Residents' perceptions of the importance of outdoor spaces and neighbourliness for medium-density mixed-housing in South Africa

Karina Landman & Jacques du Toit

Peer reviewed and revised

Abstract

Medium-density mixed-housing is promoted in various countries as a means toward creating more sustainable settlements. It does, however, require residents to live closer to their neighbours, share outdoor spaces, and be more neighbourly than what may typically be required in lower density suburban neighbourhoods. Yet, how important are outdoor design and neighbourliness for the success of medium-density mixed-housing in a South African context? This article examines the perceived importance of a number of outdoor design and neighbourliness factors from the point of view of residents living in such developments in South Africa. A survey of 300 residents across 10 developments reveals the importance of both outdoor design and neighbourliness, particularly if children, women, and older residents are involved. Planners and designers should, therefore, include sufficient private and common outdoor spaces to address the needs of residents and to promote neighbourliness and consequently the social acceptability of this type of housing in South Africa.

INWONERS SE PERSEPSIES VAN DIE BELANGRIKHEID VAN BUITERUIMTES EN BUURMANSKAP VIR MEDIUM-DIGTHEID GEMENGDE BEHUISING IN SUID-AFRIKA

Medium-digtheid gemengde behuising word in verskeie lande bevorder as 'n middel tot die skep van meer volhoubare nedersettings. Dit verg egter van inwoners om nader aan hul bure te leef, buite-ruimtes te deel en om meer buurlik te wees as wat tipies in laer-digtheid voorstedelike woonbuurte vereis sou word. Tog, hoe belangrik is buite-ontwerp en buurmanskap vir die sukses van medium-digtheid gemengde behuising in 'n Suid-Afrikaanse konteks? Hierdie artikel ondersoek die vermeende belangrikheid van 'n aantal buite-ontwerp- en buurmanskapfaktore uit die oogpunt van inwoners in sulke ontwikkelings in Suid-Afrika. 'n Opname van 300 inwoners verspreid tussen 10 ontwikkelings openbaar die belangrikheid van beide buite-ontwerp en buurmanskap, veral as kinders, vroue en ouer inwoners betrokke is. Beplanners en ontwerpers moet dus voldoende private en gemeenskaplike buite ruimtes insluit om aan die behoeftes van inwoners te voldoen en om buurmanskap en gevolglik die sosiale aanvaarbaarheid van hierdie tipe behuising in Suid-Afrika te bevorder.

BOHLOKOA BA SEBAKA SA KANTLE LE BOHAISANE KA HARA DIBAKA TSA MEDIUM-DENSITY MIXED-HOUSING AFRIKA BORWA: KA LEIHLO LA BA AHI

Medium density mixed housing e hlohleletsa ka hara naha tse fapakaneng e le mpokhoa oa ho etsa bolulo ba batho bo itswedise pele. Le ha ho le joalo; e hloka baahi ho dula haufi le baahisane ba bona, ba arolelana dibaka tsa kantle ebile ba bbontsha boahisani ho feta metse ya lower-density. Le teng ho bohlokoa ha kae ho ba le dibaka tse kantle le boahisani hore medium density mixed housing e atleheka hara naha ya Afrika Borwa?serapa sena se shebisisa bohlokoa ba dibaka tsa kantle le boahisani ka leihlo la baahi ba dulang dibakeng tse tjena Afrika Borwa. Dipatlisiso tsa dipotso tse ileng ho baahi ba 300 ka hara dibaka tsena tsa medium density mixed housing, tse 10, di bontshitse bohlokoa ba dibaka tsa kantle le boahisane, haholo holo ha bana, basadi le batho ba baholo ba le teng. Ha ho le joalo, ho bontsha hore bareri ba tlameha ho kenyelletsa ditlhoko tsa baahi le ho hlohleletsa boaisane le kaohelo ya ho ba le bululo bo tjena Afrika Borwa.

1. INTRODUCTION

There is an increased emphasis worldwide on medium-density mixed-housing, especially in the US (Talen, 2008), the UK (Berube, 2005; Roberts, 2007), The Netherlands (Geurs & Van Wee, 2006), Germany (Hanhorster, 2001), Australia (Buxton & Tieman, 2005) and New Zealand (Dixon, Dupius & Lysnar, 2001; Dixon & Dupuis, 2003; Turner 2004; Hewitt, Wagner, Su & Davies, 2004). They argue that increased density and mixed-housing can contribute to safer and more sustainable human settlements, while enabling greater socio-spatial integration (Baily, Haworth, Manzi, Paranagamage & Roberts, 2006; Jabareen, 2006; Sivam, Karuppannan & Davis, 2012; Talen, 2008). According to Haughey (2005), there are many misconceptions associated with higher density housing, e.g., traffic and parking problems, higher crime rates, environmental destruction, and generally unattractive and intended for low-income residents. It is also held that suburbanites do not want to live in medium- and higher density housing (Haughey, 2005). Similarly, there are negative perceptions associated with medium-density housing in so far that it is noisy, ugly, and overcrowded with irresponsible residents (CABE, 2005; Sivam *et al*., 2012). As with higher density housing, there are also fears associated with mixed-housing that are linked to cultural pluralism and the creation of 'ethnic federalism', impacts on environmental diversity, challenges for community policing and neighbourly disputes, growing resentment among neighbours, disrupting social networks, and increased social segregation (Talen, 2008: 43-45). Despite the increased emphasis on densification, urban

Prof. Karina Landman, Associate Professor, Department of Town & Regional Planning, University of Pretoria, Private Bag X20, Hatfield, 0028, South Africa. Phone: +27 12 420 6379, email: <karina.landman@up.ac.za>

Dr Jacques du Toit, Senior Lecturer, Department of Town & Regional Planning, University of Pretoria, Private Bag X20, Hatfield, 0028, South Africa. Phone: +27 12 420 5765, email: <jacques.dutoit@up.ac.za>

consolidation and mixed-housing in several countries, there is as yet little agreement on the application or social acceptability thereof.

In South Africa, the emphasis on medium-density mixed-housing is evident in the National Housing Plan, called *The Comprehensive Plan for the Development of Sustainable Human Settlements* (2004), as well as Spatial Development Frameworks of several major cities, including Johannesburg (City of Johannesburg, 2010-2011), Cape Town (Turok, 2011) and Pretoria (City of Tshwane, 2012). However, while medium-density and mixed developments are actively promoted and encouraged by government and several policies, many challenges remain in their implementation (Tonkin, 2008; Klug, Rubin & Todes, 2013). Given the different interpretations of space and the different perceptions of medium-density mixed-housing, several questions are raised about the critical success factors for medium-density mixed-housing in this country, especially in terms of private and communal outdoor spaces and its relation to issues of neighbourliness. While Tonkin (2008) highlighted that residents may have concerns about privacy and neighbourliness in medium-density developments, these concerns were mainly related to the size and nature of the housing unit. Given the criticisms levelled against medium-density and particularly mixed housing, and debates on factors necessary for its success, it is also important to gauge such factors from a resident point of view. This remains an unexplored area.

This article reflects on findings from a study carried out on a number of medium-density mixed-housing developments in South Africa. The study involved a survey to determine the preferences of residents regarding a range of critical success factors for this type of housing, including their views of neighbourliness and private and communal outdoor spaces.

2. MEDIUM-DENSITY MIXED-HOUSING

Although a wide range of studies and policy documents refer to medium-density housing, there is no internationally accepted range for 'medium-density' housing. In India, 'medium density' is considered to be between 201 and 400 du/ha (Dave, 2010: 16). This is much higher compared to that in the UK, where, for example, 'medium density' is regarded as approximately 84 du/ha (CABE, 2005: 7), while ranges tend to be even lower in Australia and New Zealand. In Australia, policy defines 'medium density' as between 35 and 70 du/ha (Sivam *et al.,* 2012: 479) and in New Zealand between 30 and 66 du/ha (Turner *et al*., 2004: 22). Recent documents in South Africa consider medium density to be between 40 and 50 to approximately 100 and 125 du/ha (Tonkin, 2008: 2; Department of Human Settlements, 2009: 69). The same is true of mixed developments. According to Tunstall & Fenton (2006: 6), mixed developments would include different types of buildings, their built form, size, designated uses, tenure forms and market value or rental levels. While some authors suggest a difference between mixed-'housing' developments as opposed to mixed communities or neighbourhoods, others use these terms interchangeably to refer to mixed housing of various types of dwelling and tenure and mixed developments or neighbourhoods with various land uses, income and ethnic groups (Landman, Matsebe & Mmonwa, 2009: 17). For the purpose of this article, the authors define medium-density mixed-housing developments as those with a density of between 40 and 125du/ha and including a mix of types of housing and tenure, income groups and/or land uses.

Medium-density and mixed-housing are increasingly claimed to contribute to more sustainable cities (e.g., see Jenks & Dempsy, 2005; Jabareen, 2006; Rogers, 1997; Talen, 2008), including cities in developing countries (Dave, 2010). This implies smaller or no private outdoor spaces or gardens, and dwelling units that are located much closer or adjacent to each other. In the case of mixed developments, it could also imply a neighbour from a different background, hence the negative perceptions that are often associated with medium-density mixed-housing. As pointed out by Rapoport (1977) and confirmed by Dave's study in Mumbai (2010), it is important to consider specific contextual and cultural differences within developing countries to assess the relevance of medium-density mixed-housing, in order to avoid certain generalisations. This type of housing can manifest in different forms and should meet the needs and aspirations of the local residents and different social groups to address specific issues of quality of life. Considering and implementing medium-density mixed-housing should also be done in conjunction with factors such as physical form, size, layout and socio-economic attributes. Dave (2010: 25) indicated that "people assess their home and neighbourhood by standards of public and private amenities provided and not by the density they are built".

A number of studies highlight the importance of several factors for the success of medium-density mixed-housing. These factors include a focus on access to both private and communal outdoor spaces within the housing development that are linked to the dwelling unit or at least in close proximity to units (Turner *et al*., 2004: 13; CABE, 2005: 17; Boumeester, Dol & Meesters, 2009: iii; Smith, Clayden & Dunnett, 2009: 166; Coolen & Meesters, 2012: 58). It has also been argued that adjacent, accessible and high-quality communal open spaces and public space play an important role in facilitating greater social interaction and building social networks in the context of higher density housing in more diverse neighbourhoods (Marcus & Sarkissian, 1985: 107, 187; Bernardini & Irvine, 2007: 669). Cuthbert (1985: 118) points out that the term 'density' implies a multitude of "subjective perceptions of space". These "subjective perspectives" are likely to be different in various contexts and that diversity, associated with mixed developments, is a matter of cultural perception (Talen, 2008: 43).

2.1 Private outdoor spaces

Private outdoor spaces are directly linked to the dwelling unit and thus

differ from communal spaces that are incorporated within the layout of the housing complex or development and open to all residents. As denoted by the name, private outdoor spaces are clearly demarcated and can include balconies, verandas and porches. It may also include a deck or patio level for table and chairs next to the house, bare soil for a garden, lockable storage area, drying yard, outside tap, and a pergola or lattice work over porches for sun protection (Marcus & Sarkissian, 1985: 95).

Marcus & Sarkissian (1985: 39, 94) point out that private outdoor spaces attached to dwellings in medium-density housing are necessary for three reasons, namely to provide visual privacy; to offer a buffer zone between dwellings in order to diffuse noise related to children playing or people listening to music, and to present outdoor space for activities such as toddlers' play, minor repairs, accommodating pets, gardening and drying clothes. In addition, private zones also have symbolic and psychological significance, offering a space to personalise and enjoy relief from stressful work activities and tense relations inside the dwelling (Marcus & Sarkissian, 1985: 94).

Several studies related to residents' preferences confirm these findings, showing a strong preference for private outdoor space and gardens in the UK (Bernardini & Irvine, 2007: 661; Smith *et al*., 2009: 53), The Netherlands (Boumeester *et al*., 2009: iii; Coolen & Meesters, 2012: 50) and New Zealand (Turner *et al*., 2004). In The Netherlands, there was a clear preference for a private outdoor zone and a ground-related dwelling, especially among people with children, while those without children indicated that a roof terrace or balcony could act as substitute for a garden. A communal garden was considered an extra luxury, but not as a substitute for a private garden, while aspects such as privacy and control were considered of utmost importance (Boumeester *et al*., 2009: iv). Similarly, Coolen & Meesters (2012: 65) found that people ascribe different meanings to these spaces and, hence, the one cannot be considered as a substitute for the other. Private outdoor spaces with a garden, preferred by almost 80% of the residents in the study, were associated with being outside, privacy, freedom, and gardening. Public green space was considered to contribute to the liveability of the dwelling and the experience of nature (Coolen & Meesters, 2012: 65). In England, interviews revealed that relaxation, peace and meditation were the most valuable meanings attributed to having access to a garden, followed by a sense of privacy and being in close contact with nature. The sense of privacy also allowed people to express personal creativity, while close contact with nature allowed them to experience the 'rhythm of life' (Bernardini & Irvine, 2007: 667).

2.2 Communal open spaces

According to Marcus & Sarkissian (1985: 95) communal outdoor spaces refer to those spaces between the units, such as, for example, access routes and driveways, parking areas, pedestrian routes, play areas for children, and other recreational areas that may have hard or soft surfaces. The layout and design of communal open spaces are considered important. One of the benefits of medium-density housing is that the clustering of units offers the opportunity for parts of the site to be left in their natural state or landscaped into attractive communal spaces (Marcus & Sarkissian, 1985: 107).

In the UK, a study by CABE (2005: 16) identified the 10 most negative factors to higher density housing, one being a concern with the lack and quality of public and communal spaces within the development. Smith *et al*. (2009: 166) indicated a tendency towards reduced private space provision at higher densities, which may influence tree planting and vegetation. In these types of developments, there is often greater reliance on communal spaces to cater for socialisation and children's play. The presence of trees could significantly add to the quality of these spaces. It is also important that these spaces accommodate a variety of uses and good surveillance (Smith *et al*., 2009: 182). This emphasises the need for well-designed common spaces. While not negating the value of communal spaces, the authors maintain that communal spaces cannot replace private spaces, as they do not allow opportunities for self-expression and territoriality (Smith *et al*., 2009: 182).

2.3 Neighbourliness

One of the benefits of well-designed and maintained communal open spaces relates to the development and presence of a sense of community and identity, as well as neighbourliness and social cohesion (Marcus & Sarkissian, 1985: 40, 119). The social embeddedness of families is one of the key aspects influencing residential choice. Households with children tend to focus more on building social networks with neighbours, and this is even more important among working families who try to establish supportive communities based on mutual exchange and sociality (Karsten, 2007: 85). In addition, in a study on medium-density housing in the inner city of Melbourne, it was found that outdoor spaces helped extend the fields of home life outside the housing unit, offering opportunities to belong to the local community (Fincher & Gooder, 2007: 171, 181).

Residents also tend to orient themselves to particular neighbours and tend to socialise with those from a similar class or ethnicity (Butler & Robson, 2001). This reflects a desire to belong to certain social circles, which, in turn, plays an important role in terms of the preference for, and choice of residential location. However, in some instances, particular variables such as the location of the residence within the larger city in close proximity to a wide range of socio-economic opportunities may be stronger than that of the profile of the immediate neighbours, as was the case with residents who opted to stay in the inner city of Rotterdam (Karsten, 2007: 95). This raises challenging questions about residential preferences of South Africans within medium-density mixed-housing with neighbours from diverse backgrounds

living much closer to each other than within traditional neighbourhoods.

While the concept of 'neighbourhood' has been widely explored since the heyday of the Chicago School of urban sociology (e.g., see Clark, 2008: 154; Katz, 2010: 25), the concept of 'neighbourliness' has been less so, and is generally absent from the literature on medium-density housing, apart from anecdotal references to various social issues alluded to earlier. This article adopts a broader view rather than an explicit definition of 'neighbourliness' as any factor that may involve positive social interaction between residents living in medium-density mixed-housing, particularly those living next door or adjacent to each other. The specific items used to measure 'neighbourliness' in this study are mentioned under the findings section. This article, therefore, also contributes to the existing literature on medium-density housing by including a focus on neighbourliness, particularly in relation to outdoor space that presents the setting where residents in medium-density housing interact with each other.

3. RESEARCH DESIGN AND METHODS

A survey was conducted among residents across 10 medium-density mixed-housing developments in South Africa between 2008 and 2010.

3.1 Sampling of developments

The first step was to obtain a representative sample of developments that fitted the criteria in this study for both 'medium-density' and 'mixed-use'. 'Medium-density' included: 50-125 du/ha; four storeys or less, and a combination of the following for each unit: ground-level entry; private outdoor space (e.g., a small garden, patio or balcony), or direct or close proximity to secure parking. 'Mixed-use' included at least two of the following: types of building and/or dwelling/unit; land-uses; tenure forms, or income groups (facilitated by affordable and market-rate housing in the same development).

Despite the emphasis on medium-density and mixed-housing in South Africa, it was visibly not yet part of mainstream housing development at the time of designing the study. Therefore, extensive groundwork had to be done first in order to compile a reasonably comprehensive sample frame of such developments. Groundwork included various consultations with a number of larger municipalities and prominent developers, as well as following up any leads the researchers could find, such as informants, media articles and own notes. Ten developments were eventually identified across South Africa that met the above criteria. The listing also provides a useful sample frame or set of prototypes for future research on medium-density mixed-housing in South Africa. Although all ten developments met the criteria for the study, they nevertheless varied noticeably from each other in terms of different characteristics (see Section 4.1 and Table 2).

3.2 Sampling of residents

The second step was to sample residents across each of the 10 developments. A sample frame was compiled for each development using property administration records, whereafter unit numbers were randomly sorted within each development. Fieldworkers were trained and instructed to survey heads of households from at least 30 units in each development using lists of randomly sorted unit numbers per development. Heads of households had to be 18 or older for the unit to be sampled.

Table 1 shows the number of units, the number of sampled units and respective sample sizes across each development in alphabetical order.

At Cosmo City, the sample frame was stratified by different tenure options, including 'bonded', 'credit-link' and 'RDP' houses, while 10 surveys were completed for each type. A total sample of 300 units was obtained – 2.2% of the total of 13 703 units across all 10 developments. The strength of the sample lies in having obtained equal sample sizes across different types of medium-density mixed-housing developments in South Africa. An 'equal voice' was, therefore, given to residents across all 10 developments in so far as their perceptions are formed in response to the particular type of development in which they lived.

Table 1: Number of units, number of sampled units and respective sample sizes across developments

Development	Number of units	Number of sampled units	Sample size (%)
Amalinda	598	30	7.9
Brickfields	200	30	18.0
Carr Gardens	213	30	16.0
Cosmo City	1 545	30	1.9
Hull Street	114	30	36.0
Olivenhoudtbosch	5 480	30	0.6
Pennyville	756	30	7.0
Sakhasonke	336	30	14.0
Thornhill	1 100	30	2.7
Wonder Park	1 480	30	2.0
Total	13 703	300	2.2

3.3 Fieldwork

Fieldworkers introduced and explained the purpose of the study, obtained informed consent, and asked the head of the household to complete a questionnaire in the presence of the fieldworker. Where residents found it difficult to complete the questionnaire, fieldworkers interviewed residents in their own language, where possible, and completed the questionnaire on their behalf. No other household members were surveyed apart from the head of the household.

The questionnaire presented residents with a number of different outdoor design and neighbourliness factors. The authors conceptualised and operationalised these factors following literature reviews and workshops with other researchers, and considering their relevance to medium-density mixed-housing in a South African context. At each set of factors, residents were asked the following question: "On a scale of 1 to 5, with '1' being 'not important at all' and '5' being 'important to a large extent', how important are the following factors for the success of the type of housing in which you are currently living?". Each factor was then coupled with a five-point Likert scale.

3.4 Data analysis

Data were captured, cleaned and analysed using the Statistical Package for the Social Sciences (SPSS). Each fieldworker captured their own questionnaires, whereafter each fieldworker's dataset was spot-checked by the authors to verify the authenticity and accuracy of the capturing. Selected descriptive and inferential statistical techniques were used to analyse data, while statistical significance was calculated at the .05 level.

4. FINDINGS

4.1 Description of sampled developments

Medium-density mixed-housing is evidently quite varied in the South African context considering size, built form and types of mix. Although size was not a sampling criterion, different sized developments were nevertheless obtained, ranging from smaller developments contained within one or more urban blocks (e.g., Brickfields, Amalinda, Sakhasonke, and Hull Street) to larger developments comprising an entire neighbourhood (e.g., Cosmo City, Pennyville, and Thornhill).

Table 2 provides an outline of each development in alphabetical order, including its location, character, income level, type of units, and whether it included private and communal outdoor spaces.

In addition to the mix of types of housing units and tenure in these developments, there are also a variety of outdoor private and communal spaces (see Table 2).

Table 2: Outline of developments

Name (and location)	Character (and income level)	Type of units	Private outdoor space	Communal outdoor space*
Amalinda (East-London)	Medium density mix (housing, income and tenure types) (Low to low-medium income)	1-, 2- and 3-bedroom units	None	Large communal space with facilities in the centre and parking along circular route, small yard for washing shared by a few units
Brickfields (Johannesburg)	Medium density mix** (housing, income and land-use mix) (Medium to low income)	1-, 2- and 3-bedroom units	Balconies or patios with most units	Large communal space with facilities and parking in the centre
Carr Gardens (Johannesburg)	Medium density mix (housing, income and land-use mix) (Low to low-medium income)	1-, 2- and 3-bedroom units	Balconies or patios with most units	Various smaller soft open spaces with planting and hard open spaces for parking
Cosmo City (Johannesburg)	Low-medium to medium density mix (housing, income and land-use mix) (Low to low-medium income)	Bonded, credit linked and RDP houses***; social housing units	Small to medium outdoor/ garden space around houses and balconies in some of the social housing units	Communal outdoor space around social housing units and parks in the housing precincts with other facilities
Hull Street (Kimberley)	Medium density mix (housing, income and tenure mix) (mixed land-use being planned) (High to low-medium income)	1-, 2- and 3-bedroom units	Small to medium outdoor/ garden space in front and to the back of semi-detached units	Large communal outdoor space in the centre with houses around perimeter
Olivenhoudtbosch (Pretoria)	Medium density mix (housing, income, tenure and land-use mix) (High to low-medium income)	Bonded and subsidised (RDP) houses	Small to medium outdoor/ garden space around houses	Communal outdoor space in the neighbourhood and parks in the housing precincts with other facilities
Pennyville (Johannesburg)	Medium density mix (housing, income and tenure mix) (Medium to low income)	Credit linked and RDP houses; social housing units	Patios in front of 'RDP' houses; balconies in most of the credit-linked units	Neighbourhood parks in housing precinct with other facilities
Sakhasonke (Port Elizabeth)	Medium density mix (housing and tenure types, limited mix use) (Low to very low income)	2-bedroom subsidised units	Small outdoor/garden space in front and to the back of semi-detached units	Small communal outdoor spaces in centre of clusters of units; community garden and larger soft open space in front of community centre
Thornhill (Polokwane)	Medium density mix (housing, income and tenure, and land-use mix) (High to low-medium income)	Single standing houses, 1- to 2-bedroom townhouses and 1-bedroom / bachelor units	Small to medium outdoor/ garden space around most of the houses	Swimming pool, tennis and squash court, gym and entertainment area in higher income precinct, shopping complex
Wonder Park (Pretoria)	Medium density mix (housing, income and tenure, and land-use mix) (Medium to low income)	Studio, 1-, 2- and 3-bedroom units	Balconies and patios with housing units, small gardens in front of some of the units, carports	Large communal area in the centre of the development with sport and recreational facilities, communal parking along major roads

Notes:

* Given the varied nature of medium-density mixed-housing in South Africa, it is difficult to generalise in terms of the nature of common outdoor spaces. This is also true, as common outdoor spaces in complexes or estates may vary from those in mixed neighbourhoods. However, larger communal spaces may include neighbourhood parks and generally comprise an area of over 100m^2, while small open spaces in complexes are generally less than 100m^2.

** These developments include a higher density component, although only the medium-density component was surveyed.

*** 'RDP houses' refers to subsidy houses provided by the government as part of its 'Reconstruction and Development Programme' for low-income households who earned less than R3 500 per month in 2010.

Figure 1 shows outdoor spaces ranging from small balconies or patios attached to units (e.g., Brickfields, Carr Gardens, and Wonder Park) to smaller gardens that are enclosed with low fences or walls (e.g., Hull Street, Sakasonke, and in the cluster housing in Thornhill).

In Pennyville, some of the units have balconies, while the RDP units have private spaces, although many of these are not enclosed. In Thornhill and Cosmo City, where the difference between the units and income groups is much greater, some of the larger houses have significant enclosed private spaces. Similarly, communal spaces also vary, both in terms of size and extent. While the smaller developments include only a few smaller green open spaces and communal parking areas with a community hall and perhaps a community garden or crèche (e.g., Amalinda, Brickfields, Hull Street, and Sakhasonke – see Figures 1 to 3), medium-sized projects such as Wonder Park include a large communal area in the centre with community and recreational facilities.

The larger neighbourhood-level projects include a wider variety of outdoor spaces, including parks, urban squares and pedestrian routes, and a large number of facilities such as schools, small and larger shops, corner cafés, a library, places of worship, sports facilities and one or more crèches (e.g., Pennyville, Cosmo City, Olievenhoudtbosh, and Thornhill – see Figure 4). This illustrates that, although these projects can all be classified, to some extent, as medium-density mixed-developments, the nature and size of the public open space within them differs substantially.

4.2 Questionnaire survey results

4.2.1 Profile of respondents

Table 3 shows the predominant socio-demographic profile of residents across each development based on the attributes of the majority (i.e., 50% or more) of heads of households surveyed.

A cursory overview of Table 3 suggests that residents of the 10 developments surveyed were predominantly young Black African females, at least as far as heads of households were concerned. The predominant socio-demographic profile obtained in this study may be indicative of the current and future socio-demographic profile of residents in medium-density mixed-housing in South Africa. An exception was Hull Street where the majority of the residents appeared to be Coloured and older than 35 years. At Brickfields, as many as 90% of the residents surveyed were younger than 36, while at Wonder Park, all of the residents surveyed were younger than 36. Of course, predominant ownership status depended on the different tenure options that were available across each of the developments.

Figure 1: Four-storey walk-ups in Brickfields with common space in the foreground

Source: Authors

Figure 2: Three-storey walk-ups in Amalinda with the communal area in the centre

Source: Authors

Figure 3: Two-storey semi-detached units in Sakhasonke with small neighbourhood space in-between the units

Source: Authors

Figure 4: Social housing units with communal spaces in Cosmo City

Source: Authors

Table 3: Predominant socio-demographic profile of heads of households across each development

Development	Gender	Age in years	Population group	Ownership status
Amalinda	Female	18-35	Black African	Tenant
Brickfields	Female	18-35	Black African	Tenant
Carr Gardens	Male	18-35	Black African	Tenant
Cosmo City	Female	18-35	Black African	Owner
Hull Street	Female	36 or older	Coloured	Tenant
Olivenhoudtbosch	Female	18-35	Black African	Owner
Pennyville	Female	18-35	Black African	Owner
Sakhasonke	Female	18-35	Black African	Owner
Thornhill	Male	18-35	Black African	Tenant
Wonder Park	Male	18-35	Black African	Tenant

4.2.2 Residents' perceptions of the importance of outdoor design and neighbourliness

For the purpose of this article, findings of four outdoor-design and four neighbourliness factors are presented. The outdoor-design factors included 'private backyard facilities'; 'private garden facilities'; 'communal, recreation and play facilities', and 'demarcation between public and private spaces'. The neighbourliness factors included 'sense of community'; 'presence of social networks and support groups'; 'mix of different social groups', and 'mix of different income groups'. A test for reliability revealed moderate to high internal consistency amongsthese eight factors (Cronbach's *alpha* = .869, Valid N = 295, N of items = 8). Maree & Pietersen (2007: 216) suggest the guidelines for the interpretation of Cronbach's *alpha* coefficient as follows: 0.90 – high reliability, 0.80 – moderate reliability, and 0.70 – low reliability.

Findings are subsequently presented in terms of percentage distributions of importance ratings of different outdoor-design and neighbourliness factors, coupled with socio-demographic predictors of importance ratings.

Figures 5 to 12 show tree diagrams derived from *Chi*-square Automatic Interaction Detections (CHAIDs). Figures 5 to 8 include tree structures for outdoor-design factors, while Figures 9 to 12 include tree structures for neighbourliness factors. The top or first level of a tree shows the percentage distribution of the dependent variable, i.e., the rating of a particular success factor. The second level shows the same data for subgroups of an independent variable that is statistically the strongest predictor of the dependent variable as measured by the *Chi*-square test for independence. Predictors were only identified if they were statistically significant at the .05 level, while the third level, in turn, shows predictors of second-level subgroups. Eight socio-demographic variables that were expected to influence residents' perceptions of housing aspects were tested as independent variables, including gender; age; population group; marital status; household size; presence of children in the household; duration of stay, and presence of family or relatives in the neighbourhood or nearby. Data from the five-point scales were reduced to three categories, including 'relatively unimportant' (comprising the first two points on each scale), 'indifferent' (comprising the mid-point), and 'relatively important' (comprising the last two points on each scale).

Figures 5 to 8 show that each of the four outdoor-design factors were considered important for the success of medium-density mixed-housing by the majority of residents. 'Communal, recreation and play facilities' appeared the most important of the four, given that approximately 67% of the residents ranked it as 'important', while 'private garden facilities' appeared least important, given that only approximately 57% of the residents ranked it as 'important' (see Figures 6 and 7). With each of the four factors, small percentages of residents were indifferent, while the bulk of residents ranked factors as either unimportant or important. For the first three factors, the presence of children in the household emerged

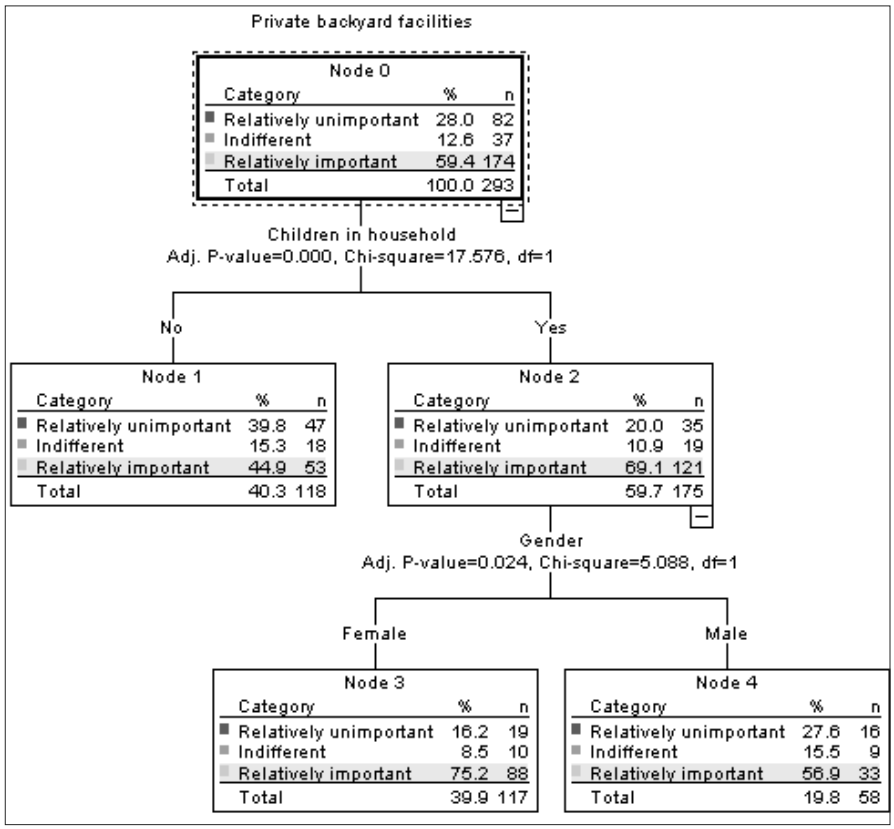

Figure 5: Percentage distribution and predictors of 'private backyard facilities'

as the strongest predictor of how residents ranked those factors, with significantly larger percentages of households with children regarding those factors as important compared to households without children. For example, approximately 69% of the households with children ranked 'private backyard facilities' as important compared to approximately 45% of the households without children (see Figure 5). On the other hand, household size emerged as the strongest predictor of how residents ranked 'demarcation between public and private spaces', with a significantly larger percentage of households with more than two persons, which may, of course, include households with children, regarding such demarcation as important compared to households with only one or two persons (see Figure 8). For both the first two factors, gender emerged as the strongest predictor of how residents in households 'with' children ranked those factors, with significantly larger percentages of females ranking 'private backyard and garden facilities' as important compared to males (see Figures 5 and 6).[1] This analysis underscores the importance of children, gender, and household size as influences on residents' perceptions regarding the importance of outdoor design for the success of medium-density mixed-housing. None of the other five socio-demographic variables emerged as statistically significant predictors.[2] Perceptions regarding the importance of outdoor design appear to be foremost shaped by

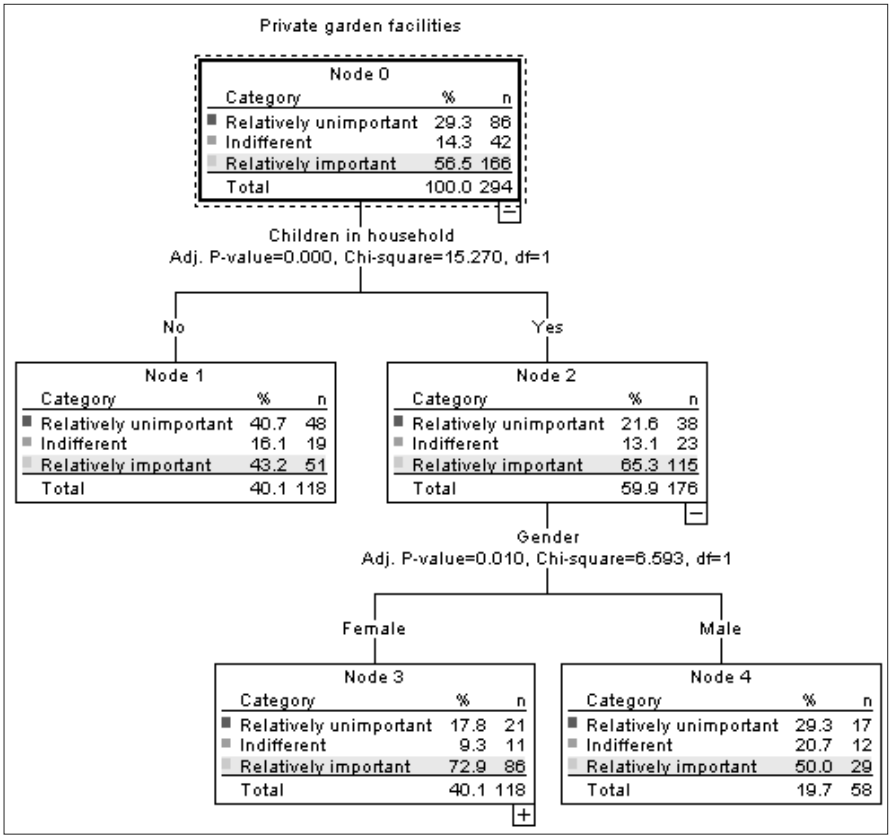

Figure 6: Percentage distribution and predictors of 'private garden facilities'

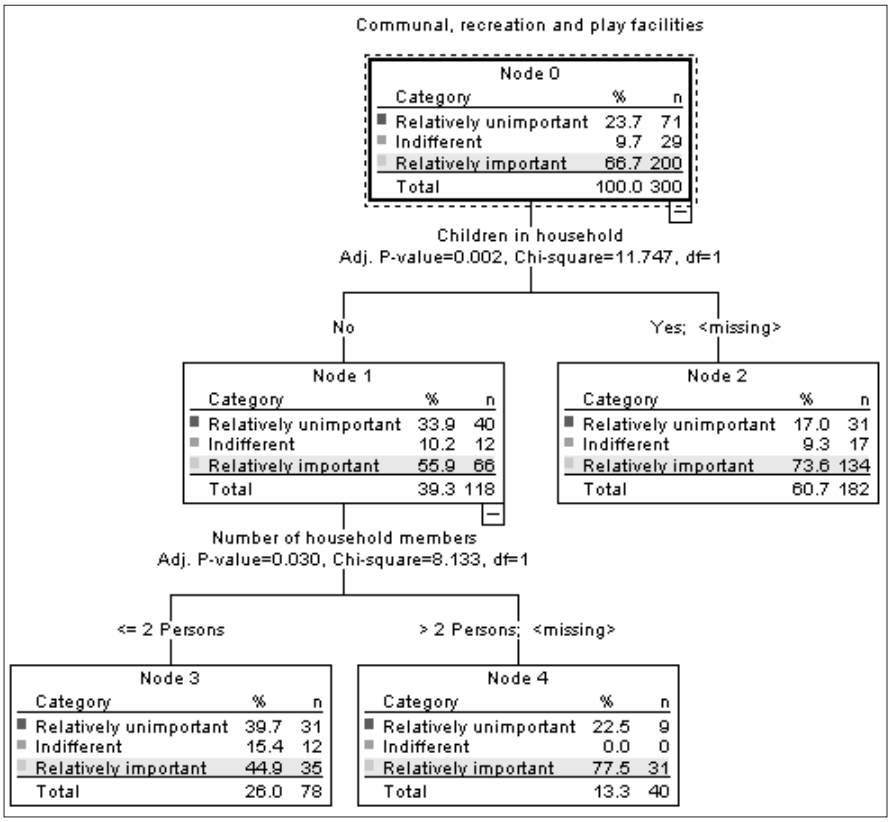

Figure 7: Percentage distribution and predictors of 'communal, recreation and play facilities'

1 This finding is irrespective of the fact that females constituted the majority of the respondents across most of the developments, since inferential statistics account for variations in sample sizes between subgroups.

2 Considering 'population group' as a predictor, this finding is also irrespective of the fact that Black Africans constituted the majority in nine of the 10 developments. 'Population group' may still have emerged as a statistically significant predictor despite small numbers of groups other than Black Africans for the same reason mentioned earlier. However, it is acknowledged that the study is limited in the extent to which the socio-demographic profile of residents in the complexes surveyed does not entirely reflect the actual population group profile of the South African society. In this regard, the authors do caution against making bold inferences regarding any aspect related to population group.

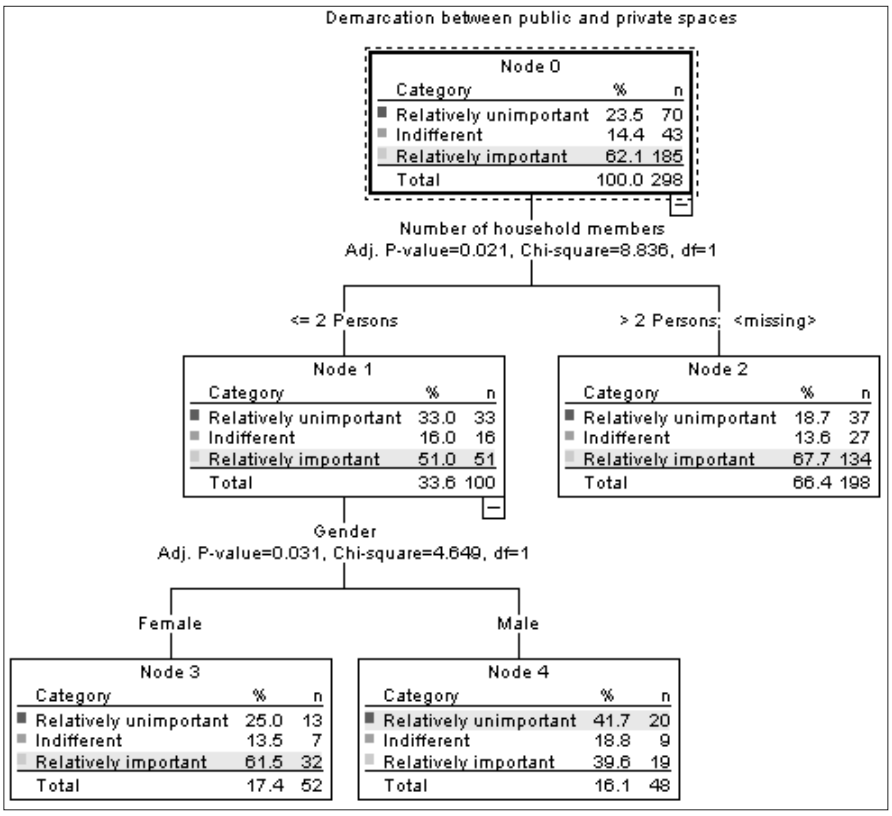

Figure 8: Percentage distribution and predictors of 'demarcation between public and private spaces'

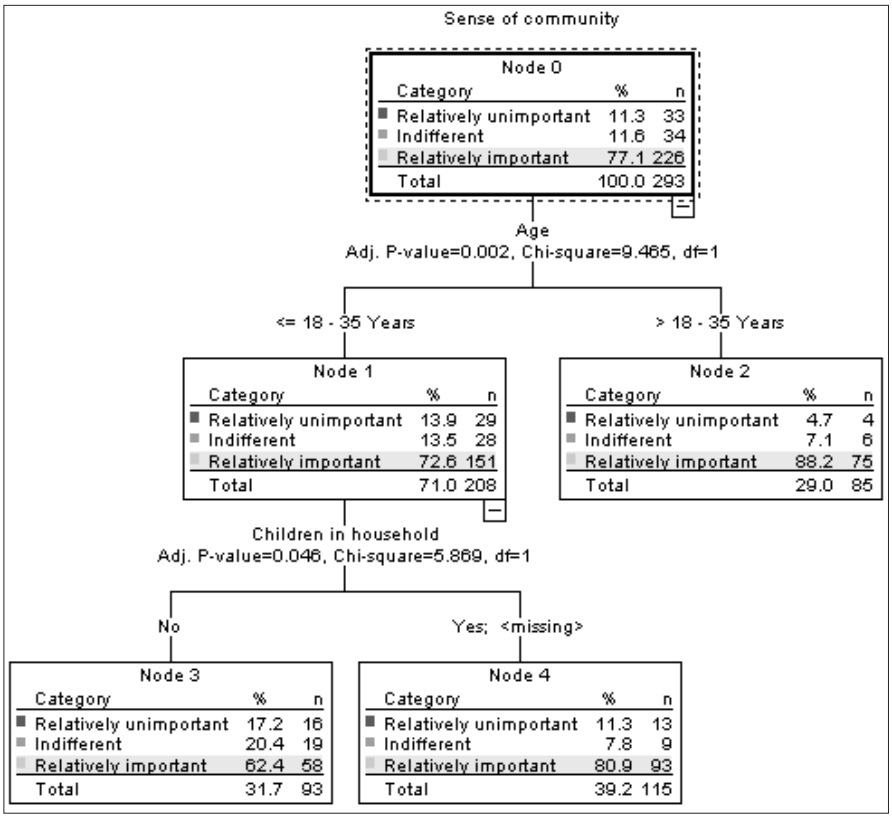

Figure 9: Percentage distribution and predictors of 'sense of community'

the presence of children in the household, followed by the presence of female heads of household in households 'with' children. Female-headed households with children are, therefore, more concerned with outdoor design compared to male-headed households, which may be due to single-parent females being more sensitive towards issues of safety and neighbourliness.

For women and/or households with children, having access to well-designed outdoor spaces within an enclosed medium-density development is clearly an important compromise to lower density suburban housing that are traditionally associated with family and outdoor living, and corroborates a similar trend in South Africa whereby the affluent often chooses to raise children in large open-space security estates. Figures 9 to 12 subsequently show similar tree diagrams for neighbourliness factors.

Figures 9 to 12 show that the majority of the residents also considered each of the four neighbourliness factors important for the success of medium-density mixed-housing. 'Sense of community' appeared the most important of the four, given that approximately 77% of the residents ranked it as 'important', while 'presence of social networks and support groups' appeared least important, given that only approximately 58% of the residents ranked it as 'important' (see Figures 10 and 11). It is interesting to note that 'mix of different income groups' – a contentious issue in current South African housing policy – emerged as neither the most nor the least important neighbourliness factor. However, of all four neighbourliness factors, 'mix of different income groups' had the largest percentage of residents (approximately 16%) that felt indifferent regarding its importance. This may point towards levels of uncertainty regarding the importance of income-mixing for medium-density mixed-housing. In addition, it should be borne in mind that all 10 developments surveyed as part of this study already included medium- to low-income units and may well be expected

in predominantly higher income developments.

For two of the factors, i.e., 'sense of community' and 'mix of different social groups', age emerged as the strongest predictor of how residents ranked those factors, with significantly larger percentages of residents older than 35 years regarding those factors as important compared to residents between 18 and 35 years (see Figures 9 and 11). Gender and the presence of children again emerged as predictors, although less prominent compared to predictors for outdoor-design factors. Gender emerged as the strongest predictor of how residents ranked 'presence of social networks and support groups', with a significantly larger percentage of females (approximately 64%) compared to males (approximately 48%) ranking such a factor as important (see Figure 10). The presence of children was of secondary importance considering both 'sense of community' and 'presence of social networks and support groups'. Significantly larger percentages of younger residents (between 18 and 35 years) with children in the household regarded 'sense of community' as important compared to younger residents without children (see Figure 9), while significantly larger percentages of female-headed households with children regarded 'presence of social networks and support groups' as important compared to female-headed households without children (see Figure 10). There were no statistically significant predictors for how residents rated 'mix of different income groups', while, again, none of the other socio-demographic variables, such as 'population group', 'marital status', 'duration of stay', or 'presence of family or relatives in the neighbourhood or nearby', emerged as predictors of how residents ranked neighbourliness factors. Perceptions regarding the importance of neighbourliness appear to be foremost shaped by age, followed by the presence of children in households headed by younger and/or female residents.

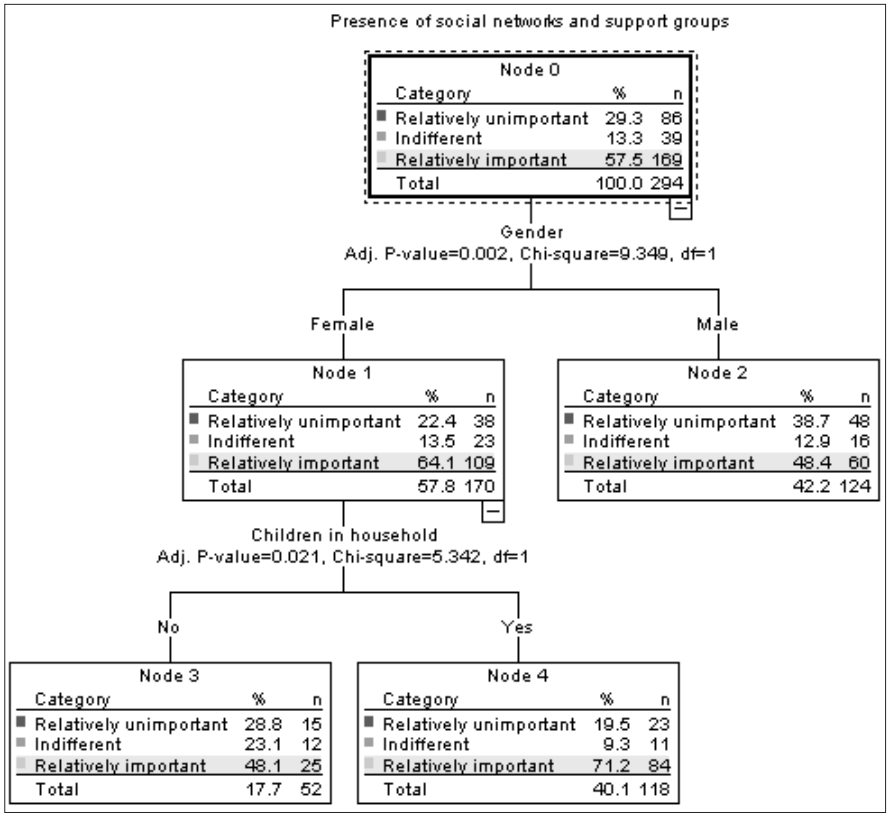

Figure 10: Percentage distribution and predictors of 'presence of social networks and support groups'

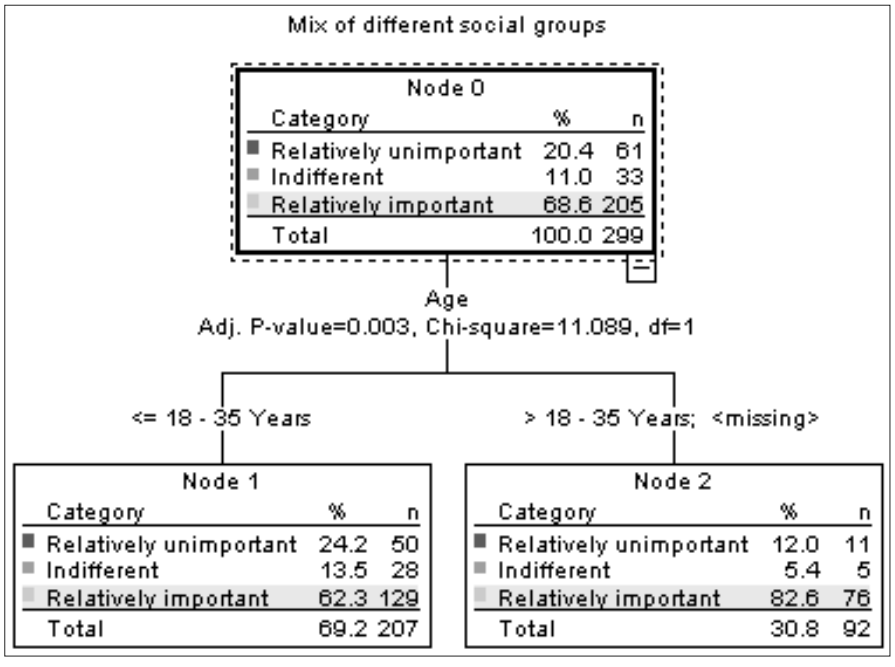

Figure 11: Percentage distribution and predictors of 'mix of different social groups'

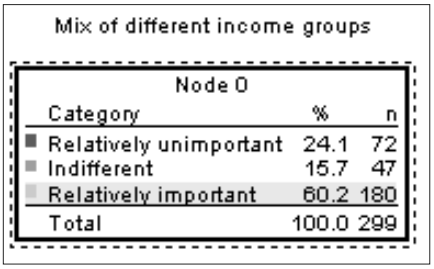

Figure 12: Percentage distribution and predictors of 'mix of different income groups'

5. CONCLUSION

This article considered the perceived importance of outdoor design and neighbourliness for the success of medium-density mixed-housing in South Africa from the point of view of residents living in such developments. The findings revealed the importance of both outdoor design and neighbourliness, particularly if children, women and older residents are involved. The importance of private spaces was also highlighted by households with more than two persons.

As residents in medium-density mixed-housing are often required to live closer to their neighbour, the design of particular outdoor spaces becomes even more important. This is relevant in terms of not only the unit design, but also the provision of private and communal outdoor spaces. The design of outdoor spaces is clearly an important factor for the success of medium-density mixed-housing, while design of private and communal outdoor spaces, in particular, is likely to increase opportunities for neighbourliness, thereby promoting the acceptability of this type of housing in South Africa.

Outdoor spaces for residents of medium-density mixed-housing in South Africa should include a balance between private spaces that are fully or partially enclosed and communal spaces with a range of facilities and amenities that address the needs of residents considering budgetary and site constraints. It may, therefore, require even more innovative responses from planners and designers to address some of these constraints, while focusing on the possibilities related to the relationship between the unit and the private and communal outdoor spaces. The design of communal outdoor spaces should include opportunities to interact with neighbours, offering possibilities for the development of a sense of community and building of social networks. Although play, garden and backyard facilities have obvious benefits for households with children, high crime levels in South Africa, especially in terms of violent crime and crime directed at vulnerable groups such as women and children, must also be considered in this instance. It is, therefore, important for planners and designers to consider the inclusion of private outdoor spaces in these developments in order to accommodate the needs of children and enable a greater sense of privacy and security. They should also focus on the nature and quality of the communal spaces in order to facilitate social interaction and allow opportunities for integration. While medium-density mixed-housing may lead to greater spatial integration, it may still not lead to greater social integration without spaces creating opportunities for social integration. Design aspects that should be considered in the conceptualisation of communal outdoor spaces may include pedestrian access and traffic management; territorial and safe places for different groups (e.g., small children, teenagers and the elderly); comfortable space dimensions; common space boundaries, and the maintenance of communal outdoor spaces (e.g., see Marcus & Sarkissian, 1985).

Giving due attention to these design aspects can facilitate greater acceptance and cohesion within medium-density mixed-housing and contribute towards the mainstreaming of this type of housing as a more sustainable model for human settlements in South Africa.

ACKNOWLEDGEMENTS

The research reported in this article was conducted under the auspices and funding of the Council for Scientific and Industrial Research (CSIR). The following fieldworkers are also acknowledged: Karla Booysen, Bertus de Jager, Katlego Hlongwane, Tumelo Moila, Zama Nene, Sophie Ngobeni, Lizelle Smit, Jacorien van Eyssen and Nicola Viljoen (all final-year students in Urban Planning at the University of Pretoria at the time of the survey), as well as Getrude Matsebe and Maema Monwa (both researchers at the CSIR at the time of the survey).

REFERENCES LIST

BAILY, N., HAWORTH, A., MANZI, T., PARANAGAMAGE, P. & ROBERTS, M. 2006. *Creating and sustaining mixed income communities: A good practice guide.* Published for the Joseph Rowntree Foundation by the Chartered Institute of Housing, UK.

BERNARDINI, C. & IRVINE, K.N. 2007. The 'nature' of urban sustainability: Private or public greenspaces? *WIT Transactions on Ecology and the Environment, Sustainable Planning and Development,* 111(102), pp. 661-674.

BERUBE, A. 2005. *Mixed communities in England: A US perspective on evidence and policy prospects.* York, England: Joseph Rowntree Foundation.

BOUMEESTER, H., DOL, K. & MEESTERS, J. 2009. *Stedelijk wonen: Een brug tussen wens en werkelijkheid*. NVB rapport: TUDelft Onderzoeksinstituut.

BUTLER, T. & ROBINSON, G. 2001. Social capital, gentrifications and neighbourhood change in London: A comparison of three south London neighbourhoods. *Urban Studies*, 38, pp. 2145-2162.

BUXTON, M. & TIEMAN, G. 2005. Patterns of urban consolidation in Melbourne: Planning policy and the growth of medium-density housing. *Urban Policy and Research*, 23(2), pp. 137-157.

CABE (CENTRE FOR ARCHITECTURE AND THE BUILT ENVIRONMENT). 2006. *Better neighbourhoods: Making higher densities work*. Centre for Architecture and the Built Environment and the Corporation of London by URBED.

CITY OF JOHANNESBURG. 2010-2011. Johannesburg Spatial Development Framework. Available from: <http://www.joburg.org.za/index.php?option=com_content&view=article&id=5941> [Accessed: 29 January 2013].

CITY OF TSHWANE METROPOLITAN MUNICIPALITY. 2012. City of Tshwane Metropolitan Spatial Development Framework. Available from: <http://www.tshwane.gov.za/AboutTshwane/CityManagement/CityDepartments/City%20Planning,%20Development%20and%20Regional%20Services/Pages/MSDF-2012.aspx> [Accessed: 29 January 2013].

CLARK, T.N. 2008. Program for a new Chicago School. *Urban Geography*, 29(2), pp. 154-166.

COOLEN, H. & MEESTERS, J. 2012. Private and public green spaces: Meaningful but different settings. *Journal of Housing and Built Environment*, 27(1), pp. 49-67.

CUTHBERT, A.R. 1985. Architecture, society and space: The high-density question re-examined. *Progress in Planning*, 24(2), pp. 71-160.

DAVE, S. 2010. High urban densities in developing countries: A sustainable solution? *Built Environment*, 36(1), pp. 9-27.

DEPARTMENT OF HUMAN SETTLEMENTS. 2009. Sustainable Human Settlement Investment Potential Atlas. Prepared by the CSIR for the National Department of Human Settlements, Pretoria.

DIXON, J. & DUPUIS, A. 2003. Urban intensification in Auckland, New Zealand: A challenge for new urbanism. *Housing Studies,* 18(3), pp. 353-368.

DIXON, J., DUPUIS, A. & LYSNAR, P. 2001. Issues in medium-density housing. *Planning Quarterly*, 141, June, pp. 9-11.

FINCHER, R. & GOODER, H. 2007. At home with diversity in medium-density housing. Housing, *Theory and Society,* 24(3), pp. 166-182.

GEURS, K.T. & VAN WEE, B. 2006. Ex-post evaluation of thirty years of compact urban development in the Netherlands. *Urban Studies*, 43(1), pp. 139-160.

HANHORSTER, H. 2001. Whose neighbourhood is it? Ethnic diversity in urban spaces in Germany. *GeoJournal*, 51, pp. 329-338.

HAUGHEY, R. 2005. *Higher density development: Myth and fact.* Washington, DC: The Urban Land Institute.

JABAREEN, Y.R. 2006. Sustainable urban forms: Their typologies, models and concepts. *Journal of Planning Education and Research*, 26(1), pp. 38-52.

JENKS, M. & DEMPSEY, N. 2005. *Future forms and design for sustainable cities*. Oxford: Architectural Press (Elsevier).

KARSTEN, L. 2007. Housing as a way of life: Towards an understanding of middle-class families' preference for an urban residential location. *Housing Studies*, 22(1), pp. 83-98.

KATZ, J. 2010. Time for new urban ethnographies. *Ethnography*, 11(1), pp. 25-44.

KLUG, N., RUBIN, M. & TODES, A. 2013. Inclusionary housing policy: A tool for re-shaping South Africa's spatial legacy? *Journal of Housing and the Built Environment*, 28(4), pp. 667-678.

LANDMAN, K., MATSEBE, G. & MMONWA, M. 2009. Assessing the physical characteristics of medium-density mixed housing in South Africa. *Town and Regional Planning*, 54, pp. 15-26.

MARCUS, C.C. & SARKISSIAN, W. 1985. *Housing as if people mattered: Site design guidelines for medium-density family housing*. Berkeley, CA: University of California Press.

MAREE, K. & PIETERSEN, J. 2007. Surveys and the use of questionnaires. In: Maree, K. (ed.). *First steps in research*. Pretoria: Van Schaik Publishers, pp.150-177.

NEWMAN, O. 1972. *Defensible space: Crime prevention through urban design*. New York: Macmillian.

RADFORD, A.D. & SARIS, T. 2002. Affordable medium-density housing solutions for Adelaide. Government of South Australia, Department for Families and Communities.

RAPOPORT, A. 1977. *Human aspects of urban form: Towards a man-environment approach to urban form and design*. Oxford: Pergamon Press.

ROBERTS, M. 2007. Sharing space: Urban design and social mixing in mixed income new communities. *Planning Theory and Practice*, 8(2), pp. 183-204.

ROGERS, R. 1997. *Cities for a small planet*. London: Butler and Tanner Ltd.

SIVAM, A., KARUPPANNAN, S. & DAVIS, M.C. 2012. Stakeholders' perception of residential density: A case of Adelaide, Australia. *Journal of Housing and Built Environment,* 27(4), pp. 473-494.

SMITH, C., CLAYDEN, A. & DUNNETT, N. 2009. An exploration of the effect of housing unit density on aspects of residential landscape sustainability in England. *Journal of Urban Design*, 14(2), pp. 163-187.

TALEN, E. 2008. *Design for diversity: Exploring socially mixed neighbourhoods*. Boston: Architectural Press.

TONKIN, A. 2008. *Sustainable medium-density housing: A resource book*. Cape Town: Development Action Group.

TUNSTALL, R. & FENTON, A. 2006. *In the mix: A review of mixed income, mixed tenure and mixed communities*. London: Housing Cooperation, Joseph Rowntree Foundation and English Partnerships.

TURNER, D., HEWITT, J., WAGNER, C., SU, B. & DAVIES, K. 2004. A report on best practice in medium-density housing design. Prepared for New Zealand Corporation: Unitec New Zealand.

TUROK, I. 2011. Deconstructing density: Strategic dilemmas confronting the post-apartheid city. *Cities*, 28(5), pp. 470-477.