in big developments.

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