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MARKET DEMAND FOR MICRO-APARTMENTS AMONG SMALL FAMILIES IN GAUTENG

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(Protocol number: SOAP060/07/2018)

Supervisor: Professor Aly Karam

A research proposal submitted to the Faculty of Engineering and

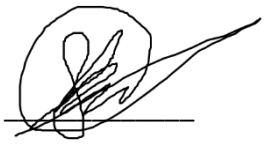
Built Environment, University of the Witwatersrand,

in fulfilment of the requirements for the degree of Master of Built Environment

5 November 2019

1. Declaration

I, Simoné Pretorius, declare that this research report except where otherwise indicated is my original research. It is being submitted for the Degree of Master of Built Environment in Housing to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.



6 November 2019

2. Dedication

This research report is dedicated to my circle of friends and family who went the extra mile to help me collect results. Also, to those who showed extra interest in my topic of research and sent me more pieces to read. I hope this report sparks interest in this growing phenomenon.

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7. Abbreviations

CV	Contingent Valuation
CoJ	City of Joburg Metropolitan Municipality
CT	Cape Town Metropolitan Municipality
CoT	City of Tshwane Metropolitan Municipality
EMM	Ekurhuleni Metropolitan Municipality
GCR	Gauteng City-Region

NIMBY	Not in My Backyard
NYC	New York City
SERI	Socio-Economic Rights Institute
UK	United Kingdom
UGS	Urban Green Spaces
WTA	Willingness to Accept
WTP	Willingness to Pay

ABSTRACT

Keywords: Tiny houses, micro-apartments, compact housing, sustainable consumption, demand, South Africa

The continuous economic migration of single and young-headed households into urban centres (McLocklin, 2018) has caused smaller rental units to become more popular (Brinded, 2014). The housing market in South Africa is struggling to catch up to the increasing demand for housing. As a result of Gauteng being the economic hub of South Africa, inward migration into the province occurs monthly and as a response to this basic need the 'Sustainable Human Settlements Department' has the largest budget in the province (Gauteng Provincial Government, 2012). The average member size of South Africa's

single-family homes has increased from 2,08 million in 2001 (Quantec, 2001) to 3,8 million in 2011 (Quantec data, 2011). Single-families are defined here as one person families living in one home. In Gauteng, the number of single-family households has nearly doubled in the same period of time. The increase in smaller households has had a tremendous effect on the environment as well as the housing demand. This research report aimed at determining the demand for micro-apartments in Gauteng, by surveying within the three highest populated municipalities in the province. Given this research topic, along with the data collection and analysis, it is clear that the market is still sceptical of micro-apartments. There is not much support for micro-apartment units in Gauteng. The demand is small and on a limited scale. When contextualising this within the comments of the respondents, the notion is justified as many respondents still function within a culture of living in large, single dwelling units. Opportunity costs will need to be considered for those who might be willing to forgo the traditional size of an apartment for a micro-apartment if it is better located, it is more affordable and the amenities are better in the buildings.

CHAPTER 1:

INTRODUCTION

1. Introduction and Background

There are continuous pressures on the environment, personal financial pressures as a result of mismanagement or weakening and stressed economies. These pressures are causing more stress in our daily, individual lives (Brinded, 2014). The two major reasons for tiny house living is as a result of prime location suburbs, residential blocks in major urban cities (Brinded, 2014), others have moved into micro-units as a result of budget constraints (Bach, et al., 2007).

The 'tiny house movement' community believes to have found the solution to saving more, living more, and being less stressed about making ends meet (Kahn, 2012). This undertaking is being titled the 'tiny house movement'. Other terms for these homes are compact studio apartments, micro-apartments and micro-apartments, as well as tiny or small houses. In theory these tiny house units should not only provide more sustainable housing options but also be more affordable to either purchase or rent. The tiny house movement has been initiated by a celebration of "sustainability, simplicity and nourishment" (Negrin, 2009). These homes vary from high-rise apartment units, too having a moveable unit which can fit on a trailer. Research has thus far indicated that these small units can range in size from 3m² to 40 m² (Alexander & Ussher, 2012; Kahn, 2012).

To help understand the impact of this housing solution in the greater Gauteng region, I researched the sustainability of micro-apartments, the financial stability and assistance it can provide, as well as aspects of location and compact cities. Along with understanding the market demands surrounding micro-apartments and policy constraints surrounding micro housing solutions in South Africa. After studying the major themes and trends surrounding micro-apartments, I discovered that micro-apartments are the most popular among small families, for mostly practical reasons. Later I investigate three major metropolitan regions in Gauteng as my field study areas. This allows me to round out my understanding of the demand for micro-apartments among families with less than three members in the greater Gauteng region.

It is important to understand that the affordable housing market, and housing market in general, is complex in South Africa. Therefore the results from this study cannot be evaluated in a compartment or be separated from the larger housing market. I will present the current benefits and drawbacks of the micro-unit housing solution and recommend further research into the micro-unit solution for lower income families.

2. Problem Statement and Rationale for the study

The world's population ~~growth~~ in and surrounding urban areas continues to grow (United Nations, 2018). Research shows that in 2018, 55% of the world's population was living in urban areas and is expected to grow to 68% by 2050 (United Nations, 2018). Established urban areas in already developed countries have less growth than cities in countries that are still in the developing phase (McLocklin, 2018). This increase in growth correlates to an increase in need for housing. South Africa is no exception. South African governments and local developers continue experiencing pressure to keep up to affordable housing demand in inner cities. South Africa's housing market is not able to supply this dominant demand for housing. According to the Affordable Land & Housing Data Centre (2013), 58% of South Africa's residential properties are valued below R 500 000. The greatest majority (92%) of these 'affordable' houses are located in 'affordable' suburbs. With regards to South Africa's history, the non-white population was not allowed to have asset-based welfare till the 1980 (Marais & Cloete, 2015). Even at that point the accumulation of assets was restricted to the black townships and outer subjects (Marais & Cloete, 2015). In 1989 the Group Areas act was abolished and people could live where they prefer (Marais & Cloete, 2015).

The affordable suburbs and affordable houses which are mentioned in the Housing Data Centre (2013) resource are therefore probable relating to suburbs which are located far from major access roads and a variety of economic opportunities. These suburbs are usually located on the outskirts of a town or city and increase traveling time and traveling expenses for its occupants. Micro-apartments should be located in nodal areas, as they are usually high-rises and need to comply with density restrictions in land use zones. GCR is highly suburbanized ~~and is~~and is therefore where I have chosen to conduct my research. GCR is in Gauteng, the smallest province in South Africa, although it provides the most Gross Domestic Product to the country. As a result, Gauteng particularly experiences higher accommodation demands as inter-provincial migration occurs to this leading economic hub (Gauteng Provincial Government, 2012).

There are several other approaches to providing better housing options. This research is only focused on one proposed solution to the problem; the development of micro-apartments. Micro-apartments are suitable for single member households, which have increased by one million households between 2001 and 2011 (Quantec, 2001; Quantec data, 2011). Along with the increase in one person households, the trend of living smaller has been gaining more interest. Currently, there is no research on the demand for such small apartments in South Africa. I will be exploring the demand for the GCR as this area is easily accessible to me.

While housing generally influences all age groups, this research will focus more on Millennials. Millennials will be characterised here as people who were born between 1981 and 2000 (Lee, 2018; Raymond, *et al*, 2018). Millennials could possibly be 30 years of age and younger in 2011, when the last South African Census was conducted. In Gauteng, 60.3% of the household heads was between the ages of 18-44 (Quantec, 2018). In a study conducted by Einarson (2016), indicated that many millennials would only expand their families at a later stage in life. The research done by Lee (2018) determined that many millennials choose to live in cities as a result of their generational characteristics which include their ~~"~~ethnic diversity and relationship status's; such as delaying marriage, or choosing to stay single ~~their delayed or nonmarriage" relationship statuses~~. As micro-apartments are not very practical for large families, it can provide a suitable solution to housing for small families. Another benefit of micro-apartments ~~are~~is that these units are reasonably priced and thus provide an easier entrance to the housing market (Einarson, 2016).

This research report will consider a more conservative and limited way of living through downscaling and micro-homes. Therefore, the combination of the large portion of young headed households, the increase in small families and living smaller, will be used in this research report to determine the demand for micro-apartments in the GCR.

3. Field Study Area

Micro-apartments are a fairly new concept to the middle to high income classes in South Africa. As mentioned previously, I was unable to find research surrounding the demand for micro-apartments in South Africa and more specifically Gauteng. As a result, thereof I have decided to conduct my research locally. Figure one shows the number of residents living in South Africa, per province (Quantec, 2018). Gauteng is both physically the smallest province but is it the most densely populated in South Africa (City of Tshwane: Strategy Development and Implementation, 2013). This high population figure in Gauteng will allow me to have access to more amounts of research opportunities than a smaller province.

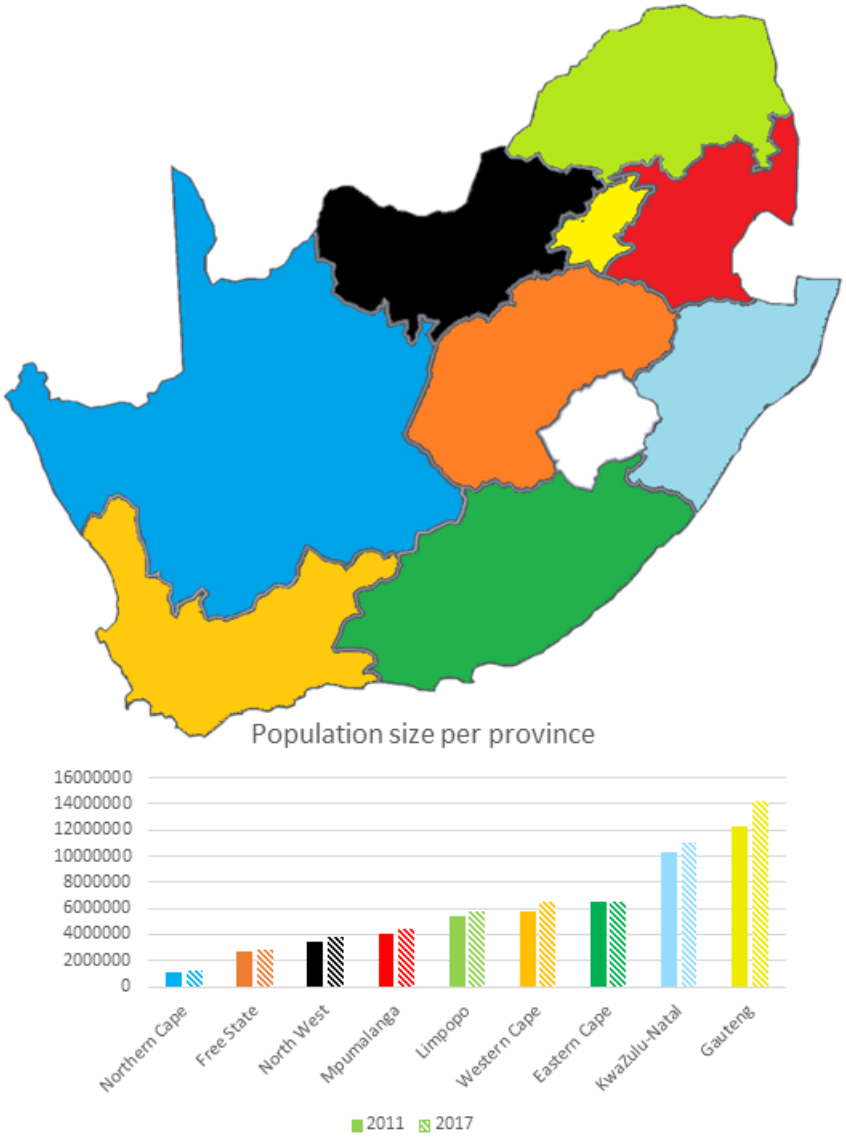
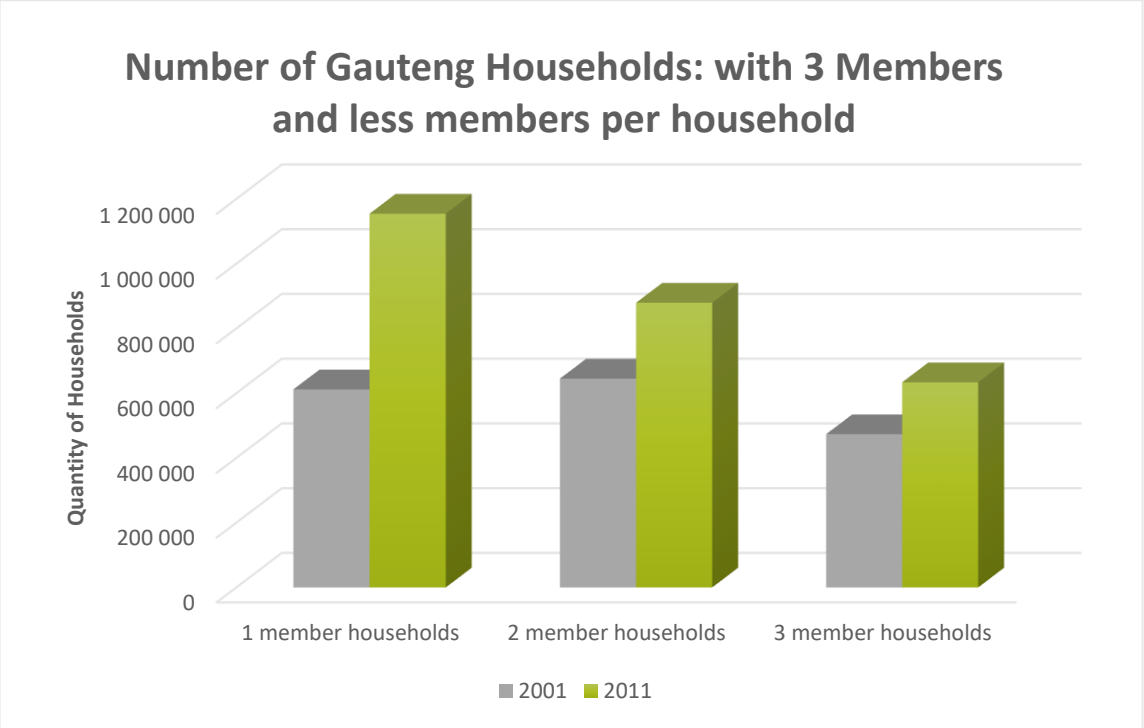


Figure 1: Population distribution 2011 & 2017 (Quantec, 2018)

The last census conducted in 2011, determined that Gauteng had 12.2 million residents (Quantec, 2018). It remains the largest economic province in South Africa is attracting people from all over the country as well as neighbouring countries (Gauteng Growth and Development Agency, 2011). Gauteng has the largest percentage of internal provincial migration. Between 2006 and 2011, 981 290 people from other provinces migrated to Gauteng (Hamann & Ballard, 2018). A 2016 community survey showed that 35% of persons living in Gauteng were not born in the province (Peberdy, 2016). This figure has increased since the 2011 census survey, where 29% of Gauteng's residents were born elsewhere

(Peberdy, 2016). The migration figures show the high demand for services and facilities that Gauteng Province faces as a result of migration. Among these services and facilities include an increased demand for housing. As can be examined in the graph below; the number of small households has increased by 22% within a decade from 2011 (Quantec, 2001; Quantec data, 2011). Subsequently, I think that if there is a demand for micro-apartments, Gauteng should have the greatest demand.



Graph 1: Small households in Gauteng (Quantec, 2001; Quantec data, 2011)

There are nine local municipalities in the Gauteng Province (Gauteng Growth and Development Agency, 2011), of which I will only be focusing on three (see figure 1). The three municipalities that I will be conducting my research in, are the economically most important local municipalities in the Gauteng province and are also encapsulated in the Gauteng City-Region (GCR). The GCR consists of mainly the three metropolitan municipalities in Gauteng, however, more wards are included from other local municipalities, which will not be relevant for my research. The GCR is South Africa's economic hub, despite it only accounting for 2% of the country's land area (Gauteng City-Region Observatory, undated). This economic area encompasses cities, towns and urban nodes which is home to 14 million people (Gauteng City-Region Observatory, undated).The broader area of the GCR provides an estimated 45% of the country's output and 33,8% of the national gross domestic product in 2013 (Gauteng City-Region Observatory, undated).

Gauteng is perceived to provide better work, education and housing opportunities (Gauteng City-Region Observatory, undated). In total, South African Deeds Registry was able to locate 1,64 million properties registered in Gauteng in 2010 (Affordable Land & Housing Data Centre, 2013). Of these

properties, 58% were worth less than R 500 000 in 2010 (Affordable Land & Housing Data Centre, 2013). This provides a small snapshot of the possible demand for affordable housing in Gauteng. Gauteng also is one of the few provinces to encapsulate more than three economic sectors of the national economy, these all include the primary, secondary, tertiary and quaternary sectors (Gauteng Growth and Development Agency, 2011). The Region is in close proximity to urban amenities and is able to provide a better standard of living for its residents (Gauteng City-Region Observatory, undated). In 2011, 13.4 million people were accounted for living within 100km from Johannesburg city centre, which is the GCR's core urban node and symbolic centre (*ibid*). As a result of these attractive qualities, the region experiences large amounts of inter-provincial and international migration (*ibid*). Poverty, unemployment and social exclusion are still rampant and a major challenge in the GCR (*ibid*). The inequality in South Africa is particularly apparent in Gauteng's cities where informal settlements can be found neighbouring wealthy areas (*ibid*).

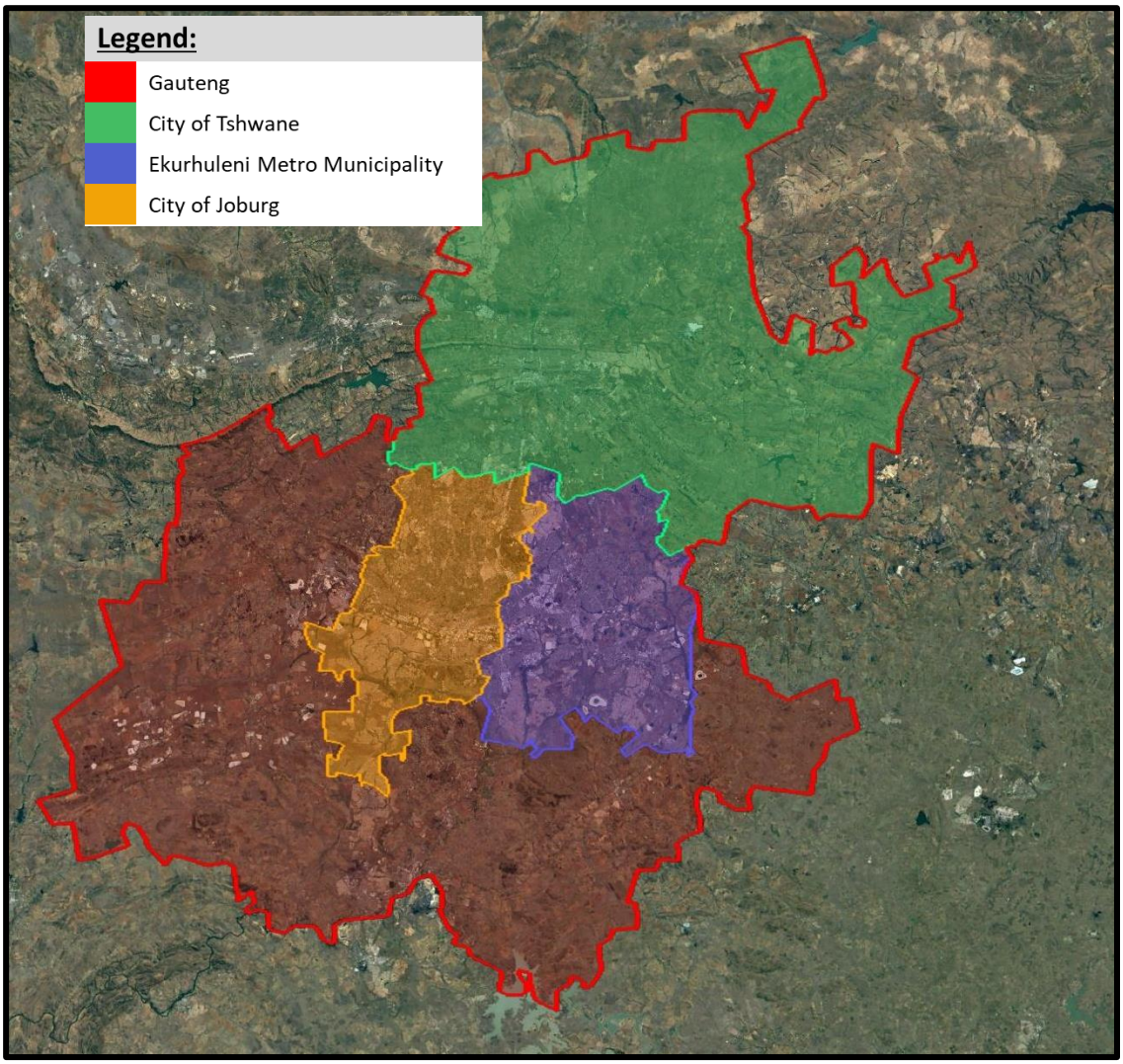


Figure 2:Field Study area within the Gauteng borders (Map created by Simoné Pretorius)

When considering which suburbs or towns to surround the possible location of micro-apartment units, within the GCR (figure 2), I considered areas which might be medium to high density areas. This will allow for increased walkability and proximity to local facilities and amenities. The literature review below indicates that these elements along with public open spaces and green areas are vital to making a micro-apartment building more feasible and attractive. I considered which areas might be the most vibrant and more favourable locations for a micro-apartment development. Although these areas are more in the medium to upper class of income brackets, in my opinion that they might be more attractive suburbs and towns than others in Gauteng.

The first suburbs I have identified are located in the Metropolitan Municipality of Tshwane and include Hatfield, Menlyn, Brooklyn, Silverlakes, Irene, Centurion Central and Eco Park suburbs (figure 3). Secondly, in Ekurhuleni Metropolitan Municipality, I identified Kempton Park, Edenvale, Bedfordview, Alberton and Benoni (figure 3). Thirdly, and lastly, my research considered areas such as Melrose Arch, Houghton, Parktown, Newtown, Randburg, Rosebank, Sandton, Northcliff, Cresta, Bedfordview, Edenvale, Greenside and Fourways in City of Johannesburg (figure 3).

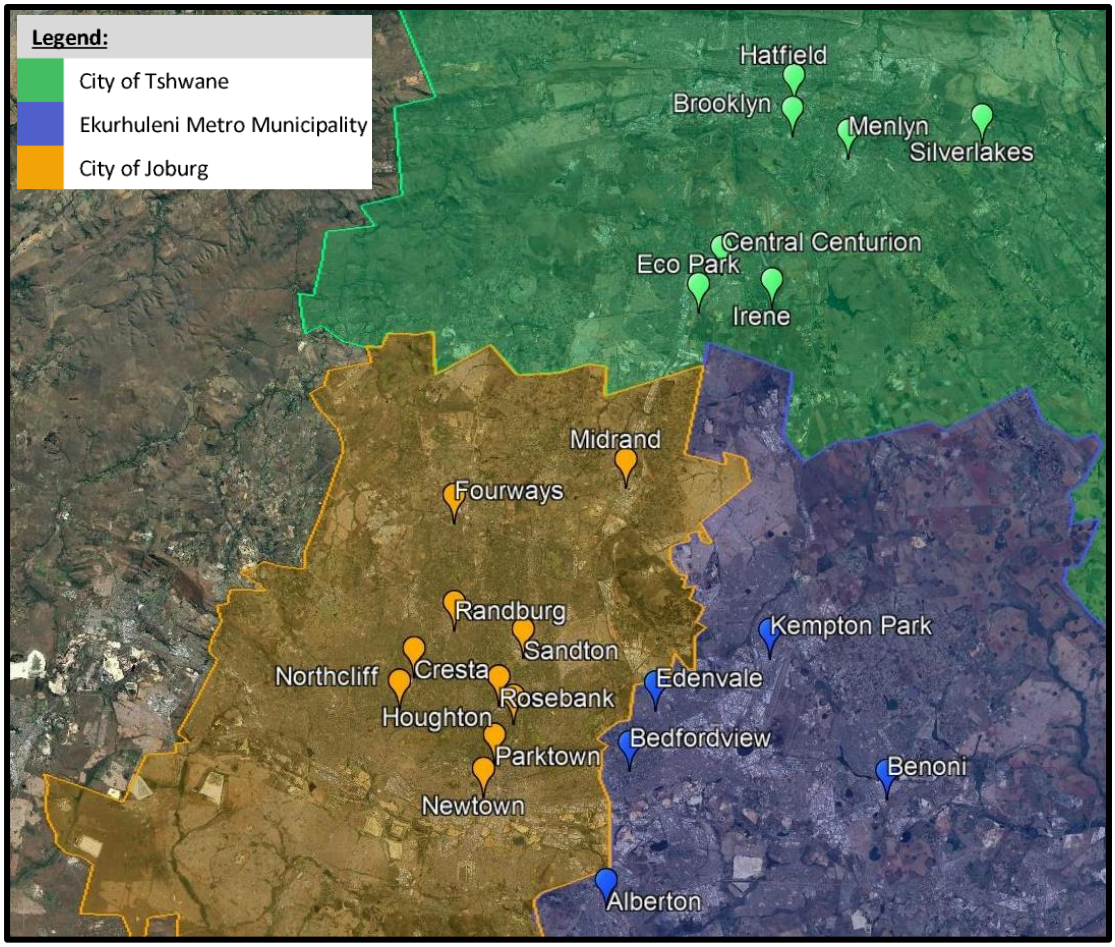


Figure 3: Survey Area's: where surveys will be collected with small families (Map created by Simoné Pretorius)

4. Aims and Objectives of the study

The purpose of this research report is to determine whether there is demand for micro-apartment developments in the three metropolitan areas, mentioned above. The household surveys will be conducted with households which have ~~3 people or less~~three people or less. The literature review aims at determining who the consumers of micro-apartments around the world are, to indicate what they could possibly look like my study area. The research aims at determining what their characteristics and priorities are, and how they perceive sustainability and consumerism.

5. Main research question and possible sub-questions

The main research question for this research report is: What is the demand for micro-apartments, among small families, in Gauteng?

This question aims to determine how many families will consider staying in a micro-apartment complex in the GCR. Further questions will surround:

- Who makes use of major nodes (see field study area) in the three-metro municipalities?
- What are the respondents' current housing typologies and future preferences?
- Is there an interest in micro-apartment living?
- If so, how big is the demand for micro-apartments in Gauteng?
- What are the reasons that respondents would consider moving into a micro-apartment unit?

6. Research Methods

This research investigation is a multi-method study and aims at determining the demand of micro-apartments in three major Metropolitans in Gauteng. This study is deductive, exploratory and made use of literature, online surveys as well as a policy analysis. Mainly, a qualitative research approach is used in order to understand the demand of micro-apartments in Gauteng.

To attain information surrounding the demand of micro-apartments, I will make use of online surveys with Google Forms. Google Forms is not a new method of collecting information, and has been used as early as 2009 to collect implementation assessments (Valentin, *et al.,* 2009). Google Forms will assist in capturing all of the answers online and I will be able to gain access to the data immediately in Google Sheets, which can be exported to Microsoft Excel. Online surveys need to have well explained definitions of terms, products, or services that are being examined (Bowman *et a,* 2009; Kahneman, D., & Knetsch, J., 1992; Hu, *et al, 2014*). Well expressed surveys are important, as the researcher will

not be able to consult if further queries arise. One constraint with online surveys is that not all respondents would fully complete a questionnaire. The reason of a non-completed survey can therefore never determine nor could you as the researcher soothe their concerns.

I will be sharing the survey link with family and friends in the suburbs identified previously, and from then onwards will hope to depend on the 'Six degrees of separation' theory where everyone might know someone who could possibly be interested in completing a survey. Some of the initial surveys will be conducted in person to understand where the problematic questions are before sharing it online. The online interviews will allow people to answer more objectively (Creswell, 2009) as I will not be there personally, and therefore they will hopefully be more willing to divulge information surrounding their priorities, goals and perceptions.

A brief enquiry to the South African property market indicated that not many units smaller than 30m² in size are available in the market. Therefore, contingent valuation will also be used to understand the current market perceptions surrounding micro-housing (Simons, *et al.*, 2008). Contingent valuation captures the respondent's reaction or need toward downscaling (Morrow-Jones, *et al.*, 2004) this could also indicate whether they might consider moving into a micro-apartment. Therefore, determining if there is a willingness to pay for hypothetical alternative options (Morrow-Jones, *et al.,* 2004), for units that might not be available on the current market.

The literature review consists of international literature surrounding micro-apartments. I will mainly make use of secondary data which will include academic journals, books, policy documents, presentations and newspaper articles from various corporates companies and other organisations. The literature will then be reviewed and compared to the primary data that will be collected. Further comparative research methods will be used to compare each of the municipalities' surveys with the next set of responses from another municipality.

7. Conceptual Framework

The objective of my research report and the majority of my literature review will be aimed at understanding how micro-apartments are suited for South African residents and more specifically the residents in the GCR. Figure 4 (below) shows the conceptual framework which acted as a guideline for researching this project. Understanding the concepts, characteristics, requirements and themes surrounding micro-apartments in the world would be able to give me an idea of what is needed from the demand and supply side for such a residential building to be successful in Gauteng. The major themes surrounding and influencing micro-apartments are sustainability, financial stability, aspects of location and compact cities. This then assisted in formulating my problem statement surrounding the

demand for micro-apartments in the greater region of Gauteng. I set out to determine what the respondents would think about micro-apartments and if this way of living could suit their lifestyle.

Once this was understood, the property market needs to be interrogated to understand how micro-apartments grew in popularity and why the demand thereof increased in the housing market. The second part, is relating the international information to the local climate. Unpacking these concepts in a local context to understand the demand micro-apartments could be in Gauteng. Hopefully these results could assist our cities in understanding the need thereof locally, and how better to meet the demand.

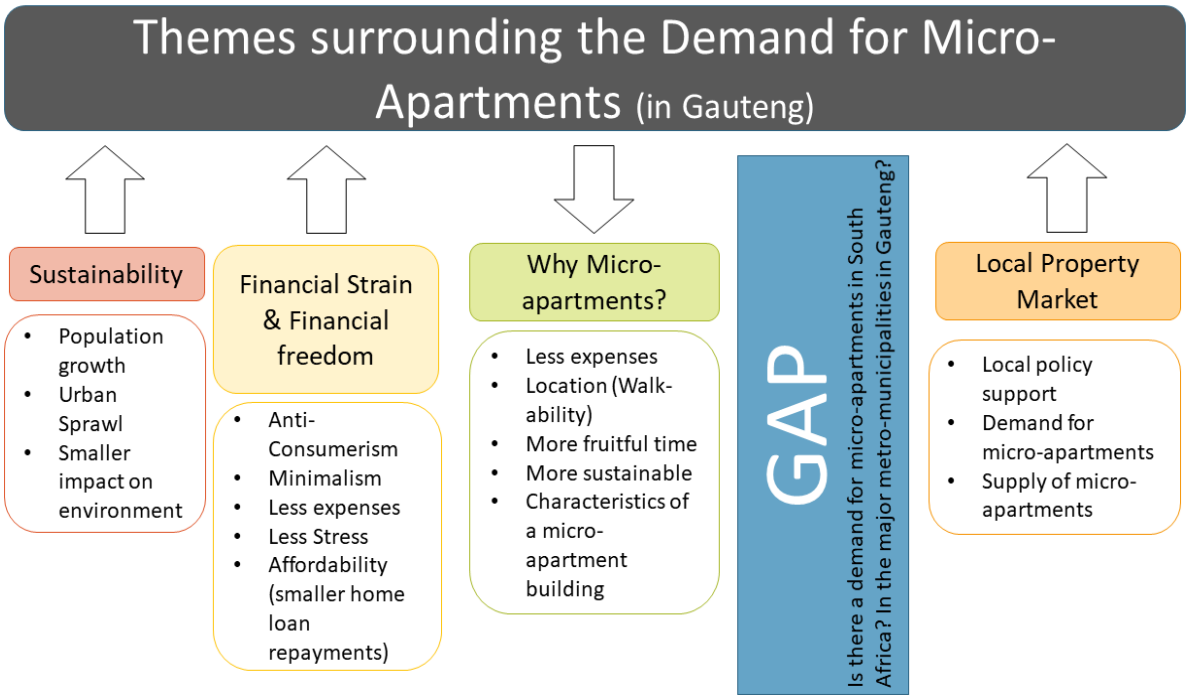


Figure 4: Micro-Apartments Conceptual Framework Diagram (Simoné Pretorius diagram)

8. Ethical Considerations

It is important to recognise that as part of a university, I am part of a community of enquiry. This is a privilege. This privilege involves researchers to coming together, critique, question, reflect and challenge any information they receive (Thomas, 2013). By being part of this community, each researcher has the privilege of access to information and opinions and therefore needs to balance them with responsibilities that comes with it. Ethics maintains order between the right and wrong methods of doing research, and making the right decisions in the wrong or difficult dilemmas that may arise with research (Thomas, 2013). Ethics should relate back to our moral principles, to safeguard our respondents whilst conducting the research.

The ethical considerations that I will encounter with my research first and foremost is the anonymity of my respondents in order to gain their honest opinion. I need to ensure that respondents cannot be identified, and that sensitive information such as their income and personal consumer preferences will be kept confidential. The questionnaires therefore will not include any response requiring names, email addresses, identity numbers, or birthdays in order to ensure that they cannot be identified by any means. The questionnaires will not request any health status from any respondents as this is irrelevant to the research. As a result there will be full confidentiality and no names can be included in my data or my report. The responses will only be recorded as statistics.

I also need to understand the respondents' willingness of participation in my research, and providing them with the right to withdraw at any moment, without providing reason or justification. The survey will therefore be easy to exit. Once a respondent has exited the survey, it will remove any data of questions that might have been populated before the respondent decides to exit the survey. Although some respondents did indicate that they were not interested in answering questions, and then submitted the survey. I am almost certain that some respondents did exit the survey as soon as they decided to do so. The respondents will be given full disclosure before the commencement of the survey, so that they are aware of how the information will be used. Most of the questions were multiple choice or Likert scale answers, very few questions will be open ended. This qualitative data will then need to be refined before it can be used as a statistic. The possibility of identifying a respondent through their verbal style will also be decreased.

9. Limitations

Other than the previously mentioned pitfalls of online surveys other limitations are also relevant. My personal perceptions and experiences will definitely influence my method of data collection and the analysis of the data. I felt too anxious to conduct research alone, as a female student, at any time of the day and therefore resolved to make use of a free, online survey platform. Another constraint was the use of time, and traveling to conduct surveys in person, as I am working full time.

Some of the limitations I experienced with regards to the collection of literature were availability of a study regarding the demand for a certain housing type. Research regarding online surveys was also extremely limited. No reports were found that was relevant to both third world countries and micro-apartments. In addition, there was no academic literature available on micro-apartments for South Africa. The limited literature on micro-apartments varied and literature surrounding market demand studies provided very little insight in to a solution I could make use of. The reliability and accuracy of my non-academic resources I am unsure of, although I trusted the information to be true.

Time was also a major constraint for me with regards to the collection of enough surveys before I needed to start analysing my data so that my submission could be on time. My time was also limited as a result of a full-time job, and late confirmation on my ethics submission. I was almost fully dependent on referrals from my friends and family members. These family members and ~~friends,~~friends would complete the survey and then pass on any contacts of persons they thought might be interested in completing my survey, in order to attain the snowball sampling effect.

10. Research report outline

The research report is comprised of five different chapters. The first chapter consists of an overview of different aspects of the research report. It indicates the aims, objectives, research questions, methods, conceptual framework as well as the ethical considerations and the limitations of the research. Chapter two is comprised of the literature review which introduces and explores the various concepts. This chapter also establishes the academic foundation for the report. The literature contributes concepts such as sustainability and the compact city, consumerism, financial stresses, minimalism and small living as well as the property market in South Africa. The third chapter encapsulates the research approach being used. The fourth chapter encircles the analysis of data and the insights thereof. The fifth and final chapter provides conclusions and recommendations for further studies.

CHAPTER 2:

LITERATURE REVIEW

2. Literature review concerning micro-apartments

Micro-apartments are a trend that can be seen in the world's largest and most popular cities. They have been increasing as population numbers in these cities increase. The micro-apartments are small dwelling units, where use of space is optimal. Micro-apartments are also seen as an affordable housing solution in the face of the housing crisis in many major cities. Micro-apartments usually range from 13m² to 37m². The typical layout includes one large room used for sleeping, lounging and cooking, and the apartment usually has a separate bathroom (Brinded, 2014). Micro-apartments have become popular in the world's most densely populated cities as there is a lack of supply of homes for residents who want to live centrally (*ibid*). Small apartments are however not new to the market, they have featured in many cities around the world and has been used, changed and subdivided in different ways (Nelson, 2018). Small apartment dwellings existed in the Roman times as 'insulae' in order to obtain more agricultural land and increase settlement density (*ibid).*

The new trend is to deliberately build small. Although these apartments are usually well below the minimum space deemed as liveable, many mayors have waived this requirement in order to provide accessible and affordable housing (Einarson, 2016). The increased number of apartments in a residential building reduces the cost of building apartment and become more affordable to those who wish to prioritise location over the square meterage of an apartment (Hoang & Vandal, 2017).

There are many challenges that one would face living in a micro-apartment such as the need to be tidy and the need to set-up and disassemble parts of the house each day. However, many residents living in micro-apartments say the benefits outweigh the above-mentioned challenges (Negrin, 2009). Health and physical benefits that residents of a tiny house experience include financial savings, less stress associated with paying off a high mortgage or debt payments, environmental well-being and having more time available (Negrin, 2009).

During this chapter, I will attempt to discover why micro-apartments have become so popular and what the underlying forces thereof are. I will also attempt to determine if South African policies and programmes make reference to micro-apartments~~.~~.

2.1 The Influence of Sustainable Development on Micro-Apartments

In Sweden, sustainability in the built environment is usually referred to as eco-efficient building or eco-districts (Bradley & Hagbert, 2017). In this context, eco-efficiency involved two aspects. First, being able to measure improvements in~~,~~ and the energy efficiency of the ~~of, materials~~construction materials ~~that have been used in the construction~~ and materials used for the duration of maintenance of buildings (Bradley & Hagbert, 2017). Second, eco-efficiency was linked to policy

strategies surrounding urban densification in terms of developing brownfield properties (Bradley & Hagbert, 2017) – brownfield properties are properties that either already have engineering services installed, or already have / had infrastructure on the property. Another strategy allowed for the promotion of compact, mixed urban environments where existing infrastructure could continue to service residents whilst the need for the use of cars was reduced (Bradley & Hagbert, 2017). The narrative then changed to making use of technological advances by reducing environmental impacts and maintaining or increasing the standard of living (Bradley & Hagbert, 2017). Micro-apartment buildings are possible solutions to increasing a city's environmental impact as the same amount of space can be used whilst creating homes for more people. Birmingham implemented a 'Big City Plan' which focussed on changing the concrete developments into more functional and memorable physical spaces ~~o~~ (Phillips, 2017).The school of thought from Birmingham compliments that of micro-apartments, as these residential units also focus's on being more functional and compact, so that less resources are wasted on spaces that residents do not make use of. The United Nations Population Fund (2007) indicates that in 2030 there will be almost five billion urban residents around the world. More developed urban areas (or developed countries) have lower levels of growth, whereas urban cities in South Africa are daily experiencing exponentially increasing levels of growth (Steedley, 2014).

The concepts of sustainable development and sustainable consumption were first added to the global agenda at the Earth Summit Conference in 1992 (Mutter, 2013). At this conference, ~~t~~ sustainable consumption strategies was defined as developments which foster the highest quality of life, the efficient use of natural resources, and the effective satisfaction of current human needs (*ibid.*). This was the first statement or definition provided for sustainable development (*ibid.*). This statement has caused many ripple effects across all areas of the built environment. The issue of housing has, however, required attention to be focussed on implementing and developing more environmentally friendly housing solutions (*ibid.*).

2.1.1 Smart growth in cities

Smart growth policies aim to contain urban sprawl by protecting open spaces, farmland and critical ecological habitats from new developments (Cho & Roberts, 2007). Without compact development policies, urban sprawl would have been more severe in urban areas. This would have resulted in less dense urban patterns, increased dependence on car use, increased emission and noise levels, reduced reliance on other forms of public transport and a larger negative impact on wildlife and natural area conservation (Geurs & van Wee, 2006). However, despite smart growth analysts increasingly emphasising higher density housing as an option to prevent urban sprawl, Cho and Roberts (2007) indicate that this is not necessarily what the consumer wants.

2.1.2 Aspects of compact cities

Developing compact housing in the United States of America, especially in Tennessee, can be a challenge because consumer ~~preference, especially in Tennessee, leans~~preference leans towards lower density housing units (Cho & Roberts, 2007). Howley *et al.* (2009) also provide research indicating that people tend to prefer lower-density rather than high-density housing.

Urban centre residents prefer access to amenities rather than open spaces, and this should be taken into consideration (Lee, 2018). Cho and Roberts (2007) note that higher density housing could be preferable if certain low-density housing factors are replicated in these developments. The most important low-density housing factor identified by Cho and Roberts (2007) is open space. The authors conclude that compact developments with larger open spaces can be encouraged as it ~~can~~ is still supporting smart growth. Cho and Roberts (2007) also argue that cities with smart growth policies will fail to control urban sprawl if they implement high-density developments with no spatial variation (such as open space).

Compact cities have been functioning in the United Kingdom (UK) for more than two decades (Lindsay *et al*., 2010). These cities boast higher residential buildings and mixed-use land on brownfield sites, which supports the goal of achieving sustainable housing growth (*ibid.*). Compact development, new urbanism, smart growth and transit-orientated development all promote high rise buildings in urban centres (*ibid.*). This is a method of combating urban sprawl. The concept of cities with ~~Compact~~ compact development ~~cities~~ implies that there is higher density housing combined with mixed~~-~~ land-use ~~land~~ (Ewing *et al.*, 2008). This method leads to large numbers of the population flocking to the city as it is seen as an employment centre with interconnected streets, designed structures and spaces at a human scale (*ibid.*).

Understanding the benefits and drawbacks of micro-apartments for local government~~,~~ will provide insight to the possible motivations for municipalities supporting applications or promoting the development of micro-apartment buildings. Daley (2007) identifies that planners who double the population densities allowed in suburban areas or on greenfield sites only benefit the developers or the landowners. This statement is supported by Lindsay *et al.* (2010) who make it clear that higher density developments do not provide enough privacy for residents. However, ~~I~~it is, ~~however~~, important to note that a desire for privacy will differ among individuals in different cultures and of different ages (Lindsay *et al.*, 2010). The wide range of literature surrounding the effects of compact developments leads to the conclusion that the benefits associated with compact development are not yet well understood and that there is no consensus surrounding the topic (Geurs & van Wee, 2006).

Jacobs (1961) initiates the compact city and indicated that it provides numerous opportunities for social interactions. This could also be translated as having 'eyes on the street' and creating 'safety in numbers'. Bramley *et al.* (2009), in Dempsey (2010), however, indicates that evidence increasingly does not support these claims. The compact city is also seen as a sustainable urban settlement type as a result of its shape. Urban sprawl requires more ~~infrastructure~~infrastructures and a higher dependence on private transport. The belief of an increasing population is an important principle to support the compact city in theories and policies, however it can be an antagonistic issue in reality and practice (Jenks & Jones, 2010 in Dempsey, 2010). Cities need to accommodate the increase in the number of residents – an often-cited solution to this problem is the compact city (Dempsey, 2010). A compact city is known to have high-density residential units with mixed land uses among it (*ibid.*). The compact city is usually surrounded by public transport systems to support low environmental impact transportation methods such as walking and cycling (*ibid.*).

Scaling down will lead to a smaller impact on the environment, in terms of the physical home footprint, the carbon footprint, and the number of products that are consumed every month. This means that an occupant should be paying less money for rent and utilities, using less detergent for cleaning and using less space for storing unnecessary items (Campbell, 2011). The debate dominating sustainable housing development focuses mainly on a building's performance, 'green' initiatives that have been implemented and well-designed urban housing concepts (Bradley & Hagbert, 2017). This might not necessarily be the solution that will have the biggest impact. Other methods such as making moral changes in our everyday life could decrease our urban footprint. Living smaller would have a bigger impact on living more sustainably. Bradly and Hagbert (2017) suggest that by addressing habits of 'living more sustainably' we will have to go beyond the technical eco-efficient solutions.

2.1.3 Consumption and sustainability

Humanity is currently functioning at an unrestrained level of production in order to keep up with the mode of production which include unrestrained consumption desires continues (Lewin-Epstein and Semyonov, 2016). Contemporary life is associated with energy and resource-intensive ways of living life (ibid). Environmental impacts are increasing in size and magnitude as a direct result of modern society's increasing levels of consumption (Hurst, 2012).

Currently, consumers focus on making use of recycled, reclaimed or upcycled products in order to live more environmentally friendly (Hurst, 2012~~*ibid.*~~). This traditional approach to being more sustainable involves making use of more eco-friendly heating and lighting products (*ibid.*). Making radical changes could possibly ~~normalise~~ weaken the current norm ~~the current low~~of low-density housing that society is promoting. The current 'sustainable movement' has included smaller actions such as changing the

type of light bulb that one uses, buying more organic or locally produced food and choosing environmentally friendly products (Abrahamse & Evans, 2009; Soneryd & Uggla, 2015). This, however, is not enough. Not all citizens are facilitating this approach in their daily lives. There are also extra costs associated with this way of living that the public is not willing accept (Kayamandi Development Services, 2016). Mutter (2013) refers to Tukker *et al.* (2006) regarding the regulation of individual consumption as this~~. This is as a result of individual consumption adding~~ adds up to nearly 40% of global consumption (Mutter, 2013). Individual consumption and personal choice have not been the focus of governments or corporations (*ibid.*), and questions surrounding this lack of action is concerning. According to Mutter (2013) ~~M~~many individuals now investigate their consumption levels and whether they are sustainable and maintainable (*ibid*). These consumers are also becoming more environmentally aware of the amount of waste they accumulate (*ibid*).

An article published by Buckley *et al.* (2015) indicates that Millennials are not as different from their spending habits as their parents (the Baby Boomers and Generation X) or grandparents might have been. I do, however, think that Millennials are more concerned with the preservation of the environment (Raymond, *et al,* 2018~~) –~~,), and in light thereof might consider moving into micro-apartments. Addressing sustainable solutions is more than the consumption preferences of individuals' lifestyle choices (Hobson, 2002). The biggest challenge, in my opinion, is changing the consumption mindset that people have.

2.1.4 The physical and environmental footprint of micro-apartments

The new trend in UK housing is a slightly different interpretation of the term 'sustainability'. The higher density (more sustainable) construction of housing units now follows a national trend where units with less living space are being built (Dempsey, 2010). The re-interpretation of sustainability is being advocated by the Tiny House people. ~~One of the motivations given – by the~~These Tiny House ~~advocate~~enthusiast~~s –~~, ~~for~~ have motivated scaling down and living in smaller housing units ~~is connected~~ to living more sustainably and consuming more sustainably (Mutter, 2013). It is important to understand what the reasons are for people who have deliberately decided on scaling down or living smaller. This can help us understand their mindset and motivations for doing so. ~~These are only one of the reasons that many provide when asked for their motives for living in tiny houses.~~

A poll conducted in 2014 indicated that 76% of Millennials say they are more focussed on the environment than their parents' generation (Timm, 2014). More than 66% of these respondents indicated that they would be willing to pay more for sustainability-focussed products (Timm, 2014). It is of my opinion that the move towards sustainability begins at an individual. ~~No policy will be able to provide an actual solution if the individuals do not believe it in themselves.~~It is crucial to know that

living sustainably starts with the individual, as no policy will be able to provide an actual solution if the individuals do not believe it in themselves. No optimal or definite solution can be found to ensure that interconnected issues surrounding resource depletion, climate change and equitable development are efficiently dealt with on a planning and policy level (Bradley & Hagbert, 2017).

2.2 How does the financial system influence micro-apartments?

Demand for living 'small' has been increasing incrementally as a result of the increased awareness of climate change, the impact of the global financial crisis and the rise in real estate prices (Negrin, 2009; Kahn, 2012). In several developed countries, the single and youth population has moved or is considering moving into smaller rental units – if it means that the rent for prime location units is lower (Brinded, 2014). Aspects such as micro-apartment affordability and how micro-apartments started will also be discussed further in this literature chapter.

2.2.1 Affordability

Local councils in the United States of America are also considering affordable housing options through micro suites (Einarson, 2016). Micro-apartments as affordable housing options is not a new concept. ~~People have been forced to make use of this housing option as a result of real estate prices being too high in urban areas or as a result of their level of income (Einarson, 2016; Bach *et al.*, 2007).~~ Some living options currently being rented out are affordable, yet a violation of basic human rights. Figure 6 and Figure 7 are images from Hong Kong where tenants lease a single-bed space where they sleep, cook and clean. These are referred to 'Cage Apartments' (Berke, 2018). It is important to gain a balance between a healthy way of life and the size of an apartment for it to be affordable to its users. Although not all users can afford apartments, these individuals have been forced to make use of this housing option as a result of real estate prices being too high in urban areas or as a result of their level of income (Einarson, 2016; Bach *et al.*, 2007). Hoang and Vandal (2016) indicates that the minimum requirements for living spaces in Hong Kong is 2.5m².

Figure 5: Cage Apartment in Hong Kong

Figure 6: Cage Apartment in Hong Kong



Photographer: Tyron Siu - Reuters (Berke, 2018)



Photographer: Bobby Yip - Reuters (Berke, 2018)

People have been affected by financial turmoil around the world for ages. Even more so since the financial housing crash in 2008 (Campbell, 2011; Kahn, 2012). This has caused people to question how important the 'American dream' truly is. The recent trend in the west is one of scaling down, and living more simply and frugally (Kahn, 2012).

When describing a home as an investment or a product for the homeowner, maintenance costs and mortgage payments also play a role (Bradley & Hagbert, 2017). Small homes endorse affordability (Campbell, 2011) and, therefore, is available to more residents. Society is moving toward replacing trophy houses with a home that works for the family. A turn towards more sustainable housing solutions has come into play (Mutter, 2013). These homes assist individuals in saving money and time, which can then be used elsewhere (Campbell, 2011). Small homes can help improve people's quality of life as they live in homes and spaces that better suit their needs.

In 2012 49.4% Millennials had student debt, compared to 25.6% student loans in 1995 by the Generation X's (Buckley, et al., 2015). The increased student debt has been found to be as a result of the financial constraints that the parents were carrying from the recession in 2008, and therefore the student debt became a burden to the Millennials (*ibid*). This could justify why Millennials are living with their parents for longer. Bleemer (2015) found that the rising home prices in cities, which is the most attractive location for Millennials, have made first-time homeownership out of their reach. Millennials' focus has shifted to travelling more and focusing more on accumulating moments or memories rather than possessions

2.2.2 Living simply and more consciously

The simplicity movement is a modern movement which focuses on adapting the thoughts that consumerism sells people: the need to buy every item that is new on the market. Simplicity has an assorted set of societal critiques (the way we act on and react to consumption), and it recommends a

different method of achieving a better quality of life: simplifying it and significantly reducing the level of consumption (Alexander & Ussher, 2012). By lowering their living costs, citizens feel they can downshift from high pressured lifestyles and live more freely. This includes consuming less, working less, having more time available for friends and family, travelling more or more easily moving to a different location.

Another movement which reconsiders the way we live life is called 'Slow Living'. Slow living refers to living life deliberately. Everyday life is approached with care and attention so that citizens are in control of their time, money and choices. According to Parkins (2006) in Mutter (2013) the priority ~~is~~ in slow living consists of being ~~"in the present in a~~ meaningful~~, sustainable,~~ and thoughtful about every action made throughout a day. It considers thinking and living more sustainably and living~~and~~ in a pleasurable way~~"~~. Slow living, however, is not necessarily concerned with its followers needing to downscale or change their space; rather, it advocates using space intentionally and changing the way space is viewed (*ibid.*).

2.2.3 Consumer preference

Another study conducted in Ireland determined that demand for housing is different to consumers' demand for cars or holiday trips (Daley, 2007). The consumer's preference differs regarding the desire to purchase a home or when considering renting. Factors such as location and neighbourhood of a home, the design and size thereof, as well as the convenience ~~Daley (2007) indicates that "location, design, size, convenience and neighbours"~~ impact the process of choosing a home *(ibid)*. Therefore, living in a city in an apartment could be someone's dream or nightmare.

Decent and affordable housing for the entry-level buyers / renters or the young working class is scarcer in established areas, as location adds a hefty price tag to housing (Bach *et al.*, 2007). Dempsey (2010) indicates that there is no consensus as to what constitutes high density. This is due to the importance of and the difference associated with a wider cultural context in a compact city (*ibid.*). Previous studies have indicated that consumers are diverse and that this diversity is influenced by their social structures (Nakano & Washizu, 2016). Consumer behaviour is also connected to various other attributes such as age, income class and ethnicity (*ibid)*.

2.2.4 Willingness to pay

Willingness to pay (WTP) is an important measure to determine the value that people associate with goods and services (Mitchell and Carson, 1989; Bowman, et al., 2009). It is important to make use of WTP when engaging with public opinion on products that are either not currently on the market or of which there is only a limited amount (*ibid*). Non-market items such as quality of life, air or water quality, or use of items, spaces or products can also make use of the WTP method in order to

understand how important they are to people (*ibid.*). A wide variety of items can, therefore, be evaluated as it is easy to receive responses (Mitchell and Carson, 1989; Bateman *et al.*, 2002 in Lo & Jim, 2010). Contingent Valuation (CV) is a method of determining the WTP for products. Contingent valuation allows a researcher to capture perceptions of consumers for products that are not widely available (Simons, *et al.*, 2008) and it also captures the respondent's reaction for a certain topic (Morrow-Jones, *et al.*, 2004; Bowman, *et al.,* 2009). The responses are expressed in monetary terms and are answers to hypothetical scenarios (Lo & Jim, 2010).

2. 3 Why are micro-apartments becoming popular?

Many authors have argued that society needs to move beyond capitalistic movements and that individuals need to consider their personal spaces such as their homes and communities. People need to confront issues surrounding affordable housing by focusing on anti-consumer and anti-capitalist solutions (Pickerill & Maxey, 2009). Society needs to consider alternative economic livelihoods and strategies. The theory surrounding micro-apartments includes building structures with many small units (Einarson, 2016). Einarson (2016) finds that the smallest micro-apartment buildings are comprised of 30 units and the largest of 402 units. This results in one structure accommodating more apartments or units as part of a single residential building. The individual cost of an apartment should then be reduced, depending on the finishes of the unit (StatsSA, 2016). The number of single~~-headed~~ households is increasing and, therefore, the micro-apartment solution is an affordable option for students and young professionals (Einarson, 2016).

Making use of space-saving techniques in tiny home spaces is vital and, therefore, the distinguishing feature of these homes (Negrin, 2009). Smaller homes have lower resource use as they use fewer resources to heat and cool the unit. The units are water-wise and electricity-wise and contain fewer material items (Campbell, 2011).

The approach frequently used by the residents of these units is: keep it small & simple – known as KISS (Kahn, 2012). The small area of each apartment allows for relatively easy maintenance. The units, potentially, have one door leading to the bathroom and a couple of lights and light switches to maintain and very little wall square space that requires repainting – if the resident so wished. Many Millennials are free-spirited: they wish to see the world and not get caught up in the 'rat race'. The low maintenance associated with these units allows residents to 'lock up and go' (Mutter, 2013).

Even though the apartments are tiny, it does not necessarily lead to the unit feeling cramped or enclosed. Architects and interior designers have been successful in creating a sense of space by using high ceilings, cleverly placed balconies and creative cupboard configurations. The apartment interiors

are designed to make maximum use of space. This includes the use of built-in and retractable furniture and collapsible desks, allows spaces to have multiple uses and makes use of hidden storage space.

2.3.1 Facilities in micro-apartment unit developments

The micro-apartment unit developments have different activities areas within the development. Mimi Hoang, defined it as being a dispersed house (Dirksen, 2016). The content configuration of the apartment is very small and compact, but other facilities are available such as the communal areas of the building. These are the spaces that one would ~~ally.~~ find in a home (Hoang & Bunge, 2016). The only difference is that these communal spaces are no longer in the apartment but are dispersed throughout the building and shared with other occupants (*ibid.*). That is to say that all the different functions of a normal house are now simply outside the apartment. These include a salon, gym, hot desks, rooftop gardens and clubhouse facilities or entertainment area. Hoang observed that homes are no longer defined by walls. Some residents' homes could be spread across blocks or even across cities (*ibid.)*. A block can function as a home, and the city could function as a whole house.

Carmel Place, constructed in 2015 in New York City, considered the facilities in the apartment building as a deconstructed home. Residents all have access to communal amenities, which were designed for a variety of functions (nArchitects, 2015). The facilities were placed in such a way to foster an active connection with the community and its residents. The facilities include a community room, a spacious porch for hosting, lounging areas, a gym, a study den, extra storage space, a laundry and a secure room for bike storage (Figure 5). Private spaces found in a typical home are dispersed throughout the building.

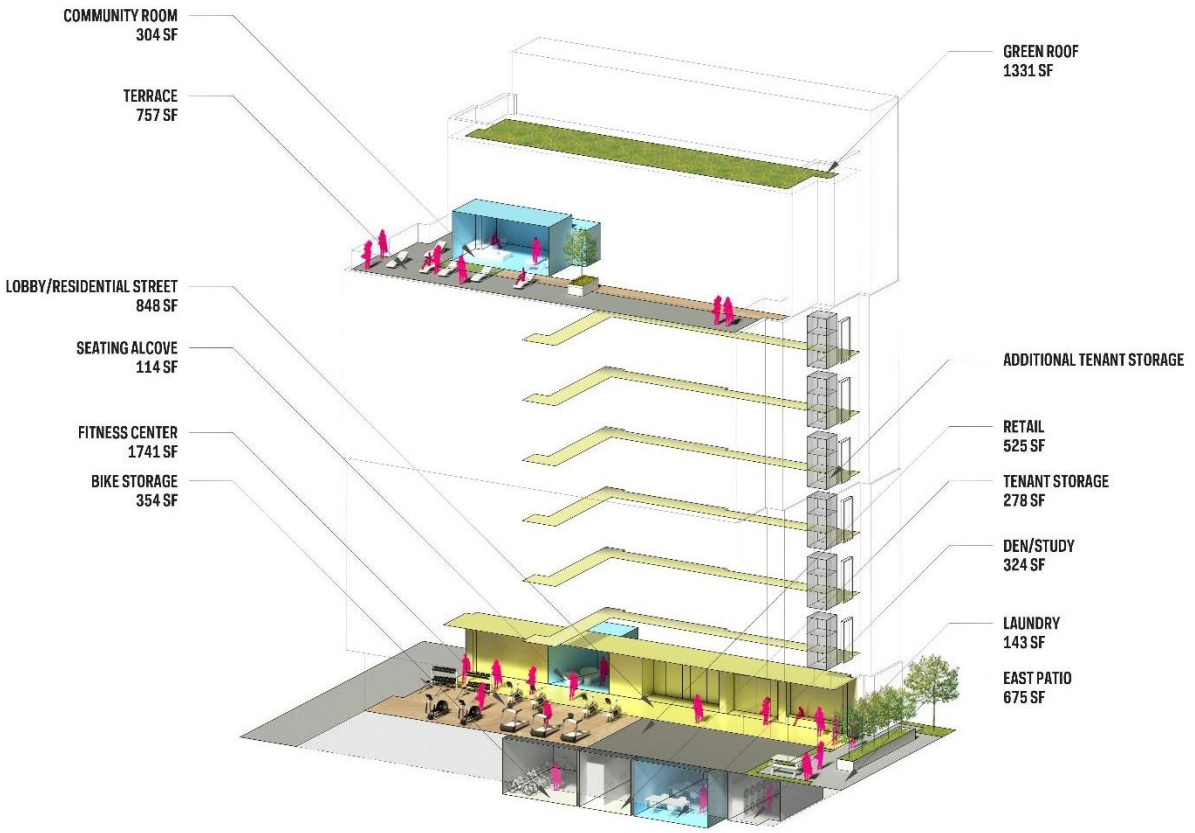


Figure 7: Amenities layout at Carmel Place, New York City (nArchitects, 2015)

Developers are now focussing on amenity, flexibility and well-being as part of their occupational strategy (Phillips, 2017). Birmingham's city centre is phasing out its major concrete jungle look to a more focussed and modern-looking business hub. The lifestyle is, however, evolving more than simply being accessible, connected and having shopping and leisure amenities close by; the actual amenities contained within the building and the building finishes are becoming an essential part in creating an appealing environment (*ibid.*).

2.3.2 Urban Green Spaces and infill housing developments

The pressure to increase densities in urban areas often results in infill residential housing developments being constructed next to facilities and amenities which have a different zone or use such as retail facilities (Lindsay *et al.*, 2010). Micro-apartment developments can therefore have access to a wider variety of facilities in urban areas, and there will be a smaller developer cost to incorporate these facilities into the micro-apartment building. The ideal land portions for the development of these buildings would also be the more valuable or sought-after infill land such as vacant land located next to a park or playgrounds in urban areas. Lindsay *et al.*, (2010) found that these land parcels increases a resident's privacy and therefore makes a development more attractive (Lindsay *et al.*, 2010*.)*.

Beyond the value of the property, the mindset of consumers is also linked to imageries associated with home and the expression of identity and, thus, has an impact on consumer lifestyle and spending habits (Bradley & Hagbert, 2017). Consumption of goods associated with residential space and materials for home decoration also shapes the financial position of the consumer. The low maintenance, the use of utilities and fewer responsibilities in a micro-apartment are major factors regarding the popularity of micro-apartments. Self-consumption is linked to individual preference and, therefore, an area where self-actualisation needs to take place before the individual takes on a more sustainable way of living.

Bowman *et al.* (2009) indicate that open space or naturally conserved environments are important to consumers. The authors further suggest that conserving open spaces in developments has the potential to increase the return on investment for city developers (*ibid*). This also results in greater social environments where citizens experience an increased quality of life. Another study regarding urban green spaces (UGS), conducted in Hong Kong, found that 70% of respondents living in high rise buildings visited UGS at least once a week (Lo & Jim, 2010). These spaces were used to exercise and to breathe in clean air (*ibid.*). The study associated this recreational pattern with the cramped private living conditions prevalent in Hong Kong (*ibid.*).

2.3.3 A unit's floor level influences market demand

A micro-apartment residential building should be medium to high density in order for the housing solution to be implemented on a feasible and functional level. The taller the building is, however, the greater the variety of apartments and views can be provided. It was interesting to discover that the floor level of an apartment affects the purchase or lease price. A study conducted by Aresenio *et al.* (2006) indicates that the higher the floor level is, it increases the view, decreases the street noise levels and therefore increases the price for the apartments. This is because the views from the apartment are better, the apartment has more access to uninterrupted sunlight and traffic noise levels decrease (*ibid*).

2.3.4 Push and pull factors related to the popularity of micro-apartments

Hoang and Vandal (2017) determined that the challenge regarding micro-apartments stretch much further than just floor area. The study addresses the needs of urban dwellers and shows how demographics have changed. Major influences on these changes have been people's mode of living and the location of their work (*ibid.*). The population's priorities have changed as they are living more environmentally friendly lifestyles and are living more healthily – resulting in longer lifespans (Hoang & Bunge, 2016). American citizens have been getting married later in life, women are studying more and pursuing their own careers and the divorce rate has increased dramatically(*ibid*). All of these

factors have led to a global rise in single households by 30% (*ibid.*). These are push and pull factors explaining why micro-apartments are becoming more popular.

2.4 Characteristics of micro-apartment residents

There is a correlation showing that persons living in micro-apartments often have similar characteristics. These include socio-economic characteristics such as educational achievement and level of income (Lewis & Baldassare, 2010). Other studies have also found that factors relating to household tenure and life cycle events, particularly views on childbirth, also play a role (Chen & Lin, 2011). Micro-apartments residents are usually single or are couples who do not have children yet (Einarson, 2016). Besides the above-mentioned socio-demographics, their attitudes and their environmental awareness also greatly influence residential location decisions (Yang & O'Neill, 2013). The largest segment of the population who is interested in well-located micro-apartments is 18 to 24-year-olds (54%), followed by 35 to 44-year-olds (37%) (Brinded, 2014).

Locational preferences have been subdivided into two broad categories: socio-demographics and other attitudes (Liao, *et al*., 2015). Socio-economic security has a great influence on highly educated individuals, as they tend to favour a more compact development where land use and neighbourhood patterns are more favourable (Lewis & Baldassare, 2010). Location plays a role in deciding whether to buy or to rent, as renters focus more on amenities and accessibility and homeowners are more concerned with the residence itself (Bina, et al., 2006). My opinion is that the attitudes towards environmental protection, natural and social environment, urban growth boundaries as well as the individual's preference regarding residential structures and preferred method of transport influence a possible residents' thoughts on micro-apartments

Residents who occupy high-density residential developments in the UK live either alone or as a couple (without dependants) (Lindsay, et al., 2010). The family units are, therefore, quite small. Youth in London indicated that they would rather rent a micro-apartment in a well-located area than a large property which is not as well located (Brinded, 2014). Brinded (2014) refers to a study published by Knight Frank which indicates that 54% of 18 to 24-year-olds are willing to stay in a micro-apartment, approximately 300 feet² (28m²), when it is in a desirable location (*ibid*). The 35 to 44-year-olds indicated that 37% of them would consider living in a small central location (*ibid.*).

2.5 Policy perspectives and Gauteng

~~These affordable housing units could be regarded as micro-apartment units as the size and cost of the unit play a major role (Webster, 2019). The second of the four options that are provided to developers states that 10% of the developable units must have a floor area of 18 m² – 30 m², providing City of Joburg with the future potential of many more micro-apartments (Webster, 2019). Rental units will be~~

~~enforced with monthly rent capped at R 2 100 per month (Webster, 2019). The building and rental of units at the previously mentioned price will require reinvention of conventional apartment units. Hopefully the reinvention of these apartments will present micro-apartment configurations. The South African Property Owners' Association, however, is of the opinion that it might deter private developers from delivering more houses (James, 2018).~~According to the National Building Regulations (2008), ~~does not provide~~no minimum dimensions are required for a dwelling unit. These regulations~~It do es~~ indicate that the room should be fit for its purpose and that the floor areas should not be 'less than necessary' (NBR, 2008: 99). With regards to the design of habitable rooms, the NBR does require the toilet facilities to be in a separate room and to be compliant with SANS 10400-C(*ibid).* SANS 10400-C (South African National Standards, 2016) does not provide further clarification as only the maximum floor area is indicated as 80m². The building regulations for South Africa does not assist the motivation or definition for building micro-apartments. The measurements are specified at maximum dimensions rather than providing minimum dimensions for habitable areas. When applying to municipalities for such buildings, these minimum dimensions would assist council officials in making decisions.

If the construction of micro-apartment buildings is considered for Social Housing Solutions, the Social Housing Regulation Act (2008: 39) design criteria refers back to the Housing Code and Building Regulations for compliance. Compliance for housing design includes the unit and room size as well as the level of finish(*ibid*). As mentioned above, these regulations are currently not defined well enough to ensure that the application of such developments would be clearly compliant. The Social Housing Regulation Act (2008: 39) requires housing to be "medium-to-high density units". At least 30% of the social housing units must be rented to for households earning less than R3 500 per month and the remaining 70% can be rented to households earning between R3 501 and R7 500 per month(*ibid).* The size of dwelling units should be considered when catering to the above income category households. I am of the opinion that providing solutions at the correct sizes and rental prices are not impossible.

Housing affordability plays a major role in living in Gauteng (Steedley, 2014). The ever-increasing cost of housing prices is forcing many local residents out of the housing market. This could cause many Millennials to rather find affordable housing in other local municipalities, further away from their work location (Einarson, 2016). Although the Gauteng Spatial Development Plan (Gauteng Growth and Development Agency, 2011) supports standards surrounding affordable housing that is in close proximity to schools, nature and safe public transportation networks, it has still not become a reality for Gauteng residents. Political candidates have committed to implementing legislation and policy frameworks that stimulate the development of affordable housing solutions that are within urban centres(*ibid*). The implementation of these and targets of affordable housing delivery has not been a reality (Tissington, 2011). ~~Affordability as~~ Affordable housing could be regarded as micro-apartment

units as the size and cost of the unit play a major role (Webster, 2019). The second of the four options that are provided to developers states that 10% of the developable units must have a floor area of 18 m^2 – 30 m^2, providing City of Joburg with the future potential of many more micro-apartments (Webster, 2019). The building and rental of units at the previously mentioned price will require reinvention of conventional apartment units. Hopefully the reinvention of these apartments will present micro-apartment configurations. The South African Property Owners' Association, however, is of the opinion that it might deter private developers from delivering more houses (James, 2018).

In order to retain Millennials within cities, Einarson (2016) suggests providing more affordable rental and homeownership options. PayProp reveals that the most affordable rental province, according to property prices, in South Africa in 2017 were the North West Province (49%), the Eastern Cape (39.1%) and the Free State (38.3%) (Writer, 2017). These three provinces had the most rental units in the R2 500 – R5 000 per month bracket. In South Africa, 32.04% of rental units cost R5 000 – R7 500 per month, followed by 27.88% that cost R2 500 – R5 000 per month. Only 8.3% of rental units cost less than R2 500 per month (*ibid.*).

The Gauteng Spatial Development Plan (Gauteng Growth and Development Agency, 2011) indicated that there was a growth of residential densities in the three metropolitan municipalities between 2001 and 2007. For that same period the growth of residential densities was not able to grow further than that of the single-dwelling housing rate (*ibid*). This illustrates that urban sprawl is still remains the development trend for housing typologies in the three main metropolitan municipalities. The City of Joburg's (CoJ) Inclusionary Housing Policy will be enforcing affordable housing rental units capped at R2 100 per month in all new development applications in the municipal boundaries (Webster, 2019). This will be done to provide more affordable, location-efficient options to households earning less than R7 000 per month (Sandton Chronicle, 2019). The Socio-Economic Rights Institute (SERI), however, advocates for an income-based rental cap of R 960 per month in order to meet the needs of the low-income households (Webster, 2019).

The City of Joburg Inclusionary Housing Policy aims to address the immense housing shortage South Africa currently faces. The vision for this policy is to accommodate households that earn less than R 7 000 per month in well-located areas (Sandton Chronicle, 2019). This is done by forcing private developers to include a certain percentage of affordable housing units in their developments (Webster, 2019).

~~The average South African middle- to high-income citizen has become so used to making use of their personal vehicles that they do not give public transport or a walkable city a second thought.~~ South African's could ~~have a stronger appetite~~be more inclined to making use of ~~for~~ transit-oriented living if

public transport was more affordable, reliable and safe. As a result, South Africa has fewer compact developments than the more developed countries, and this could therefore also have an impact of the undersupply of such urban areas. As a result of this undersupply, Liao *et al.* (2015) suggests that actual residential and travel choices ~~"have been stro~~is restricted by the vehicle dependency status~~ngly constrained by the automobile-dependent environment"~~.

~~According to the National Building Regulations (2008), does not provide minimum dimensions for a dwelling unit. It does indicate that the room should be fit for it's purpose and that the floor areas should not be 'less than necessary' (NBR, 2008: 99). With regards to the design of habitable rooms, the NBR does require the toilet facilities to be in a separate room and to be compliant with SANS 10400-C.~~

2.6 Market characteristics

It is important to determining market characteristics in order to understand how valuable micro-apartments are to the South African buyer. One method to determine the value attributed to micro-apartments is by comparing market characteristics, such as the rate of sales, days the property is on the market, appreciation of apartment rates and the number of sales (Bowman *et al.*, 2009).

2.6.1 The effect of NIMBY's on the sales market and health concerns of micro-apartments

Capps (2015) ~~suggests~~theorises that micro-apartments are being critiqued by other buyers or renters in the same housing market as micro-apartments. This could be as a result of the high level of competition between developers and therefore providing trying to influence buyers or tenants to rather purchase elsewhere. This indicates that the residents who fear micro-apartment housing feel that micro-units could displace families, the infrastructure will take strain and the units pose health risks to the residents (*ibid.*). Micro-units, however, are under strict zoning and face strict building restrictions (Dirksen, 2016) and need to adhere to all health minimums before occupation can take place.

The 'Not-In-My-Back-Yard' (NIMBYs), however, are wrong about micro-apartment housing. They are mistaking micro-housing for the symptom of a disease, instead of seeing it as a cure. Micro-apartment housing is important to help bring people back to the city by affording them more affordable rates, whilst having a lower impact on the environment and promoting urban ~~densification~~densification (Hoang and Vandal, 2016).

In San-Francisco, group houses have transitioned into group bedrooms in order to accommodate bunk-bed listings (Gabbe, 2015). This has largely come due to the affordability factor of homes in the urban area. This has caused some health cost stress as a result of residents being in extremely close

proximity to one another, making the spread of diseases easier. Capps (2015) sees this as being due to housing being unaffordable. Thus, creating more affordable, separate housing would drive down the cost of health, rather than increase it. The Center for Disease Control and Prevention has stated that diseases caused by potential overcrowding of residents ~~through~~ occur as a result of ~~"the stress of~~concerns for safety, ~~unsafe, uncertain~~housing insecurity and uncertainty, or unsustainable living ~~situations" (housing insecurity) outweigh~~situations outweigh the stress related to micro-apartment living (*ibid*).Therefore it could be more comfortable living in a micro-apartment than being concerned about the stresses laid out above.

2.6.2 Residential markets and developments in the world

In December 2017, Taipei's housing transaction market hit a historic low. This caused luxury residential developers to lower their prices to attract buyers (Huang, 2017). Since then, the transaction volume has increased slightly (*ibid.*). Both residential and office tenants are looking for a more comprehensive 'lifestyle' packages in a building. It is no longer a case of what I can do for a developer, instead, it's what can the developer do for me. Thus, the best chance that a building has of securing owners and tenants is to take a more customer-centric approach (Phillips, 2017).

In developed countries, and specifically the G7 countries, the trend of business parks being developed in peripheries is being reversed as youth are migrating back to city centres (McLocklin, 2018). The G7 countries, include countries from the most advanced economies in the world such as Canada, France, Germany, Italy, Japan, United Kingdom and the United States of America. The population numbers in cities such as London, Paris, New York, Los Angeles and Houston are increasing as young professionals are migrating into city centres (*ibid.*). This trend has also been driven by citizens realising that mass suburban sprawls are unstainable and, therefore, that cities are more economically and environmentally sustainable (*ibid.*). An added benefit of living in the city centre is that people can walk and cycle to work and back home. This counteracts the car-dependant lifestyle and improves health. Copenhagen is a strong leader and example of this lifestyle (Starke *et al.,* 2012). Younger generations are also more willing to live in high-density units than older, retired individuals. Research, however, has indicated that a small number of retirees are living in these low-maintenance units (Parkins & Craig, 2006).

Market demand

As a result of the political uncertainty, slow economic growth and inflation pressures in South Africa the demand for property has reduced, forcing sellers to adjust their prices (Writer, 2018). The current market is dominated by a cautious buyer which caused new properties purchases to slow down in 2017 (*ibid.*). Gauteng, however, is projected to increase to 28 million people by 2055 (Gauteng Growth

and Development Agency, 2011). The population total for 2010 was roughly 11.5 million (*ibid.*). The growing population will certainly add pressure to housing affordability options in the inner cities, in an already-strained housing market in South Africa.

The residential rental market demand is strong in South Africa (Steedley, 2014). The City of Joburg Metropolitan Municipality has, as a result of the housing shortage and major backlog in the municipality, implemented an Inclusionary Housing Strategy to assist in alleviating the need. There was a backlog of over 300 000 housing units in demand in 2017 in the COJ alone (Maisela & Wilehlm-Soloman, 2017). Developers are being incentivised to build more rental or affordable units at any new developments (Anderson, 2018b). The city identified over 500 buildings that could be released to developers to assist with the demand for affordable housing. The municipality, however, requested that the developers provide housing at R 800 – R1 000 in rent per month (*ibid.*). Developers started producing units and were aiming at rolling out 800 apartments by the middle of 2019 (*ibid.*). According to Africrest' s website (2019) only 180 apartments are available for occupation. Africrest alone aims at having 2 000 apartments by the end of 2020 (*ibid.*).

Market supply

Hoang and Vandal (2016) found that there are 1.8 million small households in New York City and only one million suitable small apartments to adequately house them. As a result of this large demand, larger units have been subdivided or sub-let to make the rental cost per unit more affordable. This has often been done illegally and informally in order to support the demand (*ibid.*).

Many markets are so undersupplied that single families have been sharing three- or four-bedroom homes, leading to a decreased supply in housing for larger families. This can also be seen as families complain that there is not enough housing to suit their needs (Capps, 2015). Families with lower income should not be competing with young professionals for limited housing stock. Single family households should, therefore, rather be given their own typology that suits their needs. Supply and demand sceptics are always fond of highlighting that real estate is not a homogeneous commodity. Instead, it is a variety of products that are tailored to a large variety of tastes and requirements (*ibid.*).

2.6.3 South Africa's micro-apartment market

The majority of South Africa's micro-apartment units are currently located in the City of Cape Town. Gauteng has also seen an increase in these units over the last past years (Property Wheel, 2014) These have mainly used for student accommodation and can be found in the inner suburbs of CoJ. Research in Cape Town has suggested that developers should increase the price sold per meter in micro-apartments, in order for the developers to continue making profits (Webster, 2019). The research

suggests that instead of costing a micro-apartments unit at R 41 000 per m^2, R 57 000 per m^2 should be considered (*ibid.*). This means that for a micro-apartment in Cape Town's central business district, one could be expected to pay over R 1 million for an 18 m^2 apartment and R 1.7 million for a 30 m^2 apartment. It is anticipated that with the implementation of the City of Joburg's Inclusionary Housing Policy many smaller units will be developed by private developers in order to meet the requirements from the City of Joburg

~~These affordable housing units could be regarded as micro-apartment units as the size and cost of the unit play a major role (Webster, 2019). The second of the four options that are provided to developers states that 10% of the developable units must have a floor area of 18 m^2 – 30 m^2, providing City of Joburg with the future potential of many more micro-apartments (Webster, 2019). Rental units will be enforced with monthly rent capped at R 2 100 per month (Webster, 2019). The building and rental of units at the previously mentioned price will require reinvention of conventional apartment units. Hopefully the reinvention of these apartments will present micro-apartment configurations. The South African Property Owners' Association, however, is of the opinion that it might deter private developers from delivering more houses (James, 2018).~~

Container homes

Although container living has not yet become popular in South Africa, it is definitely on the increase. More companies, as well as homeowners, are realising the various benefits attached to container-home living (Van Graan, 2016). Shipping-container homes are said to offer "a home owner [sic] flexibility, efficiency, and affordability in the design of innovative housing" (Warby, 2015). Monaghan Farm in Johannesburg is a security estate ~~that will~~would feature homes built of brick and mortar as well as container homes (Steynberg, 2016). Some residents, however, are afraid that raw storage containers in an upmarket area will decrease the value of their property and are against it being built in their neighbourhoods (Abrahams, 2017).

South Africa's average family size in 2011 was 3.8 members; the estimation decreased to .36 members per household in 2017 (Quantec data, 2011) and, therefore, this study tries to explore a more appropriate housing solution for smaller families. Contingent valuation was used to understand the current market perceptions surrounding micro-housing (Simons *et al.*, 2008). The respondent's reaction to or need for downscaling (Morrow-Jones, *et al.*, 2004) could also indicate whether they might consider moving into a micro-apartment. WTP methods of enquiry were also used as there are not yet many micro-apartments units determined to be available in the current South African market (*ibid.*).

2.7 Conclusion

These critical perspectives inspire more radical thought processes and approaches to rethink implementable changes to how society organises itself, the economy and everyday life (Starke *et al.*, 2012). Sustainability, location and affordability are the main themes surrounding the use of micro-apartments. Residents want to be able to live close to their work or families, without having to forgo the comfort of fast travel. The role of amenities in a micro-apartment building should not be underestimated as these provide residents access to the same spaces that they would usually have in a standard-sized home. Other important themes surrounding micro-apartments is understanding the freedom and flexibility it provides. It lowers the impact on the environment whilst also saving the occupant more money on consumables. Space, however, is limited in these units and, therefore, an individual with an anti-consumerism mindset is better suited to such housing.

CHAPTER 3: METHOD OF RESEARCH

3. Method of Research

3.1 Introduction to research

Through making use of quantitative research methods for this research ~~project~~ I ~~managed to~~ provide a multifaceted investigation into micro-apartments. The research approach allowed me to thoroughly unpack micro-apartments as well as analysing the views of small families in the Gauteng City Region. Google Forms has provided an opportunity for doing multiple surveys in a short amount of time, in different locations.

3.2 Research and Design Approach

As mentioned earlier on in this report, the research questions were designed to analyse the micro-apartment housing demand for small families. The main research question and sub-questions for this research report are:

What is the demand for micro-apartments, among small families, in Gauteng?

- Who makes use of major nodes (see field study area) in the three metro municipalities?
- What are the respondents' current housing typologies and future preferences?
- Is there an interest in micro-apartment living?
- If so, how big is the demand for micro-apartments in Gauteng?
- What are the reasons that respondents would consider moving into a micro-apartment unit?

The questions surround '*what*' and '*who*' will be interested in micro-apartments, provide insight into how many families would consider micro-apartments as a home or investment and what these families' characteristics are. This study is largely deductive and exploratory. There are currently very few micro-apartment buildings in South Africa, and therefore the academic territory for micro-apartments has not yet been explored. A secondary intention of the study is to determine whether people are aware of micro-apartments as housing solutions and to what degree they perceive micro-apartments as living options for their own households. I attempt to understand the micro-apartment movement in the Gauteng City Region. South Africa's current micro-apartment market demand can then be deducted through understanding the shift to more sustainable living. My expectation is that more Millennials families will want to downscale and be more aware of their impact on the environment.

Due to the power of interpretivism, I understand that every person is influenced differently and therefore a straightforward and unobjective analysis cannot be done. This research project can therefore not be conducted entirely objectively. It is crucial to understand that my background, former

education, personal and professional ties will influence the way in which the data is collected, analysed and interpreted. It is also important to make use of these reference frames so that it assists me in interpreting and expressing (Thomas, 2013, p. 109) the conclusions in chapter ~~4~~ four and chapter ~~5~~ ~~.5~~five.

Babbie (2005) determined that the exploration of perceptions within a sample of individuals assists in discovering ground-breaking research, and results in the formation of niche markets. I am hoping that with the perceptions indicated through my research will indicate~~d~~ whether there is a market for micro-apartments. I can therefore not have complete ideas and expectations before the results indicate whether there are new markets for micro-apartments before exploring the data and perceptions received accordingly (*ibid*).

Creswell (2009) indicated that if a researcher is not present, there is usually a more willingness to divulge information surrounding the respondent's priorities, goals and perceptions. In order to discover these answers, I will make use of a household questionnaire to gain objective responses from the respondents. The questionnaire will contain questions surrounding what the respondents' current living conditions and preferences are. I will also enquire about their social and economic information in order to collectively determine the '*who*' of this research project. The '*what*' will be determined by asking directly whether the respondent is or will be interested in micro-apartments.

Responses to questions will primarily be multiple-choice questions as well as some questions making provision for answers in a Likert Scale. The questionnaires will be sent by ~~myself~~me to my family and friends. The primary respondents will then either complete a questionnaire or send me other contact numbers of persons whom they think might be interested in micro-apartments or interested in completing a questionnaire. Qualifying criteria will be utilised to validate that the questionnaire does not arrive at the unintended respondent. Qualifying questions will also ensure that a respondent and their household only ~~has~~have ~~3~~ three persons or less and that the household is self-supporting financially. Being financially independent is important as purchasing and renting involves making financial decisions and considering opportunity costs suitable to your needs.

All of the questions asked in the questionnaire will be based on the goals of the research. Some questions will be asked in order to first require the respondent to start thinking critically about a subject. These questions are intended to build up to the main question, hoping that respondents will think about consumerism and wanting bigger, better and more of everything. Micro-apartments have a counter intuitive consumer ~~mindset~~mind-set and therefore the more critical questions will be introduced later in the questionnaire. The answers from the actual question would be used for the analysis in chapter 4. The introductory questions surrounds identifying the characteristics of both the

individual and the household, to answer the first question stated above. Questions are then asked about the ~~households~~household's current status quo with regards to their home, size and the composition of rooms. The same themed questions are asked about the households' future preferences for their homes; the size thereof and composition of rooms. This will answer sub-question two, stated above. From there onwards, sub-question ~~3~~three, ~~4~~ four and ~~5~~ five will be questioned.

My positionality

In high school, university and in my current working life I am a socialite. As a result, my social network is large, which allowed me to easily engage with 235 persons to complete my survey (primary data collection). My parents stay in Ekurhuleni Local Municipality, which is where other friends and family were relied on for the answering of questionnaires. I was raised in a white, lower - middle class family, who was always very loving and supportive of me~~..~~. I have a Town and Regional Planning Degree from the University of Pretoria. I have also been living in this Tshwane Metropolitan Municipality since university. Therefore, the high response rate from TMM is relatively expected as this is my primary network environment.

Town and Regional Planning introduced the fundamental aspects of physical, social and economic influences and constraints that cities considered for urban area development, whilst not neglecting the opportunities that these can present simultaneously. My interests include the sustainability of countries. As part of my undergraduate degree's research project, I researched the use of sustainability indicators in South African Municipalities.

The tiny house movement is the major influencer on my topic of research for this research report. I had followed the movement in America and Australia for a short period of time and became interested in scaling down. I was also interested in grasping the motives behind living smaller or with a smaller impact on the environment.

Once graduating from University, I went to work for a small consultancy firm which specialised in strategic development plans for local municipalities in South Africa. Here I learned how to interpret data, connect with community members and find the opportunities in each location for economic, social or labour growth. The company had to continuously compile documents for governments to improve their spending focus and provide the best growth strategy for them. The housing projects we did for the Housing Development Agency, the company conducted household surveys. These household surveys are where I learned how to compile surveys, train surveyors, collect and interpret the data. The method of collection for the household surveys was through online surveys, and we made use of community focus groups to help gain insight into the data that was collected. This background definitely motivated me to conduct my field research in the same manner, as I was

comfortable with the online surveys. Although the company made use of different survey software, the approach still stayed the same when creating questions to solve the research questions.

3.3 Population and sampling procedures

My research is conducted in in Gauteng. This is as a result of ~~Gauteng having~~Gauteng having the most economic opportunities in South Africa and being my home province. Additionally Gauteng is convenient in terms of location, accessibility and has a diverse population sample that is both relevant in terms of race distribution, age ~~distribution, and education~~distribution, education and has the highest portion of single households ~~background~~. Gauteng is familiar to me and therefore I preferred to conduct my research in Gauteng.

The purposeful sample technique was used to acquire a minimum of 30 surveys completed with residents in the identified areas mentioned below. These residents are family and friends of mine, whom I know live in each municipality. Constraints were implemented to ensure that all the respondents are non-dependants or earning their own salaries and ~~that~~those they were older than 21 years of age, living in a household with less than three persons.

The first suburbs I have identified are located in the Metropolitan Municipality of Tshwane and include Hatfield, Menlyn, Brooklyn, Silverlakes, Irene, Centurion Central and Eco Park suburbs. Secondly, in Ekurhuleni Metropolitan Municipality, I identified Kempton Park, Edenvale, Bedfordview, Alberton and Benoni. Thirdly, and lastly, my research considered areas such as Melrose Arch, Houghton, Parktown, Newtown, Randburg, Rosebank, Sandton, Northcliff, Cresta, Greenside and Fourways in City of Johannesburg.

As mentioned in chapter 1, I made use of the snowball sampling effect, resulted from the Six Degrees of Separation phenomenon, whereby any two strangers are on average only separated by 6.6 degrees of connections (Shu & Chaung, 2011). This means that any of my friends of family members, should within 6 users of their network, know someone who might be interested in micro-apartments. According to the theory, by making use of Six Degrees of Separation and the snowballing sample effect, I can extend my social network to potentially connect with someone that would have an interest in micro-apartments (Shu & Chaung, 2011).

3.4 Collecting and Processing Data

3.4.1 Undertaking Quantitative Interviews:

Through my past experience with online surveying, I was confident that this tool would help me achieve my aim within the timeframe and align with the resources I have available. I made use of online surveys for my research project through Google Forms. At the beginning of the questionnaire

the respondent is requested to agree to ~~making~~make use of all information provided in statistical form. As a result, ~~no personal~~no personal details will be used in the research report.

The initial respondents were from my direct circle of family and friends via WhatsApp. No emails were sent to potential respondents. As mentioned previously I will select every respondent carefully out of my network. This purposeful sampling will allow me to know where they stay, whether they have three persons or less in their household and whether they are still students or self-independent from then onward and living in Gauteng. ~~Ultimately,~~This will ensur~~e~~eing that the primary sample will qualify for the survey. My network of family and friends extend deeply into Ekurhuleni and Tshwane Metropolitan Municipality. City of Joburg, however, there are fewer personal contacts. Although, by ~~making use~~using ~~of~~ the snowball sampling effect I managed to reach more respondents in the City of Joburg.

After filtering through my network contacts and making sure every respondent would qualify my restrictions. The respondents have knowledge of their network and every person's circumstances (knowing whether they would qualify to the constraints). I then asked them to send me the contact numbers of the people identified so that I could also contact these persons with the link below. This ensured that my family members and friends do not do the research on my behalf. By relying on other networks and contact numbers, the survey might have arrived at an unintended person, as it usually happens in random sampling as well.

My initial Whatsapp message to all correspondents (family, friends and snowball participants) ~~are~~was: "*Hey (name), I am busy doing my masters research and would appreciate it if you could take the time to complete my survey surrounding micro-apartments (It won't take longer than 20min). The link is attached below and the survey is completely anonymous. You will find more information in the participant information sheet at the beginning of the survey. https://goo.gl/forms/P7ZvOfNFYvk3dH0F2"*

I intend on following up with family, friends and snowball participants about twice (to ensure that they are not being 'spammed' by me), before assuming that they were not interested in participating the survey. These follow-ups will take place about once a week, giving each respondent two weeks to conclude the survey. The follow up message will say: "*Sorry if you might have already responded to my survey, I would just like to remind everyone who has received the link to please complete the survey: https://goo.gl/forms/P7ZvOfNFYvk3dH0F2"*

In the event that a survey reached an unintended person, they will be able to decide~~d~~ not to continue with the survey and exit completely. If, however, the respondents are curious, the first question discusses the qualifying criteria and as a result the respondent can first decide if they would like to

continue before closing the survey. All other respondents can also exit the survey by responding to Question 5; and selecting the option to not complete the survey. Digital consent will be received through the first four 'questions' which will end with a question asking whether they would agree to participate. These four questions shall include all the details found in the Participate Information Sheet. Each participant is able to answer their survey on their own time and in a location that is convenient to them, therefore the survey will not be a nuisance, nor will it invade any respondent's privacy. The surveys can be concluded in each respondent's home, or working environment; in any location that the respondent felt most comfortable in.

3.4.2 Questionnaires:

The questionnaire ~~has~~ had sixty-two questions or statements, although one respondent would not necessarily view all of them. The statements are mostly informative or explanatory. The questions ~~will~~ have themes surrounding personal background, household background, current housing description, future housing description, owner or tenant status, micro-apartments as investments, willingness to pay for certain products, and what they think about down-scaling or up-grading.

3.5 The Approach for Analysis

The data was captured through Google Forms. This was then exported to excel, where simple linear correlation calculations were used to analyse the data received. Surveys allow ease of collecting responses in both quantitative and qualitative data simultaneously (Thomas, 2013). Both open-ended and close-ended questions were asked with a variety of dichotomous, multiple-choice and rating scale questions being asked. In many cases, each theme had a main question with clarifying or follow-~~-~~up questions to gain a holistic understanding of the answer that the respondent is providing. Keeping the questions relating to a ~~theme,~~theme also provided the respondent with more background information so that no confusion or as little as possible uncertainty is created.

The data was also compared to the literature review and other ~~informatorily~~ informative articles that could relate to the demand for micro-apartments among small families. This approach provides insight to the different responses for each theme that is enquired about (Thomas, 2013). The data then is analysed according to shared themes or trends found in the data (Leedy & Ormrod, 2005).

3.6 Ethical considerations and Limitations

As a result of my research approach involving human beings, I needed to consider ethics. It is important that my questions do not ask any invasive or offensive questions. The questions are non-suggestive and were non-compulsory, allowing the respondent to stop at any time they felt uncomfortable. My participants are protected as no respondent is asked to provide ~~their name~~their name, nor ID number

or any email address. Therefore, all data received will not be able to relate back to any respondent. The method in which the data was reported from the survey does not allow anyone to tie any information to any of the questionnaire answered. The research report will be available in the University library and will be accessible through the Wiredspace. Any interested person, researchers, and academic institutions should have access to the report.

It is important to gain informed consent. Thomas (2013) indicates that informed consent involves the acceptance of participation in the study. However, informed consent is more detailed, providing the respondent with information surrounding the nature and purpose of my study. These include the possible benefits, any harm that could come to them, information regarding confidentiality and anonymity, how the data will be stored and used, as well as where they will be able to gain access to the findings (*ibid*). My name, contact details and university details also need to be present, as well as where the respondent can contact my supervisor or someone from the ethics committee (ibid). All of these details were described and made reference to in the first four questions of my survey.

As mentioned previously each participant will be able to answer their survey at their own leisure. The total completion of questionnaires is also a limitation, as some persons could open the survey, start completing it, then get side tracked and never complete it. The research may be subject to the Hathorne Effect, whereby people may change their behaviour because interest is being sparked in them as they are asked to complete the survey (Thomas, 2013). This ~~can~~ is a possible limitation as ~~also occur because~~ I am asking family and friends to part-take in the questionnaire. They may, therefore, feel obliged to answer, or answer in a manner that can be beneficial to my research, although it may not be a true reflection of their opinion.

Interviewing and surveying my purposeful sample of family and friends could cause potential conflicts of interest, whereby the respondents may not want to disclose certain details. Only surveys will be used as pilot surveys. Pilot surveys will be conducted with anyone and their results will be excluded and discarded. The pilot surveys will indicate which questions are problematic so that the survey can be revised and adjusted. Regarding some of the more sensitive information, an option will be provided for them to not answer, although it will be indicated that answering all the questions honestly is of utmost importance to gain accurate information for my research. Ethics clearance was approved and received in October 2019.

3.7 The Approach for Analysis

Quantitative data along with small amounts literature indicated information that is important to be collected. Such data should relate to the respondent's age, gender, income, their current housing situation and their future needs and wants for housing. The data supports and suggests important

insights into whether my respondents will be interested in occupying a micro-apartment unit in urban areas of South Africa. My respondents continue to be fully protected and has no means of being identified. The following chapter is an analysis of the data found.

CHAPTER 4:

DATA ANALYSIS

4. Data Analysis

4.1 Introduction

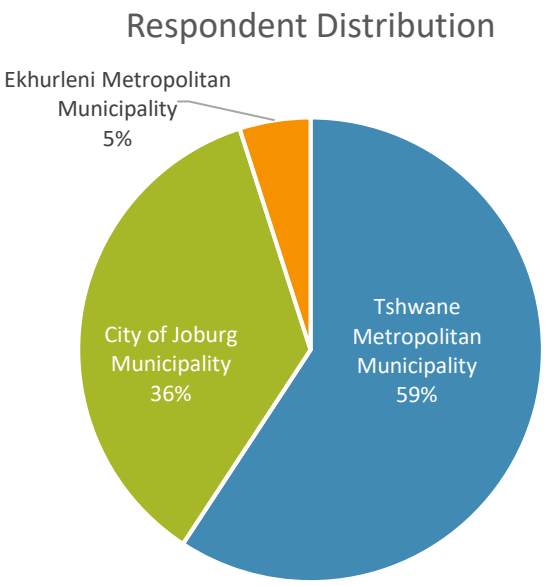
This chapter is comprised of the data collected from the surveys distributed as part of the fieldwork. The findings and analysis provides insight into the surveys distributed for three weeks. This chapter intends to answer the research questions laid out in Chapter One.

4.2 Questionnaire analysis

The overall return rate for all questionnaires that ~~was sent out~~were ~~,~~sent was 30.8%. I initially engaged 235 respondents, of whom 64 responded and 38 of these respondents provided me with numbers for other persons. The survey reached a total of 347 respondents of whom 124 completed a survey. The primary return rate of questionnaires was therefore 27.2%. The secondary circle of engaged respondents was 112, of which I received 43 in return. The secondary response rate of questionnaires was therefore 38.3%. After three weeks of surveying, I managed to receive 107 valid responses. Nearly a fourth of these responses were from families who have four or more persons living with them. Therefore only 81 responses can be analysed as part of this research project. The sample collected is very small when considering the total populations for all the metropolitan municipalities. Trends will be discussed below; however, it is important to remember that this is not a true reflection for the whole of the Greater City Region and that the small sample size is a limitation. Families with more than two children will probably be extremely uncomfortable living in a micro-apartment (Einarson, 2016), and therefore their responses are not important for this study. Chapter 2 provides more details surrounding the consumers of micro-apartments.

The aim was to receive 30 returned surveys altogether. The total responses of 81 are used in the analysis below. The surveys which were removed from the sample were either surveys which participants did not wish to part take in, were in the wrong area or where the survey arrived at the unintended person and they did not meet the criteria set out previously.

Ekurhuleni Metropolitan Municipality (EMM) managed to receive 4 responses, 29 responses were from the City of Joburg Metropolitan Municipality (CoJ) and 48 responses are from Tshwane Metropolitan Municipality (TMM). It is important to note that all data provided in this report is for those who met the minimum requirements, as described in Chapter 3.



Graph 2: Area of residence of the respondents (S. Pretorius, 2018)

The analysis of the data will be in three different sections, namely EMM, CoJ and TMM. This will be done so that the data not directly compared to one another before being weighted.

4.2.1 Ekurhuleni Metropolitan Municipality Survey data

As mentioned previously EMM only provided 4 responses. Therefore, the data were analysed separately as it might be ~~very~~ skewed, due to the small sample size. This will cause the data to provide skewed ~~averages, that~~averages that are not necessarily representing the Ekurhuleni population. The responses received from EMM did not support or show a high level of interest in micro-apartments, and therefore is the shortest sub-section of analysis for the three regions.

Profile of the average participant

In EMM the average participant is 35 years of age, married and has a total of 2 household members, including ~~herself~~the participant. The participant is a white female and is earning a salary alongside her husband. The couple earns an average of R18 000 monthly. A 50/50 percentage split was found between renters and owners for the participants in EMM. Compared to the average household income of R8 835 per month for EMM residents (Quantec EasyData, 2018), the participants in this survey are earning drastically more than the average income measured in 2011 Census.

Housing profile of the average participant

The average participant is both renting (50%) and owning (50%), although the majority would like to own the house they are staying in (75%). Half of the participants are currently living in simplexes, one respondent lives in a duplex and the other respondent currently lives in a garden City of Tshwane age.

Simplexes are free-standing units on a single erf. Duplexes are usually double story units on a single erf. I understand that the sample size for EMM is not large enough to generalise. The data could possibly indicate that the qualifying participants from EMM prefer to have their own private garden spaces, and are unlikely to be happy living in an apartment block. The house they are currently staying in is spacious, with an average of 8 rooms per house. An average of three bedrooms, two bathrooms, a kitchen, a living room and a dining room can be expected. This could indicate that the houses and possible erg sizes in the local municipality are large and spacious.

The two participants who are renting are currently paying an average of R 7 350 for an eight-roomed house in 2018. The average occupancy time for these respondents is 5 years, and most of the respondents are planning on continuing to stay in these homes.

Interest in Micro-apartments

Only one participant was possibly interested in purchasing a micro-apartment as an investment option. All of the participants indicated that when moving they would be willing to either upgrade their space or the size of their homes. They also indicated that these homes would be simplex homes, thus confirming that the participants from EMM would not consider living in micro-apartment units unless they could no longer afford their current homes.

Two respondents did, however, consider moving to a micro-apartment because of affordability, sustainability, community safety and low utility usage. Their reasons for not moving into smaller units is as a result of the units being too small and not having enough space to entertain guests. However, if they had to move to a micro-apartment, they would be willing to pay R 4 500 per month in a vibrant, small urban centre. The example given in the survey was for an apartment in Brooklyn, Menlyn, Sandton, Newtown, Midrand or Greenstone. All of these areas are described as more fashionable, safe and positive urban areas when compared to others.

When considering living in a micro-apartment in a larger urban area, the participants indicated that they would be willing to pay 25% -30% of their salaries. Currently, that amount would translate to renting a micro-apartment for R 7 150 per month, although when asked a confirmation question about the rent later in the survey, both respondents provided smaller rental prices for the micro-apartment unit. The average rental they would be willing to pay for renting a micro-apartment was R 5 500.

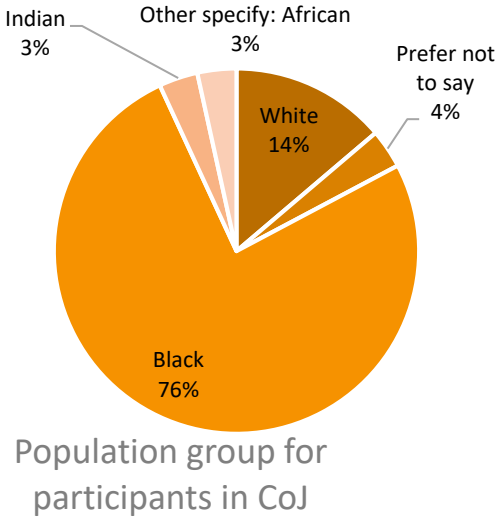
The average purchase price the two respondents will be willing to pay for micro-apartments is R475 000 in 2018. This translates to about R 11 500 per square meter. The respondent's final decision on considering purchasing an average 40 sqm micro-apartment right now – was a no, not at all. I don't

think this answer is surprising, as established ~~earlier,~~earlier; those living in EMM want a different quality of life. They prefer having space around them and having their own private areas.

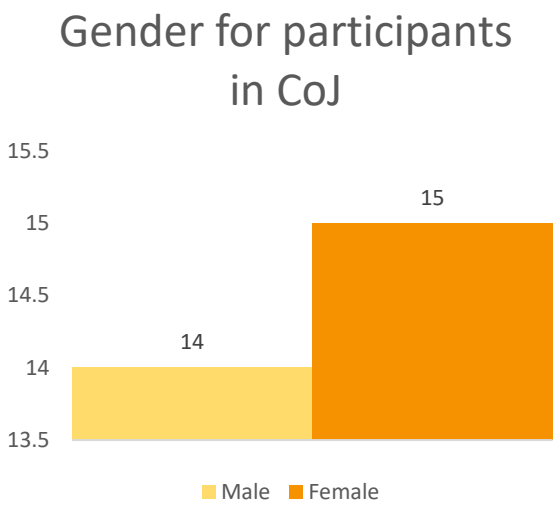
4.2.2 City of Joburg Metropolitan Municipality Survey data

Profile of the average participant

The average participant in CoJ, among the 29 responses, is 32 years of age and is female (graph4). The majority of the respondents are not married by law, either single (31%), dating (28%) or have lifelong partners (14%). The preponderance of the respondents identifies themselves as being part of the black population (Graph 3), which is contradictory to the sample found in EMM. This is however in line with the average population group for 2011(76.4%) in the City of Joburg (StatsSA, 2012).



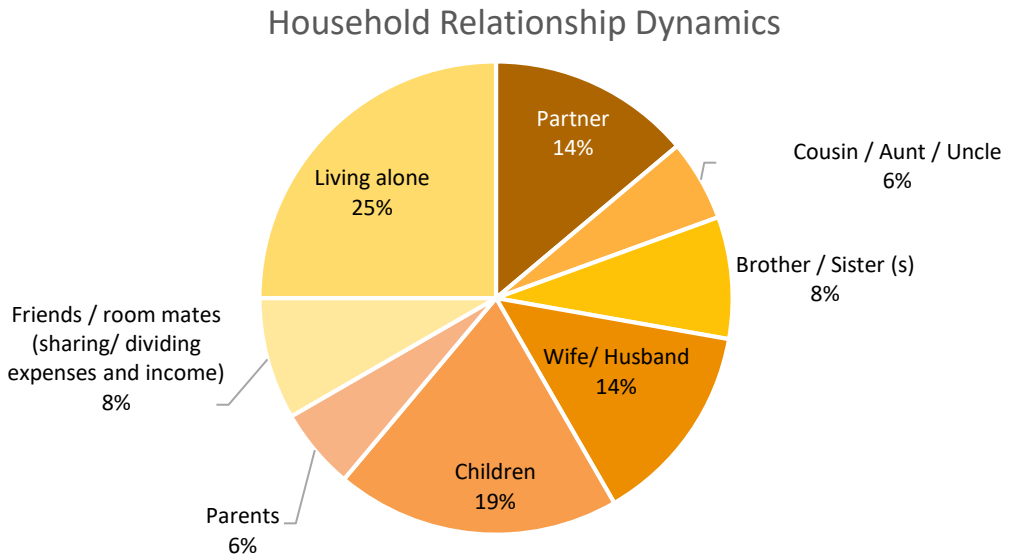
Graph 3: Population group CoJ (S. Pretorius, 2018)



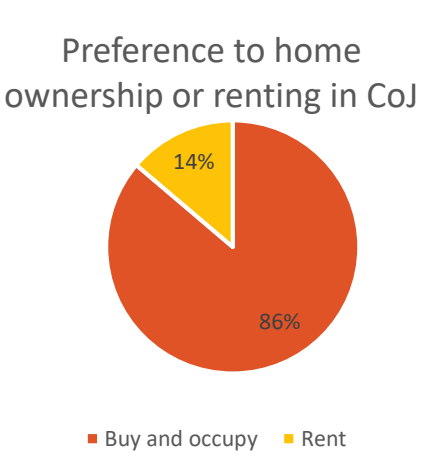
Graph 4: Gender split for CoJ (S. Pretorius, 2018)

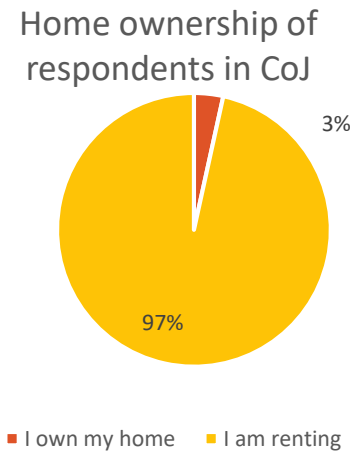
The average household size of the respondents is 1.9 persons and all of the participants are earning an income (as per my qualifying criteria). A quarter of the respondents are living alone (Graph 5). Collectively, individuals are living with their significant others, as 14% are living with their partners and 14% are living with their husbands or wives (Graph 5). Nearly 20% of the respondents indicated that they are sharing their homes with their children (Graph 5). The household in CoJ earns an average of R41 664 monthly. Only one person receives income from both salary and business earnings, 96% of the respondents indicated that their income only comes from salaries and wages.

86% of the respondents indicated that they would want to buy and occupy a home (graph 7), however only one of the respondents currently own their home (graph 8). The majority of the respondents are currently staying in apartments (69%). This is likely to represent the younger population, as CoJ does have a wide variety of households who live in free-standing units in the suburbs. This representation is also skewed towards respondents living in Midrand, where there is a higher number of apartments than other areas in CoJ.



Graph 5: Household Relationship Dynamics for CoJ (S. Pretorius, 2018)



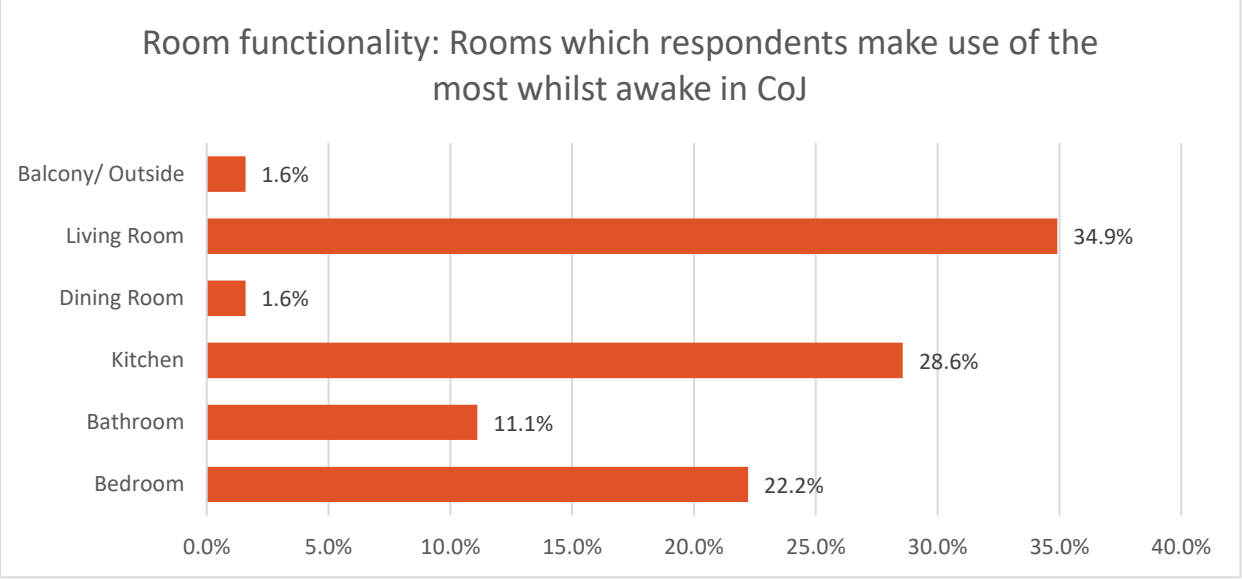


Graph 6: Homeownership preference in CoJ (S. Pretorius, 2018) *Graph 7: Actual homeownership in CoJ (S. Pretorius, 2018)*

The most popular housing units have 2 bedrooms (72%), followed by 24% having one bedroomed apartment. The average rent per month is R 6 150 per month. The average amount of rooms from the respondents is 4.6 rooms per housing unit. This includes the bedroom, bathroom, kitchen, and a dining room. The reason for the 'low' amount of average rooms can be attributed to the fact that nearly 70% of the respondents are from persons staying in apartments. The average occupant in CoJ has been

staying in their home for 2.7 years, with one outlier of 23 years. To gain a clear understanding, this outlier is removed. The average then decreases to 1.95 years of average occupancy. For the purposes of this study, an outlier is a point that is distant from all the other points. The occupants plan on staying in their current homes for an average of 6.1 years, with two outliers planning to stay there "forever", which I converted to 65 years. Once these two are removed the average decreases to 1.4 years.

The city of Joburg has a higher quantity of answers and therefore a more in-depth analysis was represented from the surveys. The questionnaire progresses from questions surrounding the status quo about the respondents and their households towards more conditioning questions for micro-apartments. These questions are created to make them subconsciously have them start thinking about the possibility of micro-apartments. After having asked them about the total number of rooms in the house, I asked about how many of these rooms they actually make use of whilst they are awake. This determines the difference between what the respondent want and what they need. This was done to emphasise the importance of living more sustainably by only focusing on the rooms most needed, rather than those more wanted. The following results were noted for the rooms that are used the most by the respondents in the CoJ. The graph below represents the rooms which the respondents make use of the most.

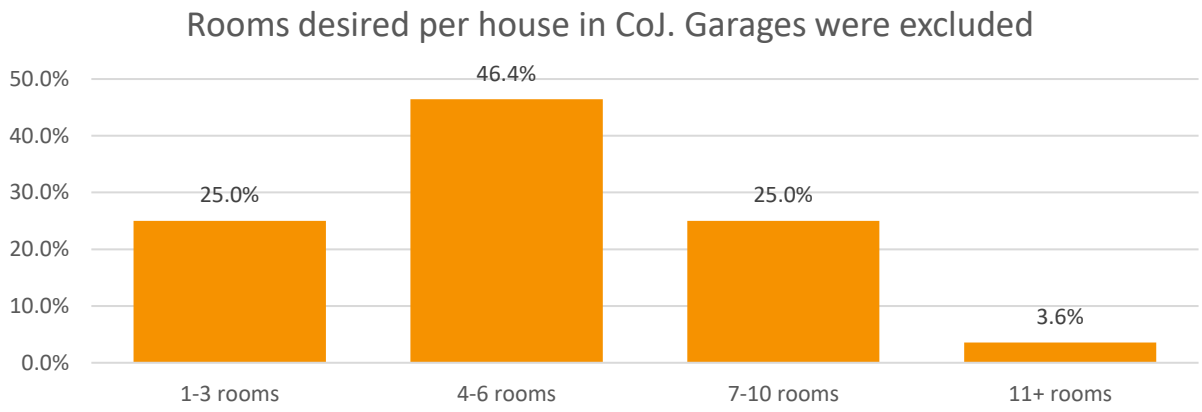


Graph 8: Room necessities in CoJ (S. Pretorius, 2018)

The results were fairly expected as the majority of people spend their time cooking and having leisure time when they are not at work (Graph 9). The highest portions, therefore, represented the Living room (35%), followed by the kitchen (29%) and the bedroom (22%) (Graph 9). The following questions then asked how many rooms the respondents think they personally would need in a house. I was hoping that the previous question (about room functionality) would make them question their 'needs',

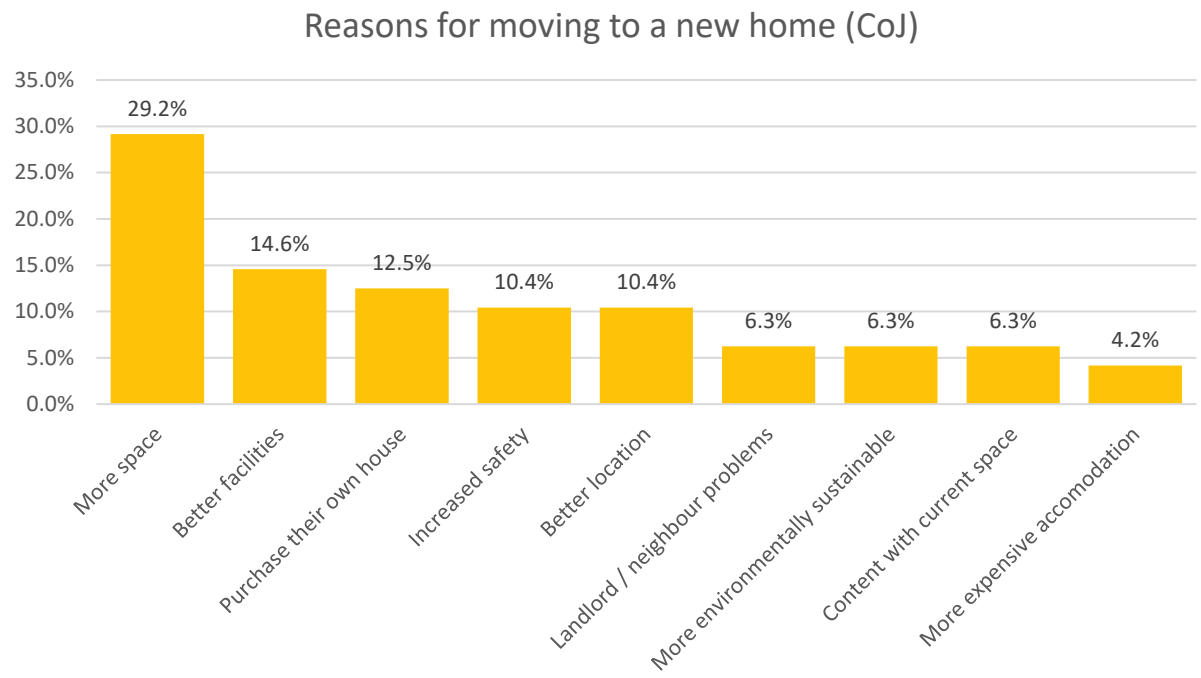
but instead, they still required an average of 5.6 rooms per house. One respondent, also an outlier, said they required 12 rooms in their home (Graph 10). This respondent is in a long-term relationship and has no dependents, in terms of offspring. This requires me to explore other possible reasons for a household comprised of two members to desire a home with 12 functioning rooms (garages were excluded as a functioning room, for the purposes of this study).

The graph below shows that nearly half of the respondents in the CoJ, desire a home that has 4 – 6 functioning rooms (Graph 10). The most frequent composition of these rooms includes two bedrooms, one bathroom, a kitchen, and a living room. This is a fair assessment of meeting the needs of a small family (two adults and a child). A quarter of the respondents in CoJ require only one to three bedrooms to be able to function daily.



Graph 9: Rooms desired per household in CoJ (S. Pretorius, 2018)

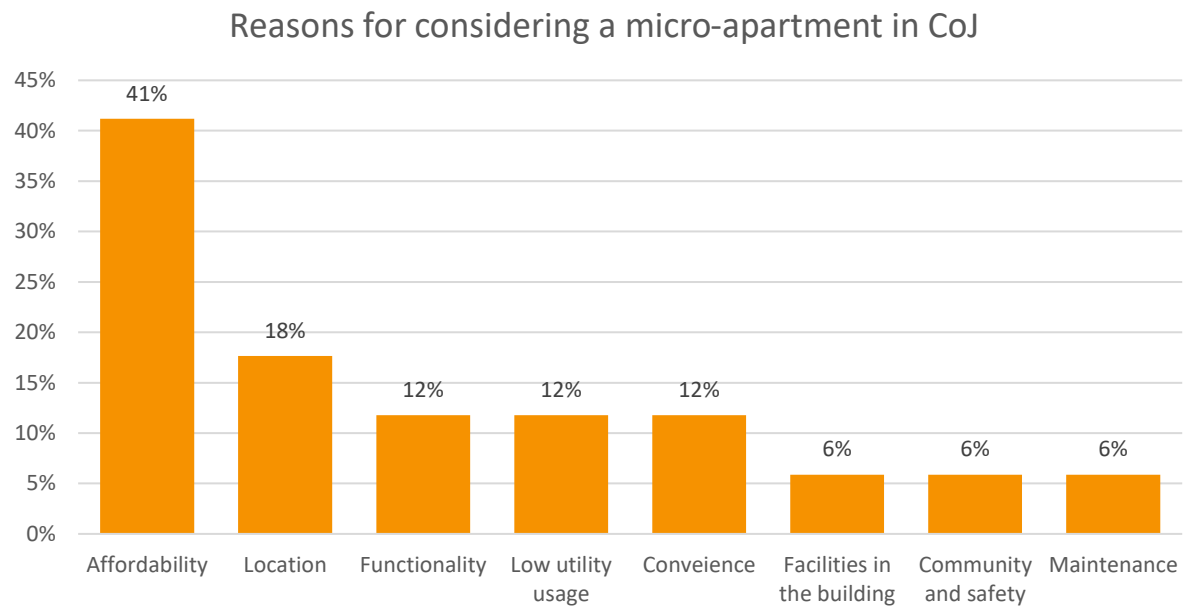
When asked whether the respondents would consider moving into a different home and why the following results were tabulated. The biggest reason for the respondents considering to move is as a result of the small space that they are currently staying in. This is followed by the fact that the households are needing better access to facilities in their immediate vicinity. It should also be noted, that again there is a relatively high demand for respondents to own their own homes, although it is not the first priority, it still is among the top three reasons for considering moving.



Graph 10: Reasons for moving to a new home, CoJ (S. Pretorius, 2018)

Interest in Micro-apartments

Seven of the 29 respondents (24%) would consider moving into a micro-apartment. All of these indicate that they would consider a micro-apartment as a result of affordability (Graph 12). Other reasons for considering a micro-apartment are represented in the graph below. The most popular facility requested was a library, followed by a gym and entertainment.



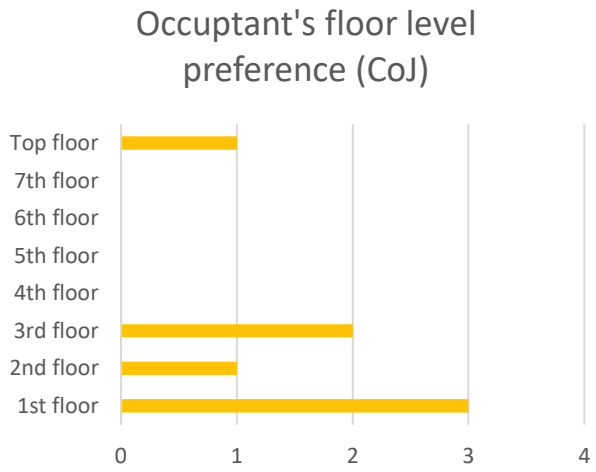
Graph 11: Reasons for considering a micro-apartment (S. Pretorius, 2018)

Functionality, mentioned above, is referred to as making more effective use of your 'awake time' than what you usually would in your current home. In other words, making better use of the square footage, through various functions to fit your everyday needs. Of the seven respondents that showed interest in occupying a micro-apartment in CoJ, 60% of them indicated that they would consider purchasing a unit if a developer were to implement such a project.

Table 2: City of Joburg Micro-apartment summary

City of Joburg	Square meterage	Average rental price (rental per /m²)	Average willingness to pay (price per/m²)
Micro-apartments averages	36m²	R 5 300 p/m (R147)	R 666 667 (R18 518)

The average rental price the 'micro-apartment' respondents were willing to pay was R5 300 per month (Table 3). The average square meterage that these respondents found to be acceptable was 36m² (Table 3). The average purchase price that the micro-apartment' respondents were willing to pay is R 614 285. One respondent's answer was an outlier, indicating that the person would be willing to pay R 300 000 for 40m², as a result of this option not being very materialistic with regards to building costs (R7 500p/m² purchase price). To have a more realistic answer of an average willingness to pay the respondent's answer was removed. The new average cost price that the respondents were willing to pay was R 666 667(Table 3). This provides me with an average cost price of R18 518 p/m² (Table 3).



Graph 12: Preference of floor level in a micro-apartment building (CoJ) (S. Pretorius, 2018)



Graph 13:Parking requirements for residents (CoJ) (S.Pretorius, 2018)

Graph 13, above, indicates the floor preference that the respondent would be interested in purchasing/ renting. Only one person indicated that they would be interested in living on the top floor. The higher floor level in apartment blocks are usually more expensive as the traffic noise level is decreased, the view is increased, as well as the access to uninterrupted sunlight (Arsenio, *et al.*, 2006). It was interesting to see that the first-floor level still remains the most popular, despite the added

benefits of an apartment higher up. It could be that the questionnaire was not specific enough, with regards to elevators in this hypothetical, and therefore respondents opted for the lowest floors in order to avoid long staircase trips. It is also important to note that parking will be required for respondents from CoJ as 57% of the responses indicated they would need a parking spot (Graph 14).

One respondent indicated that they would consider purchasing a micro-apartment as an investment option. A different respondent contradicted the previous statement, by signifying that micro-apartment tenants might only be renting on short term contracts and therefore they don't think it is viable as a long-term investment option. Three of the respondents said they would consider purchasing a micro-apartment and two respondents weren't interested.

It is anticipated that all the 'micro-apartment' respondents would live in an apartment for 10 years, on average. Again, the final average was skewed due to one response which was an outlier. The respondent said they would live there for the rest of their life, an anticipated 35 years. If the 35 years is removed from the average becomes 5,8 years that the respondents would be comfortable living in a micro-apartment. One respondent justified the average amount of years the most accurate, by saying "five years is ample time to build a career or a business idea. After this, you would want to move to a bigger place to start a family".

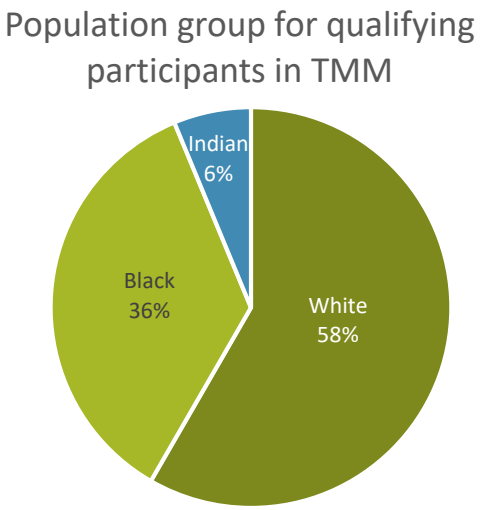
4.2.3 Tshwane Metropolitan Municipality Survey data

In the City of Tshwane, 48 responses were received. This is highly likely that I have the most friends in Tshwane. This could also be as a result of me being able to conduct direct surveys with persons staying in rental apartment development. I conducted 8 interviews personally with different respondents over two Saturdays during the data collection period.

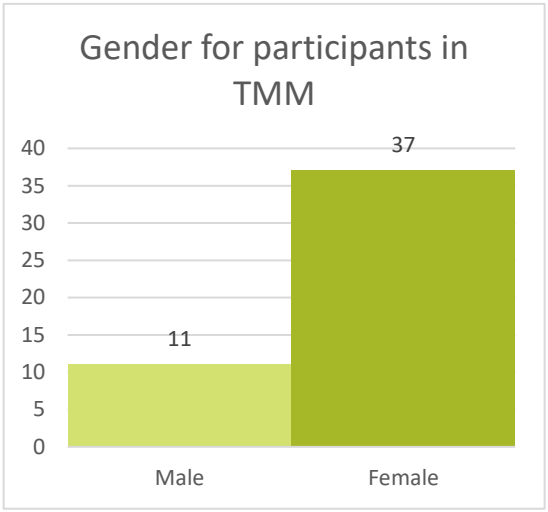
Profile of the average participant

In the City of Tshwane, the average respondent in TMM is a white, female (77%) and is 28 years of age. This is however contradictory to the dominant population group according to the 2011 census, 75% of TMM citizens are from the black population group (StatsSA, 2012). The results from TMM can be as a result of me being a white female, and therefore having white, lady friends responding, in

support of my research. The majority of the respondents are not married by law, either single (40%), dating (21%) or have lifelong partners (6%).



Graph 14: Population group TMM (S. Pretorius, 2018)

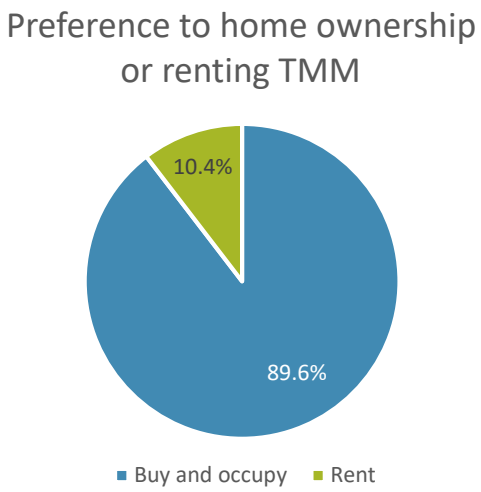


Graph 15: Gender split TMM (S. Pretorius, 2018)

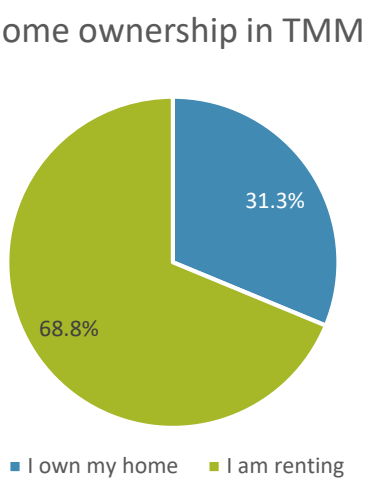
The average household in TMM is comprised of two persons and all of the participants are earning an income (as per my qualifying criteria). The household size of respondents in TMM is 2.06 persons. The majority of the households have two persons living together (40%), followed by 3 person households (33%) and lastly, single households represented 27% of the respondents. Households in Tshwane are mainly comprised of couples (31%), both the sibling and children contributed 16,4% each to household composition. The average household in TMM earns an average of R36 902 monthly. The majority of the households receive their income from salaries and wages as their main source of income. Other sources of income represented in TMM include piece jobs, grants or subsidy programmes, money sent to them, income from property rentals and small businesses. One respondent even mentioned that they receive money from a blesser. A blesser is the slang term for a sugar daddy, that started gaining momentum in South Africa in 2017 (Kuzwayo, 2017).

Housing profile of the average participant

A substantial portion of the City of Tshwane respondents would like to own their homes (90%), although only a third of the respondents actually have ownership over the home, they live in. Some of the respondents who indicated that they own their home, are actually not owners but are rather just living with the owners without needing to pay rent. These respondents are either living with their parents or their spouses who have ownership over the house. The respondents who indicated that they are currently owning a house were also asked whether they would consider purchasing a micro-apartment unit as a real estate investment, 40% of them said they would be interested. This is discussed in the subsection below.



Graph 16: Home ownership preference in TMM (S. Pretorius, 2018)



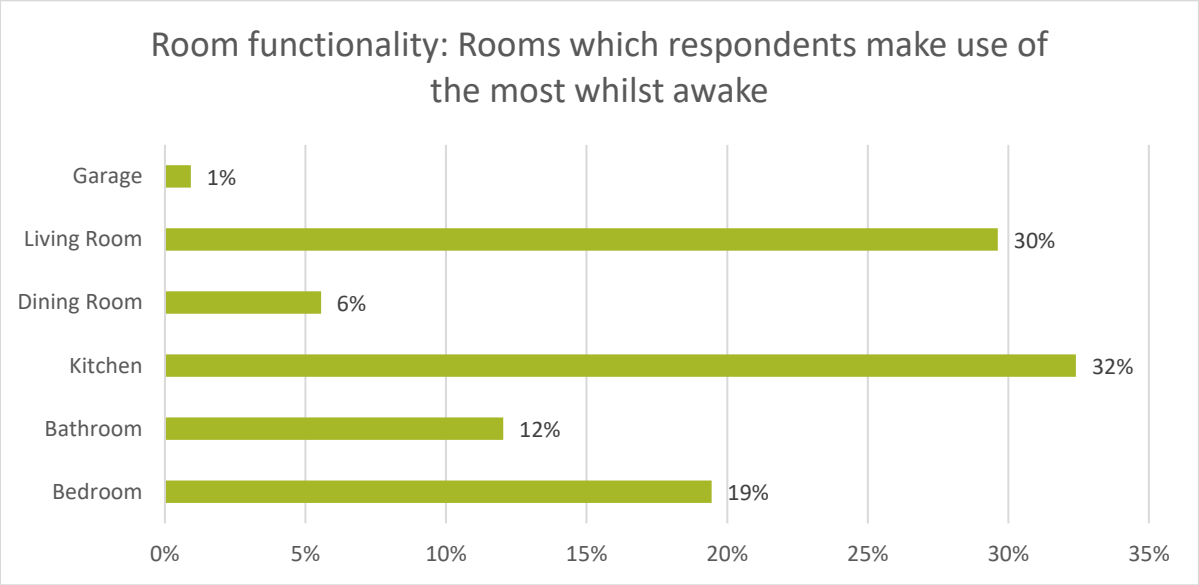
Graph 17: Actual homeownership in TMM (S. Pretorius, 2018):

A smaller proportion of respondents are staying in apartments than the respondents from CoJ. Apartment occupants only represent 33% of the respondents, followed by persons living in free-standing homes (29%). The average house in TMM has 2.6 bedrooms, 1.9 bathrooms and 2.6 other common area rooms, such as the kitchen, living room, dining room or the entryway.

The most popular housing units in TMM, vary quite drastically from the housing units in CoJ. The most popular units have 2 bedrooms (38%) or 3 bedrooms (38%). In CoJ the most popular units were 2 bedrooms, followed by one-bedroom apartments. Only 7 respondents (15%) indicated that they live in one-bedroom units. This could possibly indicate that the population is willing to stay in smaller apartments if nearly a quarter is living in one-bedroom apartments.

The average rent per month is R 6 082 per month. The average amount of rooms found in the homes of the TMM residents is 7.2 rooms per housing unit. This includes the bedroom, bathroom, kitchen, and a dining room. This average is higher than that of CoJ. The data showed that there are more counts of three bedroomed homes in City of Tshwane than in CoJ, and therefore the average is higher. Some of the respondents even have 4 or 5 bedroomed homes. The average occupant in TMM has been staying in their home for 4.7 years, with one 4 respondents staying there for longer than 20 years and 2 respondents have been staying in their homes for 15+ years. The occupants still see themselves staying in their homes for about the same amount of time as they have been living there (4.8 years). Another two outliers planning to stay there "forever"~~, which I~~ were converted to 65 years to keep with the same standard used in CoJ. However, once these two outliers are removed, the average time for remaining in the same home decreases to 2.1 years.

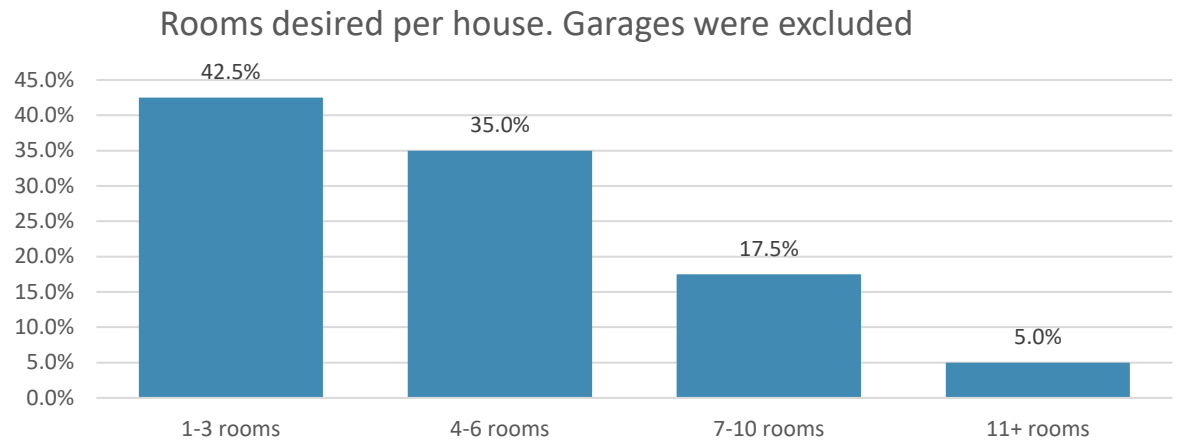
The city of Tshwane also has more respondents that what EMM ~~had,~~had; therefore a more in-depth analysis can be presented. The following results were noted for the rooms that are used the most by the respondents in the TMM. The graph below represents the rooms which the respondents make use of the most.



Graph 18: Room necessities in TMM (S. Pretorius, 2018)

The results were similar to those of CoJ's. Again, this is can be expected as the majority of people spend their time cooking and having leisure time when they are not at work. Therefore ~~The~~ the highest portions ~~therefore~~ represented is the kitchen (32%), followed by the living room (30%) and the bedroom (19%). The questions thereafter shifted to focus more on their desire numbers of rooms, rather than the previous question asking about their needs. The respondents from Tshwane indicated that they would ~~be needing~~need 5.12 rooms for every house. TMM had more outliers than CoJ, as three ~~respondents required~~respondents required more than 10 rooms in their homes.

The majority of the respondents indicated that they would desire a home that has one to three functioning rooms (42.5%). About one-third of the respondents would like to have four to six functioning rooms in their homes. The most frequent composition of the data from TMM is a bedroom, one bathroom, and a kitchen. The results are much less than what I was expecting to find. It could either mean that the questions had the effect that I wanted, or that the questions may have been misinterpreted. For the purposes of this study, it is satisfying to find that 42.5% of respondents are content with living in a small space and will be to be able to function on a daily basis.



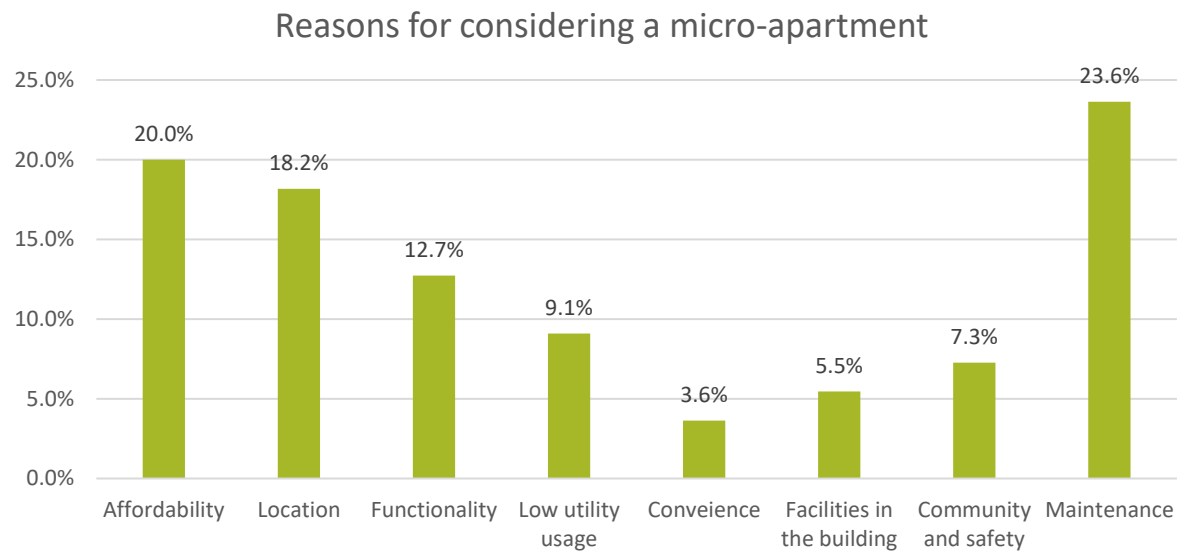
Graph 19: Rooms desired per household in TMM (S. Pretorius, 2018)

On average respondents want to move into a different place within the next 2.2 years. The main motivation for moving is to a better location (25.4%), for more space (21.1%) or to purchase their own home (8.5%) or for increased safety (8.5%). Nine respondents were content with where they are currently situated and would not want to move within the next 5 years (12.7%).

Interest in Micro-apartments

Eight of the 48 respondents (16.6%) would be down scaling their current property, although all of these respondents indicated that they would downscale either to a simplex or a duplex. Only one respondent would be interested in moving into a flat/ cottage in someone's backyard. This is a possible indication of these respondents not being interested in living in micro-apartments as none of them indicated that they would like to stay in an apartment. Eighteen respondents (37.5%) indicated that they would stay in the same size house, as they are currently staying in although they would prefer a simplex or duplex home. Again, only one respondent indicated that they would move into a granny flat/ cottage in someone's backyard.

All of these indicate that most of these respondents would not be interested in living in a micro-apartment themselves. Upon further investigation into the small sample, two other respondents could be added to the possible pool of micro-apartment users as they indicated that they would like to live in 'a small compact, easy to clean apartment'. The other respondents indicated that they were looking for an affordable apartment. This brings a total of four persons from 48 respondents in TMM possibly showing interest in a micro-apartment as a result of their description of needs. However, when asked whether respondents would be interested in purchasing a micro-apartment ~~consider~~considers purchasing a unit if a developer were to implement such a project, 19 respondents showed keen interest. All figures calculated from here onwards will be making use of the 19 respondents, as this provides a more substantial representation of Tshwane than only four persons.



Graph 20: Reasons for considering a micro-apartment TMM (S. Pretorius, 2018)

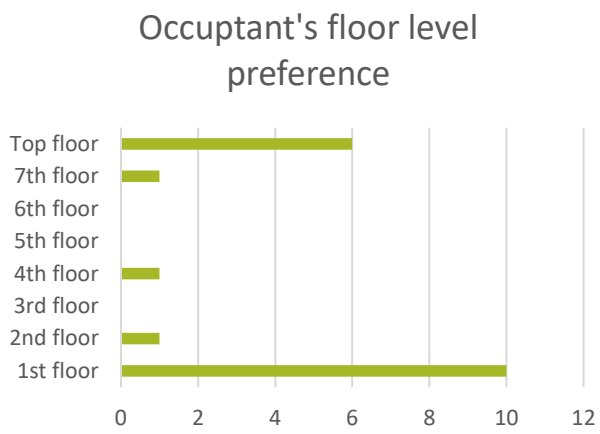
Represented above are reasons that the respondents would consider purchasing a micro-apartment. The low cost of maintenance (23.6%) and affordability (20%) are the main deciding factors for the respondents. This is shortly followed by the location (18.2%) of the micro-apartment building. The most popular facility requested by the respondents in Tshwane was a gym and a lively entertainment area with a sports bar, braai facilities, and pool area.

Of the nineteen respondents that showed interest in micro-apartments, an average of 56.9% of them would consider purchasing a micro-apartment unit.

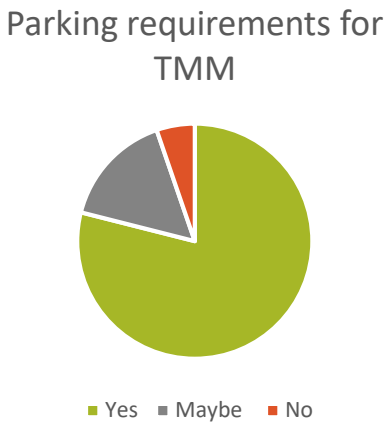
Table 3: City of Tshwane Micro-apartment summary

City of Tshwane	Square meterage	Average rental price (rental per /m²)	Average willingness to pay (price per/m²)
Micro-apartments averages	38m²	R 5 123p/m (R133)	R 642 272 (R16 616)

The average rental price the 'micro-apartment' respondents were willing to pay was R5 100 per month. The average square meterage that these respondents found to be acceptable was 38m². The average purchase price that the micro-apartment' respondents were willing to pay is R 637 727. These responses are all very similar to those received from the City of Joburg respondents. Three respondents' answers were outliers, as they all indicated that they would be willing to pay less than R 300 000 for a 40m². As mentioned in the Joburg section, this is very unrealistic in terms of building costs in South Africa and therefore the respondent's answer was removed. The new average cost price that the respondents were willing to pay was R 712 105. This provides me with an average cost price of R18 422 p/m².



Graph 21: Preference of floor level in a micro-apartment building (TMM) (S. Pretorius, 2018)



Graph 22: Parking requirements for TMM (S.Pretorius,2018)

The graph above indicates the floor preference that the respondent would be interested in purchasing/ renting. More interest in the top floor was represented in Tshwane's respondents, although the popular floor level still remains the ground floor. It is also important to note that parking will be required for respondents from TMM as 79% of the responses indicated they would need a parking spot.

Further interest was shown in the interior design of the units, and how storage can be achieved in the units. Other points of interest were regarding maintenance costs as well as safety and security in an apartment building. Many respondents indicated their interest in either renting or purchasing it for themselves, or for purchasing the unit for an investment (35.4%). Of these respondents, nine indicated that they would purchase for themselves for the short term and then later rent it out as real estate investment. Six responses, who were interested in micro units as an investment already own another property, but would still be interested in micro-apartments.

Respondents who were interested in the micro-apartments indicated that they would be able to live in a micro unit for 3.6 years. One lady indicated that she would want to stay there until she goes on pension, and then continue staying there, she needs to save money. Her response did, however, skew the data, therefore her answer was removed, and a different average of 2.6 years of occupancy per season.

4.3 Rental market Status Quo

In South Africa's last census data collection (2011), the status of tenure indicated that 25% of South Africans are renting. The Gauteng rental status is 12% higher, as 37% of Gauteng's households are renting their current home. When analysing the three municipalities in my study, I found that in Ekurhuleni MM 37.3% were renting, in City of Joburg 41.2% were renting and in City of Tshwane 32%

were renting. This means that on average, 36.8% of my study area's households are renting their homes.

Table 4: Rental market (Quantec Easydata, 2018)

	Average rental expenditure (2013)	**Average Rental growth per annum (2007 – 2013)**
Gauteng	R 7 762	2.18%
City of Joburg	R 18 238	3.04%
City of Tshwane	R 12 014	2.38%
Ekurhuleni Metropolitan	R 11 102	1.73%

Formal rental accommodation in South Africa is dominated by 2.1 million households (Private Property, 2017). There are 1.4million lease agreements. Majority of the agreements have agreed to pay between R 3000 – R 7000 rent per month, this is followed by 22% who are paying below R 3000 per month and 14% of households are paying R 7000 -R12 000 per month (Smuts, 2018). Therefore, South Africa has 80% of its tenants who are paying R 7000 or less per month. The willingness to pay results showed that micro-apartments consumers would be willing to pay between R 5 123 and R 5 300 per month, for a 36m² – 38m² apartment. SERI, however, advocates for an income-based rental cap of R 960 per month, to meet the needs of the low-income households (Webster, 2019). In order for micro-apartments to support the SERI rental cap, 7 m² apartments would need to be built. The average square size of a single bed is about 1.7m² and therefore these units would need to be extremely small. The image below shows the configuration of an 8m² ~~apartment~~apartments that has been built in Europe (figure 8). The single bed is tucked away behind the cupboard doors, a small shower can be viewed in the corner, along with a small kitchenette. Severely scaled-down units are neither utopia nor dystopia. In fact, they expand housing options across many demographics (Capps, 2015). Opportunity costs will need to be considered for those who might be willing to forgo the size of an apartment if they are better located, it is more affordable and the amenities are better in micro-apartment buildings.





Figure 8: 8m² floor plan of an apartment

Payprop, however, documented South Africans, aged 20 years to 29 years old, who are renting from a landlord. Payprop found that tenants in this age bracket use 28.5% of their net income to repay debt monthly (Smuts, 2018). This could either mean that the youth are still repaying student debts, or that they are tied to other debts. This age group pays 15.6% less monthly debt than those aged 30 years old -39 years old and nearly 30% less than the age group spending the most on debt monthly (50 years -59 years) (Smuts, 2018).

4.4 Summary and conclusion of interest in micro-apartments across all municipalities

Concluding from the data above, 49 (60%) respondents indicated that they would be interested in purchasing or renting micro-apartments. The most interest came from TMM. The data from Tshwane is misrepresented as the average participant was white and female, and therefore it is difficult to generalise as a result of this bias. This is not an accurate representation of the average Tshwane citizen.

In total 8 respondents (9.8%) showed interest in the micro-apartments as an investment option. The investment option here implies that someone will purchase a micro-apartment and rent it out to a tenant or tenants for the long term. One respondent in EMM indicated that they would be interested in a rental option, one in CoJ and six in TMM.

A summary of findings for the major three metropolitan municipalities are tabled below:

Table 5: Summary of Gauteng findings (S. Pretorius,2018)

	Ekurhuleni Metropolitan	**City of Joburg**	**City of Tshwane**
Respondents willing to downscale	0	3	8
Interest in staying in a micro-apartment unit (tenant or owner)	1 respondent	7 respondents	19 respondents
Willingness to pay for renting(p/m²)	R 137.50	R 147	R133
Reasons for considering a micro-apartment	Affordability, Community and safety and Low utility usage	Affordability, Location and Functionality	Affordability, Location and Functionality
Average occupancy time	1 year	5.8 years	3.6 years

CHAPTER 5:

DISCUSSION AND RECOMMENDATION

5. Discussion and recommendation

This chapter provides linkages between the Literature Review of Chapter two and the Data Analysis of Chapter four. It aims to provide a summary of key findings and explain the results that were found and how it achieved the research objectives in Chapter one.

5.1. Discussion

It is important to note that there is a variety of affordable housing options for the Millennial generation; this paper, however, focussed on only one solution: the development of micro-apartments.

Micro-apartments, in theory, provide a more affordable option for ownership and / or rental to single-headed households. This implies that the Millennial is young and childless, therefore being able to make efficient use of the space in a micro-apartment. Opportunity costs need to be considered for those who may be willing to forgo the size of an apartment for other benefits.

The last questions in the survey were answered by respondents who were not interested in micro-apartments. Many of these indicated they would only live in micro-apartments if they could not afford a bigger space or if their financial situation was such that they could not afford anything else. I think that this relates back to the mindset of South Africans. Sustainability is neither promoted nor supported strongly by the South African government and therefore most residents do not give second thought to sustainable practices. Respondents indicated that they would only scale down, if financially they could not afford anything else. On a financial perspective, the current unemployment rate is 29.1% (StatsSA, 2019) and it could be possible that most residents are more concerned with surviving day to day. For the respondents who can afford micro-apartments, however choose not to, could be related back to generational influence of single dwelling units on an erf.

Almost all of the respondents agreed that micro-apartment living is a short-term solution, and they would not be interested in staying there for longer than five years. This agrees with Einarson (2016) indicating that micro-apartments are in demand with first-time buyers and small households. Members of small households can enjoy staying in these apartments, as long as it continues to meet their current needs. One respondent from the City of Tshwane was of the opinion that micro-apartment tenants would only rent short term. This could reinforce that there is a higher level of demand for larger houses in Gauteng. The other respondent from City of Tshwane also indicated that micro-apartment units might be ideal in the short term, whilst the individual is building a career, but then they would want to upgrade to more spacious accommodation and start a family. Nearly 70% of the respondents indicated that they would want to upscale the size of their accommodation and 34.5%

would like to retain the size of their current homes. Those who indicated that they would like to remain in the same sized house have, on average, 7.5 rooms in the house.

Many respondents indicated that the floor area is too small for all their possessions and it would not fit into a micro-unit. This is a major concern, as consumerism is on the rise, globally, and new generations still seem to be infatuated with material possessions. Bradley & Hagbert's (2017) theory concerning consumers link to images of homes, expression of identity is relevant in the result outcome. Consumer lifestyle and spending habits are being associated with their social status and therefore mindless consumption is probably occurring. Self-actualisation first needs to take place before personal consumption is decreased by consumers and possibly then only can an individual be more concerned with living a more sustainable lifestyle.

As indicated in Chapter two, sustainability plays a major role in the development of micro-apartments. Tiny House advocates are motivated to scaling down and living in smaller units as a result of sustainability (Mutter, 2013). If micro-apartment developments are well located in urban centres, then it will promote the use of more sustainable transportation such as walking and biking and promote a decreased dependency on cars (Einarson, 2016). Location is one of the main reasons people indicate why they would consider living in a micro-apartment. A popular micro-apartment development in Cape Town suggests that a strategically located micro-apartment with amenities can attract investors. The data show that 44% of respondents would consider moving into a micro-apartment if they had a small family, fewer possessions or did not have the financial means to purchase anything else. Respondents were interested in moving if the micro-development was well located (51%), affordable (62.8%) and functional (34%).

5.2 Recommendation and final thoughts

Micro-living should be recognised as compact living. The compact residential units should be considered with the benefits of living collectively and the collective experience (Hoang & Vandal, 2017). It should make use of designs that maximise small square metres and focus on the extra amenities that are created in shared spaces (*ibid)*. South African building regulations do not recognise micro-apartment units, nor do they describe minimum dwelling unit measurements. These are important to be defined or expanded to include units in apartment buildings where main shared facilities are outside of an apartment. As detailed in Chapter two, the development of Micro-apartment buildings can balance a conglomeration of activities and amenities (Hoang & Vandal, 2017*)* within their apartment blocks. Micro-living therefore provides a solution for cities to increase the housing stock and quality of living, whilst being able to retain diverse activities.

Although urbanisation in Gauteng has grown exponentially in the last 10 years, many millions more are anticipated to move to the province in the future (Businesstech, 2018). The research topic, along with the data collection and analysis, clearly shows that the market is still sceptical of micro-apartments. Predicting what the impact or future demand of micro-apartments in Gauteng will be is therefore challenging. The housing market is complex and is affected by many variables, both inside and outside the housing market. The research was limited by time and scope and was unable to accurately answer the question surrounding demand in Ekurhuleni Metropolitan Municipality.

The demand for micro-apartment units in Gauteng is small and on a limited scale. When contextualising this within the comments of the respondents, the notion is justified as many respondents still function within a culture of living in large, single dwelling units and accumulating many possessions. From my research I have deducted that currently there is a very small demand for micro-apartments among small families in Gauteng.

However, we need to continue densifying our cities and decreasing our footprint on earth. Many other large cities are years ahead of South African cities with regards to public transport, high densities and the development of smaller apartments. For these citizens it has become a norm to live in tight spaces and to make use of shared facilities and open spaces. Awareness surrounding sustainability practices needs to be increased and motivated by both public and private sectors. This can be done through marketing campaigns by public and private sectors, and lifestyle changes by public icons such as sport heroes, radio presenters, actors, Politian's and, the latest trend, social influencers. Changing the mindset of residents is the serious challenge in Gauteng. Another method could be to introduce rewarding systems for residents making sustainable consumer decisions. In other countries coupons, discounts, free products and tax relief has been provided for sustainable consumer decisions. Home loan providers could incentivise the purchaser through providing loans at below prime rates. Developers can also be incentivised by earmarking prime locations for high density, small unit developments. If developers purchase land in these districts, and such units are built in these areas, their external servicing fees which is owed to the municipality, could be reciprocated for the development.

5.3 Future studies

Although this research had methodological limitations, its results shed light on the gaps. From a sustainability point of view, I think that micro-apartments provide a great alternative to a more affordable and smaller impact home for those who are seeking these two characteristics. Some of the gaps of my research and potential investigations for future research includes the analysis of South African, Gauteng or local municipality policy documents and housing programmes that could support

the development of micro-apartments. Therefore, determining what policy dictates regarding housing for smaller families in South Africa.

Another potentially fundamental study could be determining whether or not middle- to high-income classes have a demand for transit-oriented living? These developments would impact the engineering infrastructure and public transport systems and perhaps increase the demand for ideally located, yet affordable housing solutions?

Another aspect to micro-apartments for South Africa can include the supply of micro-apartments including the current stock in the market and how the sales or rental of these units are progressing.

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Appendices

Appendix A: Ethics clearance certificate

[redacted]

SCHOOL OF ARCHITECTURE AND PLANNING
HUMAN RESERCH ETHICS COMMITTEE

SCHOOL OF ARCHITECTURE & PLANNING

CLEARANCE CERTIFICATE
PROTOCOL NUMBER: SOAP060/07/2018

PROJECT TITLE:	Market demand for Micro-apartments in Gauteng
INVESTIGATOR/S:	Simoné Pretorius (Student No: 566158)
SCHOOL:	Architecture and Planning
DEGREE PROGRAMME:	Master of the Built Environment (MBE)
DATE CONSIDERED:	18 October 2018
EXPIRY DATE:	18 October 2019
DECISION OF THE COMMITTEE:	Approved

CHAIRPERSON
(Professor Daniel Irurah)

DATE: 19-10-2018

cc: Supervisor/s: Aly Karam

DECLARATION OF INVESTIGATORS

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to endure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

Signature **Date** 26 March 2019

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Appendix B: Online questionnaire (including online consent form)

Micro-Apartment Survey

*Required

1. **The qualifying criteria for this questionnaire is for all households who have 3 or less persons living together.**
   Mark only one oval.
   - ◯ A household with 3 persons or less, should have at least one member earning an income.
   - ◯ Please no students as they are not independant and are still supported financially

2. **My name is Simoné Pretorius and I am currently a part time student studying towards a Master's degree of the Built Environment in the School of Architecture and Planning (SOAP) at the University of Witwatersrand. I am currently investigating the market desirability for Micro-apartments in Gauteng.I am inviting you to be part of the study through a survey ***
   Mark only one oval.
   - ◯ Ok

3. **The interview will take no longer than 20min of your time. The survey can be conducted with you at home, a coffee shop or anywhere else convenient for you. During the course of the interview you will be asked questions regarding your demographics (race, age, gender, etc.), where you are currently living and what your future home goals are. ***
   Mark only one oval.
   - ◯ Ok

4. **The interview will be recorded via the application known as Google Form.You have been selected to participate in this study due to you residing in Gauteng as well as your current household size.Your participation is voluntary, you may refuse to answer any questions that make you uncomfortable, and you may withdraw at any time without penalty or loss. You will receive no payment or other incentives for your participation. Your participation will be completely anonymous and you will not be personally identified in the final report. Any information provided will be made use of in the form of graphics and statistics; therefore, no names will be used. You will NOT be referred to at any stage. ***
   Mark only one oval.
   - ◯ Ok

5. **The research undertaken is solely for academic purposes and once completed will be available electronically and can be accessed publicly. If you have any questions, concerns, or comments or if you would like a copy of the final report, please feel free to contact Lerato at lerato.nkosi2@wits.ac.za or my supervisor Prof Aly at Aly.Karam@wits.ac.za. I hereby confirm that I have been informed by the student researcher of the purpose, procedures, and my rights as a participant. I have received, read and understand the written participant information sheet. I have also been informed of: - the nature of my participation in the form of a electronic survey, - the duration of the study, - the reasons for why I was selected to participate in the study, - the voluntary nature, refusal to answer, and withdrawing from the study, - no payment or incentives, - no loss of benefits or risks, - anonymity, - confidentiality, - how the research findings will be disseminated. This is a digital consent form. Do you agree to participate? ***
   Mark only one oval.
   - ◯ I herefore agree to participate in this study by completing the survey honestly
   - ◯ I do not agree to participate in this study *Stop filling out this form.*

Personal Questions

Thank you for agreeing to participate, next I will ask you about some personal questions.

6. **First let me explain what a Micro-apartment is: A micro apartment, also known as a micro-flat, is a one-room, self-contained living space, usually purposefully built with multi-functional furniture, designed to accommodate a sitting space, sleeping space, bathroom and kitchenette. Micro-apartments for the purpose of this study is determined as 40sqm or less. Micro-apartments can be seen as an 'interim housing' solution - which means it provides short-term (0-2years) accommodation for people to live to stay temporarily. These places need to meet basic needs such as food, safety and hygiene.**
Mark only one oval.



Example 1 (30 sqm)



Example 2 (24 sqm)



Example 3 (40 sqm)



Example 4 (17 sqm)

7. **How old are you in completed years?**

8. **What gender do you identify with?**
Mark only one oval.

- Female
- Male
- Non-binary
- Gender non-conforming
- Transgender
- Prefer not to say
- Other:

LL

9. **What population group do you identify with?**
Mark only one oval.

- ◯ Black
- ◯ Indian
- ◯ White
- ◯ Chinese
- ◯ Coloured
- ◯ Prefer not to say
- ◯ Other: _____

10. **What is your relationship status?**
Mark only one oval.

- ◯ Single
- ◯ Dating
- ◯ Engaged
- ◯ Married by law
- ◯ Lifelong partners, but not married by law
- ◯ Divorced, widowed or seperated

11. **Do you earn or anyone in your household an income?**
Mark only one oval.

- ◯ Yes
- ◯ No *Stop filling out this form.*
- ◯ Maybe

Household

12. **How many persons are in your household? That means people who sleep and live with you, and who cook and eat with you and share most household expenses.**
Mark only one oval.

- ◯ 1 (it is only me)
- ◯ 2
- ◯ 3
- ◯ 4 *After the last question in this section, stop filling in this form.*
- ◯ 5 *After the last question in this section, stop filling in this form.*
- ◯ 6 and more *After the last question in this section, stop filling in this form.*

13. **What is the relationship between you and the other people in your household? (Skip if it is only you)**
Tick all that apply.

- ☐ Wife/ Husband
- ☐ Partner
- ☐ Brother / Sister (s)
- ☐ Children
- ☐ Cousin / Aunt / Uncle
- ☐ Grandmother / Grandfather
- ☐ Friends / room mates (sharing/ dividing expenses and income)
- ☐ Other: _____

MM

14. **From the above: who has a job / form of income in your household?**
Tick all that apply.

- [ ] Myself
- [ ] My wife / My husband
- [ ] My partner
- [ ] My sibling who is staying with me
- [ ] My child (ren)
- [ ] My cousin / Aunt / Uncle
- [ ] My Grandmother / Grandfather
- [ ] My roommate / friend who shares expenses with me
- [ ] All of the above
- [ ] Other: _____

15. **Where does your monthly income come from?**
Tick all that apply.

- [ ] Income from salaries or wages
- [ ] Income from your own business
- [ ] Income from piece jobs with another employer
- [ ] Income from money sent to us
- [ ] Income from government through social grants (such as child support, grants, old age grants or disability grants)
- [ ] Income from property rentals that we own
- [ ] From investments (eg. Retirement Annuity)
- [ ] From inheritance
- [ ] From a blesser ....or two ;)
- [ ] Other: _____

16. **What is the total income that the HOUSEHOLD receives on a monthly basis, before monthly deductions & taxes? (Brackets are determined by StatsSA)**
Mark only one oval.

- ◯ None
- ◯ R1 - R3 500
- ◯ R3 501 - R7 500
- ◯ R7 501 - R 10 000
- ◯ R10 001 - R15 000
- ◯ R15 001- R22 000
- ◯ R22 001 - R30 000
- ◯ R30 001 - R42 000
- ◯ R42 001 - R75 000
- ◯ R75 001 +
- ◯ Other: _____

17. **Thank you for answering this section**
Mark only one oval.

- ◯ Ok

Home and neighbourhood

Next I will ask you about where you are staying, what your current home looks like and what you imagine your future home being

NN

18. **Where do you live? Please provide the suburb AND main town/ city. E.g: The Reeds, Centurion** *

19. **Would you prefer to buy and occupy a house yourself /or would you prefer to rent a house?**
Mark only one oval.

- ◯ Buy and occupy
- ◯ Rent

20. **Do you currently rent your home?** *
Mark only one oval.

- ◯ Yes *Skip to question 23.*
- ◯ No *Skip to question 21.*

Ownership

21. **What type of ownership do you classify your current home as?** *
Mark only one oval.

- ◯ I own my current home *Skip to question 22.*
- ◯ I do not own my current home *Skip to question 23.*
- ◯ Co-owned (non-business reasons) *Skip to question 23.*
- ◯ I soley inherited my current home *Skip to question 23.*
- ◯ I inherited my current home with others *Skip to question 23.*
- ◯ I partially own my home through purchasing with someone else as a business deal *Skip to question 22.*
- ◯ Other: _____ *Skip to question 23.*

Investment option

22. **Even though you own your current home, would you consider purchasing a micro-apartment as a investment opportunity?** *
Mark only one oval.

- ◯ Yes
- ◯ No *Skip to question 59.*
- ◯ Maybe

Home type

In the this section, I will be inquiring about your current home and any future goals / homes

23. **What type of house/ home do you live in?** *
Mark only one oval.

- ◯ Simplex (one house on a property)
- ◯ Duplex (one house on a property sharing walls with another house)
- ◯ Apartment (stack of units ontop of one another)
- ◯ Granny flat/ cottage (seperate building from the main building on a erf)
- ◯ Sharing an apartment / house / duplex
- ◯ Commune (Sharing facilities with at least with 1 other person who is not a family member)
- ◯ Other: _____

OO

24. **How many bedrooms does your current unit have?**

25. **How many bathrooms does your current unit have?**

26. **How many common rooms does your current unit have? (kitchen, living room, dining room, study, reception, etc)**

27. **What is your monthly rent for the whole unit?** *

28. **How long have you been living in this place (in completed years)?** *

29. **Which areas of the house do you use the most when you are AWAKE? ...max 3 please** *

Tick all that apply.

- [ ] Kitchen
- [ ] Bathroom
- [ ] Bedroom
- [ ] Living room
- [ ] Dining room
- [ ] Study
- [ ] Gym
- [ ] Garage
- [ ] Other: _____

30. **How many rooms do you think you need in a house? (mention room and quantity)**

31. **How long are you still planning to stay in your current home?** *

PP

32. **What would be the reason for you wanting to move?** *
Tick all that apply.

- [ ] I don't want to move anytime soon (more than 5 years)
- [ ] Better location
- [ ] More expensive accomodation
- [ ] Cheaper accomodation
- [ ] Better facilities in the compound / unit / building
- [ ] Amenities in the area (clinic, shopping, schools, entertainment, etc)
- [ ] Landlord / neighbour problems
- [ ] Increased safety
- [ ] Increased access to transport facilties
- [ ] More environmentally sustainable (less utilities such as water and electricity usage)
- [ ] More space
- [ ] Other: _____

33. **Would you be looking to upgrade your home? Quality-wise.** *
Mark only one oval.

- ◯ Downgrade our standard
- ◯ The same standard
- ◯ Upgrade our standard

34. **What is the amount of rent/loan repayment that you will be willing to pay at the new place(per month)?** *

_____

35. **Would you be looking to downscale your home? Space/ Size or saving wise.** *
Mark only one oval.

- ◯ Downscale *After the last question in this section, skip to question 42.*
- ◯ Remain in the same size
- ◯ Upscale *After the last question in this section, skip to question 59.*

36. **What type of house/home do you wish to live in?** *
Mark only one oval.

- ◯ Simplex (one house on a property)
- ◯ Duplex (one house on a property sharing walls with another house)
- ◯ Apartment (stack of units ontop of one another)
- ◯ Granny flat/ cottage (Seperate building from the main building on a erf)
- ◯ Sharing an apartment / house / duplex
- ◯ Commune (Sharing facilities with at least 1 other person who is not a family member)
- ◯ Other: _____

37. **Would you prefer 'basic finishes through out the house' or a 'basic finished kitchen'**
Mark only one oval.

- ◯ Basic finishes - such as lighting and flooring throughout the house (no cabinets)
- ◯ Basic finished kitchen - Kitchen fitted with cabinetary, countertops, plugs and stove (no other finishes throughout the house)
- ◯ Both basic finishes and a finished kitchen

QQ

38. **Could you describe your 'dream house', for the next 2 years of your life?** *

39. **For the desired home mentioned above, what would you be willing to pay for this home? Purchase price** *

40. **What percentage of the price (mentioned above) would you be able to provide as a deposit when purchasing this house? Lets say within 4-6 months from now** *

41. **Thank you for answering the questions.**
Mark only one oval.

- ◯ Ok

Down-scaling

Down-scaling here is determined as living smaller, or living with a smaller footprint, or by using less resources than your household is currently using.

42. **When considering down-scaling; where/what would you downscale first? Please tick the 3 most important ones** *
Tick all that apply.

- ☐ Food (the types of things you buy)
- ☐ Entertainment
- ☐ Move to a smaller / less expensive house
- ☐ Making use of a private car / car pooling / public transport / cycling / walking
- ☐ Move to your parents house
- ☐ Medical Aid
- ☐ Memberships (gym, dstv, magazine subcriptions, etc)
- ☐ Telephone contracts
- ☐ Other:

43. **What rent would you be willing to pay for a micro-apartment unit in a vibrant, small urban center such as Brooklyn/ Sandton/ Menlyn/ Newtown/ Midrand/ Greenstone (etc)?** *

44. **What portion(%) of your household salary would you be willing to pay for a micro-apartment unit in a large urban center such as Johannesburg/ Pretoria (etc)?**

RR

45. **What kind of facilities would you like to have in the building your micro-apartment is situated in? (amenities outside of your unit - library/gym/lounge/entertainment, etc)** *

46. **What is a suitable PURCHASE PRICE for the unit you have described above?** *

47. **What is a suitable RENTAL PRICE for the unit you have described above?** *

48. **What would be the reason behind you considering moving to live in a micro apartment?** *
Tick all that apply.

- [ ] Sustainability (less square footage = smaller carbon footprint)
- [ ] Function (if you don't spend alot of 'awake' time in your own home, it might serve as a better function than a bigger home)
- [ ] Affordability
- [ ] Conveience
- [ ] Location
- [ ] Maintenance (not much time needed for cleaning + tidying)
- [ ] Community and safety
- [ ] Amenities in the area
- [ ] Facilities in the building
- [ ] Low utility usage
- [ ] Size
- [ ] Other: _____

49. **Thank you for answering the willingness to pay questions. The last section deals with possible developments** *
Mark only one oval.

- ◯ Ok

Development of micro-apartment buildings

50. **If a developer were busy with the construction of a building with micro-apartments with large communal kitchens, braai facilities, a pizza oven, a pool, a lounge area, gym, laundry facilities and an indoor cinema - would your household consider purchasing a unit for yourselves?** *
Mark only one oval.

	1	2	3	4	5	6	
Definitely	◯	◯	◯	◯	◯	◯	Not at all

51. **What size of apartment would you be interested in?** *
Mark only one oval.

	1	2	3	4	5	
20 sqm	◯	◯	◯	◯	◯	40 sqm

SS

52. **What floor level would you be more interested in living on, in a 8 floor building?** *
Mark only one oval.

- ◯ 1st floor
- ◯ 2nd floor
- ◯ 3rd floor
- ◯ 4th floor
- ◯ 5th floor
- ◯ 6th floor
- ◯ 7th floor
- ◯ Top floor

53. **What other elements would you deem as important to you, when considering a micro-apartment?**

54. **Would you require basement parking?** *
Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Maybe
- ◯ Other: _____

55. **Would your household consider purchasing or renting a micro-apartment? Please elaborate why** *

56. **If purchasing a micro-apartment unit - how many years would you anticipate living there yourself, and why?** *

57. **When purchasing this unit what price range would your household be able to afford? (https://www.property24.com/calculators/affordability)** *

58. **Thank you for your answer, the last section just concludes the survey** *
Mark only one oval.

- ◯ Ok *Skip to question 63.*

TT

Not interested in Micro-apartments

59. **What are some of the reasons that you interested in down-scaling or what do not like about micro-apartments?** *
Tick all that apply.

- [ ] Too small
- [ ] People might think I am cheap / can't afford anything else
- [ ] Not enough space for my posessions
- [ ] Not enough space for my family to grow
- [ ] Would not have sufficient room to have socials
- [ ] Feels to cramped
- [ ] Not my style / dream
- [ ] Might be too expensive for my wallet
- [ ] Don't want to stay in such close proximities to others
- [ ] Other: _____

60. **Would you consider living in a micro-apartment under any other circumstance? (And why?)** *

_____

_____

_____

_____

_____

61. **Is there anything else you might want to add about micro-apartments and the possibility thereof in City of Joburg, Ekhurleni or Tshwane?** *

_____

_____

_____

_____

_____

62. **Thank you for your answer, this section concludes the survey** *
Mark only one oval.

- ◯ Ok *Skip to question 22.*

Time concluded

Thank you so much for reading and answering the survey. As mentioned early this research is for the completion of my Masters degree in Housing, so this really does help!
The data will then be captured in used in my report - so thank you for being part!!
If you can think of anyone else that might be able to complete a survey (in a household with 3 or less persons) or might be interested in the micro-apartments or the tiny house movement, PLEASE send them the survey so that they can also contribute to my research.

63. **Thanks again** *
Mark only one oval.

- ◯ Ok..... 'Drops mike' *Stop filling out this form.*

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