DETERMINANTS OF AGED-FRIENDLY URBAN NEIGHBOURHOODS IN MALAYSIA

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ABSTRACT

Malaysia is experiencing a rapid increase in its elderly population. According to 2010 census, the number of elderly has risen from 1.4 million in 2000 to 2.1 million in 2010 and is projected to be 3.4 million by 2020. As Malaysia progressed towards becoming a developed and competitive country by 2020, aging population will be a main challenge to planners and policy makers in terms of designing aged-friendly neighbourhoods and providing accessible amenities and services to meet the needs of the elderly. There is a growing interest in aged-friendly neighbourhoods as the neighbourhoods that promotes an active lifestyle among its elderly population, and hence, ensures healthy aging. In Malaysia, active lifestyle among the young elderly is greatly understudied. This study looks at young elderly active lifestyle from the social and physical perspectives. By applying an ecological perspective and building on the WHO framework on 'age-friendly communities' that is based on 'active aging', the study conceptualized aged-friendly neighbourhoods. Data were collected from young elderly aged 60-75 years residing in two neighbourhoods with highest elderly population: TTDI in Kuala Lumpur and Taman Meru in Ipoh. The study adopts mixed methods approach; the qualitative approach involved a phenomenological research to elicit the essence of young elderly active lifestyle experience as lived by 12 young elderly; the quantitative approach involved surveying randomly selected 385 young elderly with regard to their neighbourhood as facilitating/obstructing their active lifestyle. Nine (9) neighbourhood environmental factors were hypothesized to influence young elderly active lifestyle (social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety) as explained by two domains social cohesion and physical activity to identify determinants of aged-friendly neighbourhoods. The qualitative approach included using a simplified version of Hycner's process for explication of phenomenological data. For the quantitative approach, the main statistical techniques used for the data analysis were exploratory factor analysis, multiple analyses of variance (MANOVA) and multiple linear regressions. The results of the qualitative data explication showed that the essence of the experience is staying occupied and that staying occupied has the potential to be both physically and socially active. Findings of the quantitative analysis showed that permeability was the salient predictor of young elderly active lifestyle, followed by accessibility and then walking. Therefore, aged-friendly neighbourhoods are those neighbourhoods that are permeable, safe, based on human-scale, pedestrian-friendly, provide access to recreational facilities, have directness of routes, high connectivity and provide many destinations within adequate distance. Triangulating findings from both approaches revealed that aged-friendly neighbourhoods are neighbourhood where their elderly population is both socially and physically active. The results also showed that social activities contributed more to young elderly active lifestyle. This implies that there is a need to understand in more detail the association between subjective and objective neighbourhood environmental measures; and that efforts to curb young elderly active lifestyle should be the responsibility of multi -disciplinary research.

ABSTRAK

Malaysia mengalami peningkatan pesat bilangan penduduk warga tua. Berdasarkan bancian pada tahun 2010, bilangan warga tua telah meningkat daripada 1.4 juta pada tahun 2010 kepada 2.1 juta pada tahun 2010 dan dijangka menjadi 3.4 juta menjelang tahun 2020. Malaysia menuju ke arah sebuah negara maju dan berdaya saing menjelang tahun 2020, dan penuaan penduduk akan menjadi satu cabaran utama kepada perancang bandar dan penggubal dasar dari segi merekabentuk kawasan kejiranan yang mesra warga tua dan menyediakan kemudahan-kemudahan yang boleh di akses serta perkhidmatan untuk memenuhi keperluan warga tua. Terdapat peningkatan minat dalam kejiranan mesra warga tua sebagai kejiranan yang menggalakkan gaya hidup aktif di kalangan penduduk warga tua, dan seterusnya memastikan penuaan yang sihat. Di Malaysia, kajian mengenai gaya hidup aktif di kalangan warga muda-tua sangat terhad. Kajian ini memberi fokus kepada gaya hidup aktif golongan muda-tua dari perspektif sosial dan fizikal. Dengan menggunakan perspektif ekologi dan membina dari rangka kerja WHO mengenai 'komuniti mesra usa' yang berdasarkan 'penuaan aktif', kajian ini di konsepkan kawasan kejiranan yang mesra warga tua. Data telah dikumpulkan daripada warga muda-tua berumur di antara 60-75 tahun yang menetap di dua kawasan kejiranan yang berpenduduk warga tua tertinggi iaitu TTDI di Kuala Lumpur dan Taman Meru di Ipoh. Kajian ini menggunakan pendekatan kaedah campuran; pendekatan kualitatif yang melibatkan kajian fenomenologi untuk mendapatkan intipati pengalaman gaya hidup aktif golongan muda-tua yang dilalui oleh 12 warga muda-tua; manakala pendekatan kuantitatif pula melibatkan kajian soal-selidik terhadap 385 warga muda tua yang dipilih secara rawak dengan mengambil kira kawasan kejiranan mereka sebagai fasilitator atau sebagai penghalang gaya hidup aktif mereka. Sembilan (9) faktor persekitaran kejiranan telah dihipotesiskan sebagai mempengaruhi gaya hidup aktif warga muda-tua (interaksi sosial, berjalan kaki, fasilitator untuk berjalan, halangan fizikal untuk berjalan kaki, kemudahan, kebolehcapaian, kadar resapan, penyenggaraan dan keselamatan) seperti yang di jelaskan oleh dua domain perpaduan sosial dan aktiviti fizikal untuk mengenalpasti penentu kawasan kejiranan yang mesra warga tua. Pendekatan kualitatif termasuk menggunakan versi ringkas proses *Hycner* untuk menganalisis data fenomenologi. Bagi pendekatan kuantitatif, teknik statistik utama yang digunakan untuk menganalisis data ialah analisis faktor penerokaan, analisis berganda varians *(MANOVA)* dan regresi linear berganda. Keputusan data kualitatif menunjukkan bahawa intipati pengalaman ialah sentiasa melakukan sesuatu dan menyibukkan diri mempunyai potensi untuk menjadikan warga tua aktif dalam kedua-dua aspek fizikal dan sosial. Penemuan daripada analisis kuantitatif menunjukkan bahawa kadar resapan adalah faktor penentu penting gaya hidup aktif golongan muda-tua, di ikuti oleh akses dan seterusnya berjalan kaki. Oleh yang demikian, kawasan kejiranan mesra warga tua adalah kawasan kejiranan yang telap, selamat, berdasarkan skala manusia, mesra pejalan kaki, menyediakan akses ke kemudahan rekreasi, mempunyai kelangsungan laluan, penyambungan kawasan yang tinggi dan menyediakan pelbagai destinasi dalam jarak yang mencukupi. Hasil triangulasi kedua-dua pendekatan kuantitatif dan kualitatif menunjukkan bahawa kawasan kejiranan yang mesra warga tua adalah kawasan di mana penduduk warga tuanya aktif secara sosial dan fizikal. Hasil kajian juga menunjukkan bahawa aktiviti -aktiviti sosial menyumbang lebih kepada gaya hidup aktif muda-tua. Ini menunjukkan bahawa terdapat keperluan untuk memahami dengan lebih mendalam mengenai hubungkait antara langkah-langkah persekitaran kejiranan yang subjektif dan objektif, dan bahawa usaha-usaha membendung gaya hidup aktif warga muda-tua sepatutnya menjadi tanggungjawab penyelidikan pelbagai disiplin.

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AARP	American Association of Retired Persons
ACSI	American Customer Satisfaction Index
ALS	Active Lifestyle
AGE	Asian Gerontology Experience
CCRC	Continuity Care Retired Community
CSI	Customer Satisfaction Index
DBKL	Dewan Bandaraya Kuala Lumpur
DBI	Dewan Bandaraya Ipoh
FWALK	Facilitators to Walking
IRPA	Immediate Resolution Priority Areas
KRAS	Key Result Areas
KMO	Kaiser-Meyer-Olkin
MANOVA	Multi-variety Analysis of Variance
MBI	Majlis Bandaraya Ipoh
NACCE	National Advisory and Consultation Council for the Elderly
NHMSIII	Third National Health and Morbidity Survey
RTPI	Royal Town Planning Institute U.K.
SCT	Social Cognitive Theory
SRH	Self-Rated Health
10th MP	10th Malaysia Plan
TM	Taman Meru
TOD	Transient-Oriented Development
UD	Universal Design
WHO	World Health Organization

Chapter1

The Phenomenon of Aging in Malaysia

1.1 Introduction

In the coming decades the number and percentage of older people in the population of developed and developing countries will keep increasing. This increase in aging population is an indicator for improved health and low mortality.

According to census figures the number of elderly in Malaysia was approximately 1.15million in 2005 (4.3% of the total population), in 2010 the number has risen to 2.1million (7.7% of the total population)-(Department of Statistic, 2010). This number is expected to increase to be 3.4 million by 2020 (10.8% of the total population). Malaysia is experiencing a rapid decline in the percentage of young population aged 0-14 years and a low percentage of older population of 65 years and above compared to its working age population 15-64 years (UNSCAP, 2011). According to the United Nations, any country having a 10% population of 60 years and above is categorized as having aging population (Avermaete & Teerds, 2007).

The Malay tradition is of care for the older people, but due to certain constraints such as work constraints and demands, the younger generation is obliged to leave behind their beloved ones. This is one of the reasons many older people in Malaysia live alone without their younger family members around at homes. Yet, this older generation is mostly educated, healthier and more active than their precedents, thus they will be more demanding in terms of their needs of decent housing, facilities and services. These indicators form the basis for planning and preparing for quality of life for the elderly.

Since the early 70s, the influence that the concept of built environment has on the lifestyle of elderly has attracted researchers from the erotological field (Lawton & Nahemow, 1973). Since, then many researchers had written on the impact of different

environments on the elderly lifestyle with particular focus on institutional environment (Ong, Oung, & Ong, 2010; Wahl & Weisman, 2003). Many researches around the world are interested in investigating on active lifestyle for the elderly by focusing on the community environment. Their findings showed that the design of residential neighbourhoods has the potential to effectively influence elderly active lifestyle by either facilitating or limiting the opportunity for social cohesion and physical activity (Feldman & Oberlink, 2003; Lui, Everingham, Warburton, Cuthill, & Bartlett, 2009) ; . The World Health Organization (WHO) defines aged-friendly communities as the communities that promote active aging:

> *"In an age-friendly City, policies, services, settings and structure support and enable people to age actively"*
> *(WHO, 2007, p. 5)*

Therefore, an aged-friendly neighbourhood is the neighbourhood that promotes elderly-oriented planning, i.e. recognizes the importance of promoting physical activity and enhancing social cohesion for both the physical and mental health of the older individuals as they age. Building on the WHO (2007) definition, throughout the thesis the researcher will be discussing aged-friendly neighbourhoods as explained by two domains: social cohesion and physical activity that are influenced by the existence of certain neighbourhood environmental factors. Two neighbourhoods (TTDI and Taman Meru) with highest elderly population in two different cities (Kuala Lumpur and Ipoh) were surveyed to investigate the impact of the neighbourhood environmental factors on active lifestyle of young elderly to identify determinants of aged-friendly neighbourhoods.

Since in Malaysia, the elderly have been far the least researched group (Sim, 2001), the study is concerned mainly about the active lifestyle of the young elderly in residential areas. Furthermore, the study aims at providing a residential strategy that meets the

needs of the young elderly where the elderly can engage in their own social exchange form.

1.2 Who are the Young Elderly?

Since the mid-80s older individuals have been referred to by many terms, such as, senior citizens, elderly and grey population (Greco, 1987) . Different cut-offs for age were the results of defining the elderly, for example some researchers define elderly as individuals who are 65 years and above, while others used 60 years and above (Kim, Kim, & Kim, 2003). Different age groupings were also employed, for example, (Abdel-Ghany & Sharp, 1997) distinguished young olds as elderly whose ages ranged between 65-74 years, and old olds as elderly who are 75 years and above. This study defines the young elderly as the elderly aged 60-75 years.

1.3 Research Background

In view of this changing trend, Malaysia has formulated policies and initiated programs to meet the needs and demands of its elderly population. Malaysia has participated and contributed to local and international collaborations towards improving elderly' well-being:

- ❖ The Care Centre Act 1993

- ❖ The Care Centre Regulation 1994 to protect older persons in Malaysia

- ❖ Private Health Care Facilities and Services Act 1998

- ❖ The National Policy for the Elderly formulated in 1995 aimed at:

  "To establish a society of the elderly, who are contented, dignified, possessed of a high sense of self-worth, and optimizing their potential, as well as to ensure that they enjoy all opportunities besides being given the care and protection as members of a family, society and the nation"

- ❖ The 10th Malaysia Plan (MP), (2011-2015) thrust 4 number 2 *"Increasing health awareness and promotion of healthy lifestyle"*

These initiatives and collaborations represent approaches that promote healthy aging. However, Malaysia will face a major challenge as it must provide the necessary services and structure to support its elderly population wellbeing.

1.4 Problem Statement

Population aging is a global concern. The challenge faced by Malaysia in the next millennium is not in providing affordable and adequate housing for the aged, but in providing aged-friendly neighbourhoods where they can live healthily and actively as they age. The percentage of elderly people in Malaysia is expected to increase and consequently the problems related to it will also increase. This growing number of elderly will impact the public policy. The public policy formulated in 1995 did not appropriately cover the elderly needs (Sim, 2001). While, the old old (75 years and over) represents 22.2% of the total elderly population and the young old (60-75) represents 77.8% of the total elderly population and is projected to be 82.15% in 2020, the policy focuses more on frail elderly.

Furthermore, 43.7% of the Malaysian population aged 24-65 years are inactive, and thus are vulnerable to suffer from chronic diseases such as hypertension that magnifies the risk of cardio-vascular diseases which represent major causes of death and disability in Malaysia (Table 1.1). Prevalence of hypertension among the elderly aged 60^+ years was reported to be 62.4% (WHO Malaysia, 2008). Furthermore, in Malaysia, 48.8% among the elderly aged 60 and over suffer from chronic illnesses such as type2 diabetes, hypertension, coronary heart disease and stroke (NHMSIII, 2006; Ong et al., 2010). The National Health and Morbidity Survey showed that only 30.9% of Malaysians did exercise. Previous researches highlighted the role of neighbourhood design in effectively reducing such chronic diseases by promoting physical activity in

its simplest form which is walking (Rodriquez, Khattak, & Evenson, 2006; Strath et al., 2012).

Table 1.1: Overall Prevalence of NCD Risk Factors in Adults 25-64 Years, 2006

Risk Factor	Prevalence
Physically inactive	43.7%
Hypertension (30 years and above)	42.6%
Hypercholesterolemia (30 years and above)	26.9%
Overweight/obese	43.1%
Central Obesity	17.4%

Source:Institute for Public Health. (NHMSIII, 2006)

The following issues directed the research problem:

1. The increasing number of young elderly.

2. The National policy for the elderly 1995 did not consider the young elderly and their housing needs. Young elderly need a safe environment to encourage them go out for their basic daily needs or to perform different physical activities such as walking. This matter has less attracted the attention of policy makers.

3. Lack of studies in relation to elderly active lifestyle in the neighbourhood. Previous studies focused on frail elderly.

Studies that examine the neighbourhood factors that would encourage the older people to go out and navigate safely in their area and promotes active lifestyle are needed. Such studies would help in developing a model that addresses the older active lifestyle in neighbourhoods. Thus, there is a need to fill up these gaps in both public policy and knowledge so that the future policy is formulated on the young elderly and could also be beneficial for other age groups such as children and youngsters.

1.5 Aim and Research Questions

The aim of the research is to analyse the relative significance of neighbourhood environmental factors that help young elderly to stay both physically and socially active as they age in order to identify determinants of aged-friendly neighbourhoods. Therefore, the research aims to determine the effect of neighbourhood environmental

factors on young elderly's active lifestyle. In particular the research aimed at answering the following key questions:

1. What contribution do neighbourhood environmental factors make to the prediction of active lifestyle among the young elderly?

2. Which neighbourhood environmental factors are the best predictors of young elderly active lifestyle?

3. Previous researches have suggested that walking is the salient predictor of young elderly active lifestyle, is this hypothesis correct?

4. What are the measures to be taken to ensure the existence aged-friendly neighbourhood that provides active lifestyle among young elderly?

1.6 Objectives

A quality housing environment reflects a sense of convenience among its residence through physical characteristics such as the housing conditions and availability of certain facilities. Furthermore, social cohesion among neighbours conveys a sense of well-being. Young elderly aged 60-75 years, undergo a vitally important phase of their life. In this transitional age, they face different housing environmental demands that have a great influence on their future active lifestyle. Changes that might happen to young elderly (retirement, loss of status/spouse) might greatly influence their social and physical housing demands. Therefore, housing environment that promotes social cohesion and physical activity has become a vital research objective. Based on this assumption, the present research objectives are formulated as follows:

❖ To investigate the neighbourhood environmental factors and the outcome active lifestyle variables of physical activity and social cohesion among the young elderly.

❖ To identify the potential neighbourhood environmental factors that inhibits the active lifestyle in young elderly.

❖ To examine the young elderly individual experience of their neighbourhood design related to active lifestyle.

❖ To develop a model that ensures an aged-friendly neighbourhood that promotes active lifestyle among young elderly.

1.7 Research Hypothesis

Most of the residential areas in Malaysia are not designed with the concept of promoting active lifestyle in mind. There is a natural setting of active lifestyle inbuilt in them. Thus, the general hypothesis of the research is that the active lifestyle of the young elderly people within the residential areas in different locations is not uniform. However, based on the research objectives the following four exploratory hypotheses are possible:

Hypothesis 1 explores land use planning (neighbourhood location):

H_0: There is no significant difference in the active lifestyle among the young elderly in the different urban setting.

H_1: There is a significant difference in the active lifestyle among the young elderly in the different urban settings.

Hypothesis 2 explores the neighbourhood environmental factors related to young elderly's active lifestyle:

H_0: There is no significant association between neighbourhood environmental factors and active lifestyle among the elderly in the different urban setting.

H_0: There is a significant association between neighbourhood environmental factors and active lifestyle among the elderly in the different urban setting

Hypothesis 3 explores the interaction between the young elderly and their contextual environment:

H_0: There is no significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors.

H_1: There is a significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors.

Hypothesis 4 explores the residents' perception of their neighbourhood:

H_0: There is no significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the young elderly in the different urban settings.

H_1: There is a significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the young elderly in the different urban settings.

1.8 Significance of the Study

Despite the large existing body of research on the impact of built environment on the lifestyle of its elderly residents, the focus has been mainly on the micro environment (housing/institution condition) and a little attention was given to the macro environment (neighbourhood, rural/urban localities or region). As the study is investigating determinants of aged-friendly neighbourhoods in two different localities /urban setting: TTDI in Kuala Lumpur and Taman Meru in Ipoh-Perak and since issues differ across different urban settings and localities (Burholt, 2006; Menec, Means, Keating, Parkhurst, & Eales, 2011), the study will provide a rich description on how active lifestyle might differ depending on the existence of unique features and barriers related to living in different urban settings. However, the following points summarize the significance of the study:

- The literature showed that elderly active lifestyle appears to be a concern of mainly the medical and transportation fields, the urban planning field has little contribution to the literature, therefore, this study could add to the literature from the urban planning perspective concerning aged-friendly neighbourhoods.

- Previous studies concerning the elderly housing living environment had focused on children, youngsters and frail elderly who need nursing homes, while only few studies had focused on providing housing with a high quality environment for the young elderly. On the other hand, the public policy focuses only on health and social security issues regarding the frail elderly. This study attempts to fill these gaps by examining the environmental factors that promote social cohesion and physical activity as domains explaining aged-friendly neighbourhoods, thus providing active lifestyle for the young elderly.

- Total expenditure on health by the public sector is 44.14% and 55.86% by private sector (WHO Malaysia, 2008). Aged-friendly neighbourhoods promote healthy lifestyle and thus reduce both public and private sectors expenditure on medical care for the elderly and other age groups.

- The findings of the study can help policy makers to identify the most important environmental factors that improve access to outdoor spaces, promote social interaction and encourage walking among the older people in their neighbourhoods. This will ensure the success of future housing policies regarding the young elderly and meet the goals of the 10th Malaysia Plan.

- The study can help planners and architects to identify key issues to determine the adequacy of the existing planning methods for the elderly and to identify the neighbourhood environmental factors pertaining to young elderly active lifestyle in order to meet their needs for active aging and create liveable

communities where older individuals can stay active and healthy as they age for as long as possible.

🞧 The study would explore the potential of the residents in considering the facilitators and obstacles for active lifestyle, thus, paving the way for the optimum use of the most efficient active lifestyle measures.

1.9 Theoretical Framework

Neighbourhood environmental factors are found to have a strong influence on the residents' active lifestyle and social interaction. The study Draws on the model of age-friendly communities by WHO (2007) and model of individual and environmental factors impacting active lifestyle among elderly by King (2006); (these two models will be discussed in more details in Chapter Two). Therefore, the presented model focuses on the neighbourhood environmental characteristics to consider the young elderly active lifestyle identified as social cohesion and physical activity. Particular consideration is given to neighbourhood structural variables such as walking, facilitators to walking, physical barriers to walking, accessibility and permeability, in addition to social factors reflected by the existence of social interaction between the residents and their perception of their neighbourhood attractiveness, maintenance and safety.

The conceptual model in figure 1 shows the hypothesized relationship between the neighbourhood environmental factors and the older people social interaction and active lifestyle.
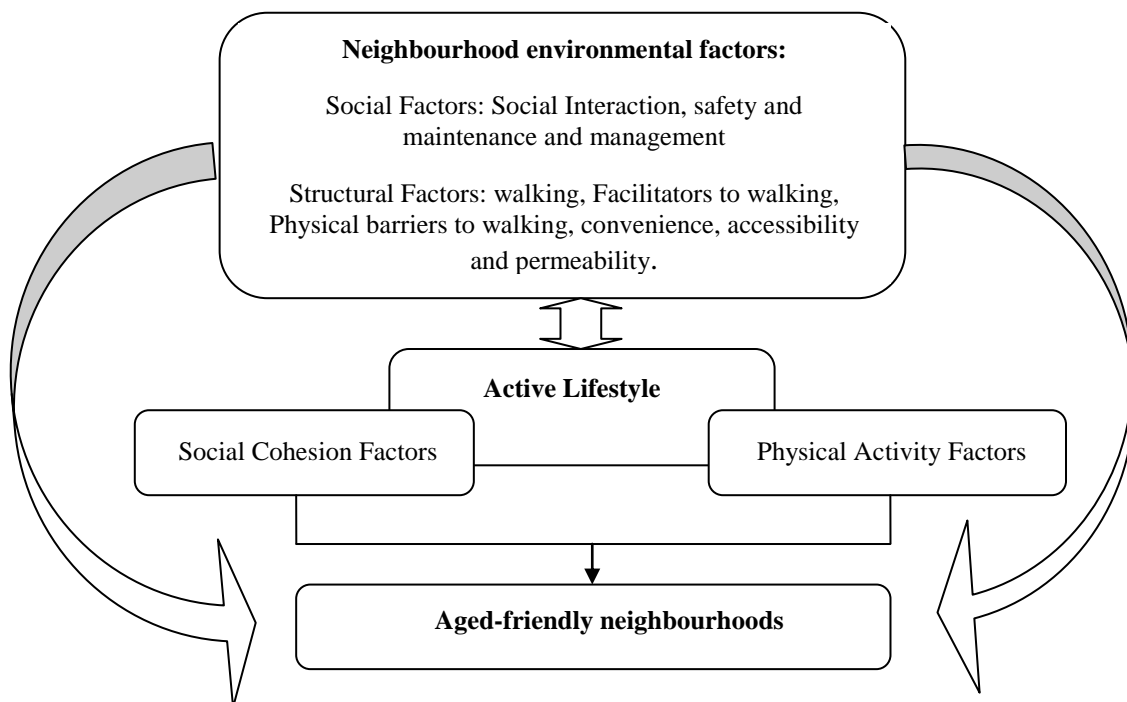
Figure 1.1: The hypothesized relationship between the independent Variables and the dependent variables

1.10 Structure of the Thesis

This section provides a brief outline on the organization of this thesis organization. The study employs an eight-chapter thesis format that follows the researcher's exploration path. It is organized as follows:

Chapter one introduces the study background, the theoretical basis and the main theme to be examined within the context under examination.

Chapter two presents an intensive literature review related to the neighbourhood environmental factors and the elderly active lifestyle. The review addresses relevant theories of aging as well as the following topics of social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety.

Chapter three presents the contextual background of the study. This includes a review of the population aging trends and policy framework available for the elderly in

Malaysia. The chapter discusses the contextual background. This in turn includes the historical background and the Malaysian elderly demographic structure. The chapter also highlights the policy framework available for the elderly in Malaysia.

Chapter four presents the detailed methodology procedures employed by the study to obtain and collect the necessary data for the study. The procedures include five main sections. The first section discusses the research choice approach. The second section discusses the methods of data collection (qualitative and quantitative techniques applied). The third section discusses the research instrument. The fourth section discusses the sampling process and the fifth section discusses the fieldwork survey and ethics considered in conducting the research.

Chapter five presents the two study areas. This includes description of the demographic characteristics of the areas as well as the layout and different land uses.

Chapter six presents the findings of the qualitative research. This includes data explication of the phenomenological research.

Chapter seven presents the data analysis of the quantitative research. The presentation sequence of the study will follow the hypotheses sequence developed in the study. The chapter also presents the discussion of the key findings, and the triangulation of both quantitative and qualitative methods.

Chapter eight concludes the summary of the thesis writing and empirical findings and consequently highlights the important research implications, Draws recommendations, specifies study limitations, contribution as well as future implications for elderly, policy and future research. Consequently, development of the model that addresses the older active lifestyle in neighbourhoods is presented.

The next chapter 'the literature review' focuses on theoretical and empirical researches that have examined the relationship between the physical environment and active lifestyle among elderly to identify determinants of aged-friendly neighbourhoods.

Chapter 2

A Look at Theories of Aging

2.1 Introduction

The rationale for this research stems from a belief that neighbourhood environmental factors are likely to lead to a more harmonious and liveable residential areas. This chapter focuses on the theoretical and empirical studies covering the subject of older people active lifestyle through examination of the neighbourhood physical environment to determine aged-friendly neighbourhoods. This review aims at providing an understanding of the past and existing research that has examined the relationship between neighbourhood environmental factors and older people active lifestyle to build a theoretical foundation for the study. The chapter further discusses the neighbourhood environmental factors related to older people active lifestyle to determine aged-friendly neighbourhoods, and focuses on the quest of using design to promote healthy and active aging. Thus, the chapter is composed of two sections: theoretical and empirical studies, each with sub sections.

2.2. Defining Old Age

Old age could be defined in many ways; for example, chronologically old age is defined as the age period from approximately 60 years and over; biologically, as the later decades of less reproduction; sociologically as the time when the social interaction is reduced due to physical/psychological restrictions (Biggs, 1994). However, since people vary in their physiological and social interaction ability, the most convenient definition would be the one by Noller, Judiths, Feeny, and Peterson (2001, p. 119),:

> *"Old age would be at the time when poor health creates a major limitation on activity"*

2.3 Theories of Aging

Theories enable researchers to understand and explain what it is they want to know and why it is important and these are important for a successful research design, because it enables researchers to go beyond the description of the data in an attempt to explain the why and how of the principles of the processes underlying them (Bengston, Silverstein, Putney, & Gans, 2009). One of the definitions of theory is;

> *"coherent group of general propositions used as principles of explanation*
> *for a class of phenomena"*
> *(Bengston et al., 2009, p. 4)*

Researchers have developed various theories of aging in an attempt to understand and describe how and why we age (Bengston et al., 2009). For a useful and reliable study on aging, theory is quite vital for adequate and relevant use of the research findings. Theories of aging help the acceleration of the development of social gerontology and enable us to understand and explain the process of aging. Thus, the questions of what, how and why have more comprehensive explanations. For example it enables the understanding of why some people remain active till the age of 90, while others become frail at the age of 60 and why there exist this drastic difference in aging among them. The theories of aging are divided into two categories;

1. Biological theories of aging explaining the biological basis of aging (Powell, Martin, & Pranesh, 2003). These could either be stochastic theories holding that aging is the result of organisms' damage, or programmed theories holding that aging is actually a result of determined genes processes (Baltes & Smith, 1999; Finch & Seeman, 1999).

2. Psycho-social theories of aging deal with the perception and behaviour of the elderly and focus on the individuals and their adjustment to social and psychological changes as they age. These are divided into five theories namely;

disengagement theory, activity theory, continuity theory, social cognitive theory

and socio-environmental theory (Baltes & Smith, 1999).

This study focused on the second category-Social Gerontology theories; these are multi-disciplinary theories of aging that respond to the trend of changing demographics. The trend of interdisciplinary theories of aging helps in providing an inclusive understanding and explanation of the process of aging. Theories of aging in the social and physical environment field also enable the understanding and explanation of the result in the context of noticeable differences in the process of aging across individuals. It worth mentioning that these theories normally reflect the social time, values and the cultural perspectives of their creators of the optimum method for explaining a social phenomenon (Powell et al., 2003).

There are many theories addressing the process of aging. For the purpose of this study, the sociological theories that will be discussed are: disengagement theory, activity theory, continuity theory, social cognitive and socio-environmental theory. Sociological theories are mainly concerned with the changing relationships , roles and status that accompany people as they age and influence their ability to adapt to the changing social status, for example disengagement and activity theories assume how the behaviour of people changes as they age and how it should change (Powell et al., 2003).

2.3.1 Disengagement Theory

Disengagement theory of aging is an old theory of aging that have gained considerable debates in the psycho-social field. The theory was developed by Cumming and Henry in the late 50s. Cumming and Henry (1961) argued that disengagement theory proposes that as people age they tend to withdraw gradually from social interaction to prepare for death. Disengagement in this sense implies three losses. The first loss is the loss of social roles, the second is the loss of social contact and the third loss is the

decreased commitment to social moves. However, in a wider society withdrawal is seen as functional because it facilitates the smooth power transfer from one generation to the next one. Jung (1967, p. 792) stated that:

> *"An old man who cannot bid a farewell to life appears feeble and wretched as a young man who is unable to embrace it"*

From his own opinion Jung thought that disengagement does not assume a decrease of social contact, and anticipated it as a change of roles in the relationships between the old and young generations and the continuation of it among peers.

It holds that the social system explains a new way of thinking about aging, and that the older people have a desire to decrease their social interaction and the process of withdrawal is mutual, that is, the older individuals withdraw from the society to the same extent as the society withdraws from them (Carstensen, 1992). The theory argues that as people age they experience a time of personal choice, to embrace, to reject or to begin a path towards transcendence (Biggs, 1994). It emphasizes that older people are unable to give up important relationships because of physiological problems. This may be due to social losses such as widowhood and the grief period that accompanies it, or may be of social forces such as ageism which makes it difficult for older individuals to be full members of the society. Furthermore, there might be effects of individual differences, for example, some elderly may prefer to have little social contacts and obligations, whereas others may prefer to spend time with close friends only (Norris-Baker & Scheidt, 1994).

The theory further argues that as people age, contradictions and constraints upon the personality are increasingly withdrawn. This withdrawal influences the behaviour of the elderly and results in a reduction of social contact with the younger generation and the continuation of it amongst peers. It is a natural process of readjustment to the changed social status, informed by the wisdom that transfer knowledge and power from the older to the younger generation and in the process maintaining the continuation of

the society functions after the older generation passes away. The theory in that sense explains the reduced social interaction observed as people age. Thus, it represents a slow and steady withdrawal between the older individuals and the society that benefits both the society and the elderly because it maintains a balance in the social system. However, gerontologists seemed to disagree with this disengagement theory and argued that forced withdrawal from the society may harm the older people as well as the society. Furthermore, the theory's main problem is that it ignores the older individuals' opinion about aging and disengagement that might be completely different or have different meanings from the observers' point of views.

However, Noller et al. (2001) argued that retirement could be a good example of disengagement theory as it illustrates the gradual disengagement of the individual from economic and social activities, such disengagement could have many implications for the retired individuals and their families. Noller et al. (2001) highlighted three retirement implications, firstly, for retired individuals, retirement most probably involve giving up power and status. Although these loses might differ in magnitude depending on the type of work and the level at which they worked, retirees may experience a sense of meaningless, as they lose friends and chances for social interactions developed in the work context that might lead to social isolation and loneliness. Thus, the need to develop relationships with neighbours and friends become more important than relationships with family because it is related to morale (Powell, Slater, Chaloupka, & Harper, 2006).

Secondly, the dimension of the household tasks will be more demanding than it had been before retirement and dissatisfaction feeling may occur. For example, if the wife is still working, there will be more demand on her time for companionship, on preparing meals and less choice in terms of deciding how to use her time (Noller et al., 2001).

Thirdly, financial pressure could be very serious for retired individuals, as they usually have to live with less amount of money than they used to have in the past. It could be difficult for them to spend on limited resources and come to equal arrangements as there will be drastic changes on the spending pattern (Noller et al., 2001). Such a change in the economic status might require changes in accommodation needs in later life.

Thus, older people experience age-related declinations in different areas. Such declinations differ for different individuals and could happen in physiological/cognitive capacity and economic and social stress, (Noller et al., 2001).

2.3.2 Activity Theory

Activity theory opposes and argues against disengagement theory by advocating that successful aging can be achieved by maintaining activities, social relationships and roles in later life. The activity theory of aging explored by Lemon, Bengston, and Peterson (1972), is also known as the common sense theory and is the most commonly applied theory in the USA. The theory suggests that as people age they tend to gradually lose the status, power and identity, they had during their work or their family life; nevertheless, those who get involved in physical /social activities remain active for a longer period of time and maintain a higher quality of life (Bengston et al., 2009; Noller et al., 2001).

The theory further, argues that the retention of the lost roles preserves health and self-efficacy of the elderly. It targets engagement in the different activities as an important component of the older people active lifestyle (King, 2006). For the purpose of the study active lifestyle is identified as physical activity and social cohesion. Questions about walking and social interaction will be examined to provide understanding of the di verse activities performed by the aging population.

Thus, staying active at an old age is related to healthy aging, because older people need to substitute for the lost and abandoned roles in their life by getting involved in physical and social activities. Physical/social activity at an older age enhances the older individuals' sense of the wellbeing and restores their self (Powell et al., 2003). Thus, the theory promotes the maintenance of the regular social roles and physical activity assuming that the older individuals who remain both physically and socially active achieve healthy aging as these new roles substitute for the lost ones they have had before.

Sallis and Owen (2002) argued that activity theory is a role theory implicitly appeared in the gerontology literature and states that older individuals can readjust to aging through activity. The theory holds that despite their physiological and health decline, older individuals' social and psychological needs remain unchanged. Unfortunately, the social withdrawal makes it difficult for them to meet these needs. However, the individuals who ages successfully are the ones who overcome the social world withdrawal and remain active, either through maintaining close relations with family members, friends and neighbours (informal activity), or through being involved in voluntary organizations work (formal activity), or through engagement in household maintenance (solitary activity). It is also found that social cohesion with relatives, friends and neighbours (informed activity) is the most significant variable related to the older people's life satisfaction (Knapp, 1977; Lee & King, 2003).

However, Lee and King (2003) further argued that the concept could be applied for middle/upper class individuals who enjoy better economic and social resources that allow for this substitution. From this perspective, the theory could be viewed as the relationship between socio-economic status and lifestyle rather than between social /physical activity and life satisfaction (Bengston et al., 2009). This argument supports the findings by Wang and Zhang (2006) who found that people with high socio-

economic status are more physically active than those with lower socio-economic status.

However, activity theory encountered three problems, firstly, the activity theory assumes that people control their social situations and are able to reconstruct it by having a substitute for the lost roles and activities. Secondly, the theory assumes that the people's phases of life are stable in terms of social and psychological needs and in the process ignores the changes that might happen at a particular age, such as, retirement, loss of status or loss of spouse that might greatly influence the social and psychological needs of the older individuals (Noller et al., 2001). Thirdly, it assumes that particular kinds of activities can substitute for these great losses.

2.3.3 Continuity Theory

Continuity theory was proposed by Atchley (1972), and holds that adult individuals develop certain preferences and habits that are inhibited in their personality and as they age, they continue to have those habits and preferences that become stronger despite the changes they experience (loss of social status, decline in physical and mental health etc.). Thus, basic behaviour patterns such as, character, values and principles remain constant and unchanged. Therefore, the past experience forms the foundation for the late life behaviour.

The theory represents a modification of the activity theory, as it perceives the lifestyle in later life as a continuation of their young age one. Moreover, it allows for a variety of ways to adapt to aging, as it assumes that individuals attempt to maintain role stability and to preserve continuity of these roles throughout their lifespan. However, the theory guarantees successful aging when older individuals maintain positive habits and meaningful changes in their life not negative habits from adulthood to the late life.

2.3.4 Social Cognitive Theory

The social cognitive theory (SCT) was developed in the 1960s by Bandura. The theory holds that individuals act with intention and their behaviour is adjusted according to the environment and self-reflection. Furthermore, it assumes that the human behaviour is modelled by observational learning, self-regulation and reciprocal determinism (Bandura & Wood, 1989). Observational learning involves human acts in a similar way to the observed behaviour. Self-regulation is a measure of how the human behaviour is perceived by others resulting in the modification of the behaviour, reciprocal determinism highlights the interaction between human behaviour and the environment and its influence on activity engagement (King, 2006).

An important component of SCT is self-monitoring (King, 2006). For example, when older people desire to act in a certain way they normally evaluate their own assumptions and seek advice and information from other resources such as neighbours, TV, newspaper, etc. Their act will depend on their assumption about the consequences of the act. Thus, they might feel more comfortable about having exercise in their own homes rather than walking around the neighbourhood if they believe that the neighbourhood is unsafe and assert this by the condition of the neighbourhood (litter, poor walkways, teenagers loitering around, etc.). Such outdoor environment might limit their outdoor activity and discourage them from going out. The reciprocal effect will be more outdoor environment deterioration. Therefore, one can conclude that individual behaviour and the environment interact dynamically in such a way that leads to multi - facets outcomes (Bandura & Locke, 2003).

2.3.5 Socio- Environmental Theory

The socio-environmental theory holds that diverse social context creates diverse activities for older people. The theory assumes that social cohesion and neighbourhood

factors influence the level of loneliness and physical activity of individuals. It explains the multiple impacts on individual behaviour and the complex relation between the neighbourhood design, individuals and individuals' behaviour (Li et al., 2005).

The theory further argues that the external environment determines the behaviour of the older individuals. It views the older person as free acting, whose behaviour is determined by his/her environmental conditions. The theory explains the person-environment relationship and how they shape each other. It views the interaction with and adaptation of individuals to the environment as a dynamic process and consequently as part of the aging process. Thus, the theory introduced the person-environment approach that paved the way to the foundation of the studies of environment and aging-environmental gerontology (Glass & Balfour, 2003). Such studies argued that if the environmental conditions remain unchanged, the elderly behaviour and functioning will be negatively influenced.

2.3.6 Relevance of Theories of Aging to Urban Planning

Bengston et al. (2009) argued that researchers have developed the various theories of aging from the wide range of disciplines in an attempt to understand and describe how and why we age. From the urban planning perspective, there is a need to know how the patterns that are associated with age, such as health and longevity, are influenced by differences in place, socio-economic status and demographic characteristics (race, gender, and ethnicity (Framkin, Frank, & Jackson, 2004). The urban planning profession is concerned about the impact of the built environment on the health and urban planners' research focus on the role of spatial planning on health outcomes (Crawford, 2010; RTPI, 2009). Thus, the planning profession and elderly well-being spring from the same source.

Urban planning research in aging explains and describes the complex blend of the different disciplines that occurs at both the personal and social levels to provide the big picture that summarizes the person-environment relationship (L. W. Green & Kreuter, 2004; King, 2006; Sallis & Owen, 2002).

Following the above discussed theories, the researcher identified a number of variables that emphasize the relationship between the elderly and the physical environment. For example, disengagement theory discusses the elderly's desire to limit their social interaction with the young generations and the continuation of it amongst peers. This complies with the concept of particular housing arrangements such as retirement villages to satisfy this desire. Activity theory identified the importance of physical activity and social cohesion for successful aging which are typical characteristics of aged-friendly neighbourhood. The social cognitive theory highlighted neighbourhood safety and maintenance as important components of elderly active lifestyle. The socio-environmental theory identified neighbourhood environmental factors such as accessibility, permeability, as determinants of elderly active lifestyle and hence, successful aging.

However, out of the different disciplines it is possible to come out with the ecological model as a foundation for multi-disciplinary work that attempts to understand the person-environment relationship. The model assumes that the socio-economic differences and the demographic characteristics shape the context in which people live and thus affect the health risks of individuals.

The ecological model was developed by Lawton and Nahemow (1973). It proposed that there is a point of balance between the individuals' and the environmental demand, where individuals function independently of the environmental physical attributes to satisfy a behavioural need (Putnam, 2002). The model explains and describes how the physical and social environment demands influence the individuals' capacity and

behaviour. Some researchers employed the concept of the Chinese box (boxes within boxes) to explain the integrated and multi-level nature of the model (Putnam, 2002). The outer box represents the physical environment which includes population and society, single individuals, individuals' behavioural and physical capacities and finally biology (Figure 2.1).
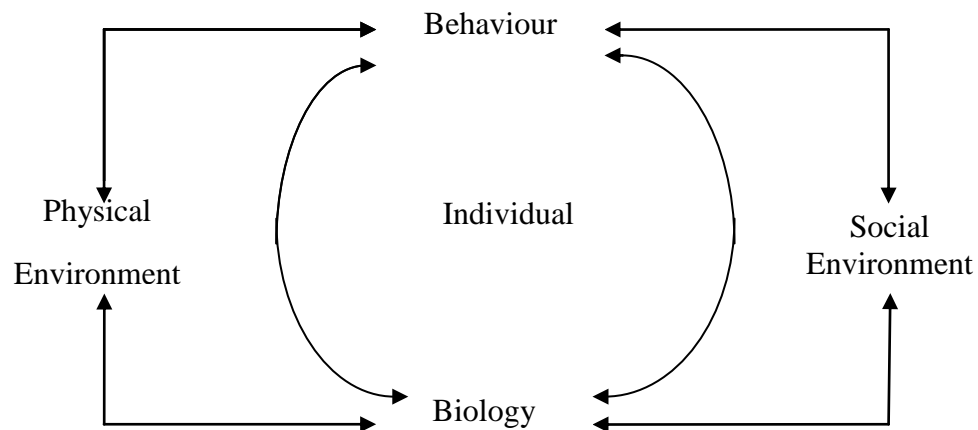
Figure 2.1: Ecological Model, Putman, (2002)

2.4 Planning Theories Related to Aging

Planning for the elderly has its roots in the planning history since the early concepts of Garden City Theory by Howard (1898/1965), and Neighbourhood Unit Theory (Social Reform Theory) by Perry (1929),. Walkable neighbourhoods in relation to physical activity have for many years attracted the attention of urban planning profession. The study identifies three main theories:

1. Garden City Theory: Howard (1898/1965), proposed a model of British cities where people live in close proximity to services (walking distance) and are connected by transit rail.

2. Neighbourhood Unit Theory (Social Reform Theory): Perry (1929), planned for the "Neighbourhood Unit" and suggested that children and adults should have a safe walkable route to schools and services. The purpose of the theory is to increase urban population.

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3. New Urbanism Theory: nowadays, advocates of New Urbanism continue to promote walkable neighbourhood by concepts such as Pedestrian Pocket, Transit Oriented Development (TOD), Urban Village, etc.

2.4.1 Garden City Concept

The Garden City concept was introduced by Sir Ebenezer Howard in1889 in his writing "To-morrow: a Peaceful Path to Real Reform", and was reissued in1902 under the title "Garden Cities of To-morrow".

The theory projects the city as residences near to one's work, a central city commercial area/park and a rapid transit connecting the different clusters to all parts of the state. The concept revolves around four key issues: social reform, environmental reform, town planning and regional planning. The social reform involves the promotion of economic equality and public ownership. The environmental reform includes the improvement of the physical environment of the housing through the provision of more open spaces and lower densities. The town planning of garden cities is concerned with land use and building arrangement within the city, transportation systems and recreational facilities at a local level. The regional planning is concerned with surrounding the cities and towns with a green belt (gardens), thus, focusing on the land and building arrangements between towns and cities (Batchelor, 1969; Jim & Chen, 2003).

Out of the theory it was possible to come out with some ideas that are relevant to aged-friendly neighbourhoods, such as:

1. The use of clusters.
2. The planning of civic centre surrounded by park in the middle of each cluster.
3. The commercial area is integrated with the civic centre and the park to provide a vibrant walkable space that encourages the elderly to go out.

4. Housing area is placed in close proximity to the civic centre and commercial area to promote walkable neighbourhoods and reduce automobile use.

Each cluster is connected to rapid transit that connects the different clusters together.

In Malaysia, Kuala Lumpur represents a good example of a garden city as it is naturally gifted with green belts (forests), an identity which few cities in the world can claim. Bukit Damansara (in the close vicinity of TTDI) in Kuala Lumpur could be a good example of today garden city.

2.4.2 Neighbourhood Unit Theory

As mentioned earlier walkable neighbourhoods have been the focus of the planning profession ever since its inception. Perry (1929), proposed his theory of "Neighbourhood Unit' based on the safe walk of the children from their homes to school and community centres. The Neighbourhood Unit concept has attracted the attention of many professions as researchers found that the design of the neighbourhood influences the active lifestyle of the residents (Framkin et al., 2004; Giles-Corti & Donovan, 2003; Lee & King, 2003).

The Neighbourhood Unit theory is alive and has a new sense of vision shown in urban sustainability principles, Putrajaya in Malaysia could be a good example as it adopts sustainable development principles in all its design aspects.

2.4.3 New Urbanism

New urbanism known also as traditional neighbourhood development was first recognized in the early nineties as a solution to the unsustainable suburban growth. The urban components in New Urbanism define a strong sense of community (Talen, 1999), because it calls upon a community where everyone knows everyone and the basic daily needs are within close proximity to where one's live. It addresses many ills of the

sprawl development and at the same time it maintains the compact communities by addressing the needs of the ever changing society pattern. Its key principles are: pedestrian scale, diversity, public over private spaces, compact form, mixed use, high density and convenient public transport (www.newurbanism.org; (Carroll, Adkins, Foth, & Parker, 2007). Talen (1999), noted that New Urbanism planning principles are based on interconnected, service-oriented, diverse and walkabe communities. These would promote social interaction and eventually achieve community building goals. Talen (1999), has also identified permeability, accessibility, walkability and social interaction as principle components of New Urbanism design. Thus, the concept of New Urbanism revolves around the design of new cities with residential areas within a walking distance from offices, shops and amenities all mixed together in an attempt to create neighbourhoods that are liveable, attractive and environmental friendly (Farr, 2008). This traditional urban form pattern encourages social interaction as a basic human need that is neglected in today's urban planning (Hanna, Dale, & Ling, 2009), and warrants higher levels of physical activity (Rodriquez et al., 2006). However, New Urbanism concept is not new as it borrows many concepts from Ebenezer Howard Garden City that seeks to create places designed for people (Antoninetti, 2008).

Malaysia, being a developing country considers planning strategies that serve the needs of the changing society pattern and tries to embrace opportunities offered by new planning techniques. However, New Urbanism concept is adopted in all new development throughout the country. Putrajaya could be a good example of New Urbanism as it employs land efficient planning methods to deliver sustainable development and high quality of life to the Malaysian People.

2.5 Theoretical Background

For the past thirty years, researchers from the different disciplines (anthropology, sociology, psychology, gerontology, geography, urban planning and architecture) used different approaches aiming at understanding the dynamic relationship of person-environment. The theories have determined the growth and development of disciplines of research, such as Universal Design and environmental gerontology. This is mainly due to the fact that theories have identified and clarified the critical role of person-environment relations (Wahl & Weisman, 2003).

2.5.1 Environmental Gerontology

Theories of aging are important in gerontology as it explains the diversity and complexity in aging. Previously, it was noted that despite the fact that the gerontology field is very rich in data related to elderly it lacks theory (Bengston et al., 2009). Theories of aging explain the mechanism and processes of aging as they provide meaning and explanation of what researchers experience and observe. Nevertheless, theories of aging limit the ability of researchers to predict the behaviour changes as people age, because they did not reflect the context of the physical and social environment-where the behaviour occur and how people navigate through the natural and built environment across their life span (Rakowski, 1997). Other theories from different disciplines examined the impact of environmental and individual factors on the elderly mobility through their neighbourhoods (Dumbaugh, 2008). Theories of social cohesion and psychological theories of aging converge on the importance of social relations and its impact on health and the wellbeing. Researchers on these theories argued that previous theories on aging and cognitive loss are not complete and that socio-emotional context emerges a different picture when taken into account, (Atchley, 1972; Gollant, 1984; King, 2006). Understanding social relations of people

across time is important for life satisfaction, health and quality of life in older age. (Antoninetti, 2008), argued that geographical gerontology came to the fore to explore the person-environment relationship. It focused mainly on themes such as scale, landscape, perception attitude/behaviour. From a geographical perspective, place experience refers to the people's perception of their area-what it means to them and how they feel about it. He further argued that, although geographical gerontology was the first to emerge the 'place' concept, it has not addressed the issues of the wellbeing and place. Environmental gerontology filled this gap by identifying the context and conditions that limit or assist the people's adaptation to aging. Environmental gerontology examines the individual's experience of place overtime which is a basic geographical theme, person-environment relationship is at the heart of environmental gerontology that explains and addresses the relationship between the aged and their environment. Thus, environmental gerontology is a multi-disciplinary approach in person-environment relationship (Wahl & Weisman, 2003). It defines the environment as the socio-physical (social, physical and cultural) environment that impacts the process and outcome of aging. It attempts to explain how the elderly needs and experiences are related to the place in which they age. Furthermore, it explains how aging issues are influenced by the context. Therefore, there is a natural overlap between the different disciplines pertaining to aging. The common theme is the scale experience located in space through time. For example, human geography dimension refers to identity, borders, and people's perception of their place, use of place through time and the organization and adaptation of the landscape to meet their needs. Psychological theories of aging refer to what a stimulating environment might compensate for a deteriorating mental and physical health (Hoffman, 2009). Lastly the social trend of health inequalities and social capital at the scale of the community is measured by spatial locations.

2.5.2 Universal Design

'Attractive and integrated urban environments do not simply happen by their own accord, they have been created by choice, by sound design and by efficient organization'' (Neal, 2003, p. 2)

Universal design (UD) has a wider scope as its name implies, but it focuses mainly on the design of the built environment that incorporates the whole population, in other words, design for the disabled as well as the non-disabled people. Some urban design elements represent good examples of UD such as the cut kerb which is designed to facilitate the navigation of the disabled people from the road to the pedestrian-walk. This particular design has also become useful for mothers with prams as well as travellers pulling wheeled suitcases (Biddulph, 2007).

The global increase in aging population has increased the awareness of the need for such a design that would accommodate the different abilities. Universal Design in the urban design context refers to making a more accessible public space and transport. There are a number of factors that restrict people's mobility within their urban setting especially the aged, such as lack of adequate transport, limited accessibility to other houses in their neighbourhood and because safety is a concern in their neighbourhood (Weiss, Maantay, & Marianne Fahs, 2010).

(Glanz, 2011), argued that Universal Design was inspired by New Urbanism concept and was developed to promote sustainable development patterns and provide the community with a safer, more accessible and pedestrian-friendly neighbourhoods. . In line with it, smart growth concept was also developed to address the mobility needs of the aged and disabled people in the neighbourhood community (Neal, 2003). These neighbourhood characteristics created by both concepts quite match the senior-friendly concept which also promotes walkability and social cohesion, because people's car dependency decrease as they age (Ewing & Handy, 2009). Before going into more

details about these concepts, let's have a review of their evolution in the urban planning field.

The neighbourhood represents the primary physical and social base upon which cities grow. It has a central role in re-establishing towns and cities as attractive and liveable urban places. The challenge facing planners and architects is to create popular neighbourhoods that are productive, age-friendly and beautiful to live in not only for the present but also for generations to come. In the 1960s Jane Jacobs argued that cities need diversity of uses that weave its fabric together and give it both economic and social support. She further argued that if planners could not understand this urban planning diversity, they would not be able to produce great American cities. She stated that "mixing people and *'forming complex pools of use'* would produce something greater than the sum of their parts" (Jacobs, 1961, pp. 164-165).

In the late 1980s the concept of urban villages emerged as a vital and viable approach to create successful neighbourhoods. Its main purpose was to lessen major failures of the past urban planning and to re-establish the many good principles of successful town planning that have been there for many years (Neal, 2003). European and American neighbourhoods were designed to comply with this particular concept. Due to certain political, economic and transportation constraints, the neighbourhood residential areas design complied with the concept that residents are always in a good economic status, residents who do not age and residents who were never children (Antoninetti, 2008). Antoninetti (2008), argued that modern environments are planned without the concern to meet specific requirements and needs of particular groups (aged and the disabled) and landscape. He further argued that from a physical point of view, management of spaces was used by political and economic forces to direct lifestyles and to hold public and private interest. Consequently, the cities' places were shaped by three main forces namely politics, economic and transportation. Antoninetti (2008), further argued that,

the result of these forces was that land uses were separated to favour car use as the only means to navigate through the neighbourhood, making the city a collection of separate and isolated urban units that are only connected by traffic lanes. He also added that from a social perspective, neighbourhood residential areas were divided in accordance with demographic, economic and social standards preventing the creation of a sense of community both in deteriorated core areas and sprawling neighbourhood. The outcome of these planning practices is that many residents find themselves living in houses that are too big for them, the houses that they have chosen twenty years ago. Similarly, senior citizens cannot manage their aging dwellings rising cost by relocating in the same residential area. The conditions of the urban elderly are equally unsettled by planners who did not create integrated environment. Lund (2009), supported Antoninetti's argument by agreeing that the residential blocks were not designed in a flexible way. This led to the prevention of adaptation of environments to meet the changing needs of the residents. As time passes it may not be possible to fit spatial patterns to match the habitual behaviour of the residents. These residential areas were designed with cul-de sacs to keep away strangers, potential offenders, noise and traffic (Newman, 1981). Such residential design could represent a barrier for senior's social life because of the limited space that does not encourage walking nor provide usable public space. For this reason, suburban and rural areas have suffered spatial mismatch by those who cannot afford housing expenses increase or those who are unable to drive (Antoninetti, 2008). For the elderly the problem is worsened because of the decline in their health. Similarly, residents who desire to reduce car dependency do not find basic daily needs of food, worship and leisure within a walking distance from where they live and thus experience misplacement (Hu, 2006). The older population, as mentioned above, will experience a socio-spatial mismatch because of their wish to age in place and the necessities of aging in place that require a certain neighbourhood characteristics

that would facilitate the process. This issue has led to a major debate on how urban residential environments should be built, how transportation alternatives should be implemented and how the different land uses should be managed (Alfonzo, Marlon, Day, & Anderson, 2008). Most of the residential developments lacked permanence as they were located away from shops and mass transit. Such developments do not only affect the elderly , but also the whole community because they are designed to be car dependent that have no consideration to the disabled, elderly nor to those facing economic decline (Antoninetti, 2008). Moreover, these developments have been documented by researchers as not supporting sustainable development. Planners needed to stand back and have an in-depth look at what they are producing. Recently, the urban planners have aimed at correcting this situation by introducing three urban planning concepts: New Urbanism (mentioned above, p. 26), Smart Growth and Liveable Communities (Neal, 2003); www.newurbanism.org/).

2.5.3 Smart Growth

The second principle 'smart growth' is oriented more towards policy compared to New Urbanism, which is connected more to planning and architecture (Lund, 2003). The concept was developed in both the United States of America and the United Kingdom as a proposal for new smarter and more efficient growth addressing issues of sustainability, employment, integrated transport and the development of greenfield and brownfield. New Urbanism has been criticized for being oriented more towards the physical environment. Smart growth assumes that   well designed and attractive environments could provide a framework for promoting growth and economic identity that would address both employment and housing issues (Neal, 2003). However, as with the New Urbanism concept, smart growth concept is not new and its principles have been adopted in many developed and developing countries. Its principles can be

summarized as aged friendly cities, pedestrian friendly, environmental friendly and advocates open space and green development. Nevertheless, smart growth policies have been criticized as restricting growth in attempting to preserve open space and increase mass transit through urban densities. Such policies result in limitation in the developable land and in an increase housing price which would mostly influence the poor and fixed income retirees (Neal, 2003). Moreover, new communities built on compliance with the principles of New Urbanism and Smart Growth support gentrification by targeting home buyers with a higher income who in most cases replace the less advantaged and the less mobile existing aged community, thus, forcing the elderly to move to another place to live in and this, indeed, result in a decline in their quality of life. Kahana, Lovegreen, Kahana, and Kahana (2003), argued that when the personal options are limited the equivalent neighbourhood environmental factors and the needs of the individuals become very significant. This is mainly due to the fact that the decline in the socio-economic power results in the formulation of strategies that adapt to the worn-out personal lifestyle and environment because the impact of the characteristics of the environment on individuals is oppositely relative to their capacity to deal with them. For the above mentioned, New Urbanism and Smart Growth are accused of being greatly driven by market force and operating without consideration to the community life and social structure (Howe, 2001).

2.5.4 Liveable Communities

The third planning principle represents a more comprehensive planning method than New Urbanism and Smart Growth and has been adopted by a number of organizations on aging. The principle stated that:

> "*A Liveable community is one that has affordable and appropriate housing, supportive community features and services, and adequate mobility options , which together facilitate personal independence and the engagement of residents in civic and social life* " (AARP, 2006, p. 4).

The American Association of Retired Persons (AARP) has developed the 'Liveable communities' concept in an attempt to create communities to enable people to 'age in place' freely, actively, independently and comfortably. The AARP (2006), report has identified causes that facilitate or obstruct successful aging and held the built environment as being responsible for promoting economic sustainability, social engagement and healthy lifestyle which are considered a measure for successful aging. The report further examines the mobility options, neighbourhood and home design in an attempt to analyse their relation and impact on liveable communities and hence, successful aging. The report findings showed three factors impacting negatively the lives of older people aged 50 and over. Firstly, unaffordable housing or housing that fails to meet the physical needs of the aged. Secondly, the characteristics of the neighbourhood that hinder or limit social interaction or that are linked to a lack of a sense of community and negative perceptions. Thirdly, people's mobility is car dependent. Jacobs (1961, pp. 176-177), wrote:

> *"Failing or failed city areas are in trouble not so much of what they have (which can always be regarded as a base to build upon), but because of what they lack).*

Fortunately Liveable Communities concepts provides solutions to the report findings, as it makes adjustment to circumstances and needs by promoting a diverse and flexible city form that accommodate the needs of the people through focusing on local economy, streets, neighbourhoods and community living (Antoninetti, 2008).

Thus, the three planning principles converge towards the socio-physical characteristics of the neighbourhood as the way for a better quality of life for the residents.

2.6 Empirical Studies

> *"We have reached a stage in the development of our technology where we have the power to create the environment we need or to destroy it beyond repair, according to the use we make of our power. This forces us to*

*control the power. To do this, we must first of all decide what we want to
achieve. And this is far from easy"*
(Tibbalds, 2001, p. 1)

The study examined the potential of neighbourhood environmental characteristics to stimulate active lifestyle among the older people in an attempt to identify determinants of aged-friendly neighbourhood. This section identifies the different concepts guiding the aim of the study. Different disciplines use the concepts of aging in place and place attachment to explain how aging issues are influenced by the context. The urban planning concepts of social cohesion and physical activity offer the basis for the empirical research into the dimension of active lifestyle in later life. The review of the empirical research provides the groundwork by providing definitions of terms along with a major focus on social cohesion and physical activity as the domains explaining active lifestyle which is a major characteristic of aged-friendly neighbourhoods.

2.6.1 Aging in place

Aging in place have several meaning, such as remaining in the same urban setting that holds many meanings for the aged or staying in the same home they have lived in during their youth (Gollant, 2003). The following are several definitions of "Aging in place":

> -*"The ability to remain in the current setting as one ages" (Cutchin, 2003),* p.1077.

> -*"The ability to live in one's own home and community safely, independently and comfortably regardless of age, income or ability level"* *http://www.cdc.gov//healthyplaces/terminology.htm*

> -*"The idea of aging in place may ultimately be viewed as reflective of a basic human need for territoriality" (Rowles & Ravadal, 2002, p. 90).*

However, the neighbourhood characteristics play an important role in the decision to age in place. Cutchin (2003), introduced a model of elderly place integration and associated problems as key findings of his qualitative analysis (Figure 2.2). The model

explains three core processes: "reshaping through place and space", "creating meaning through activities centred in place" and "contesting place and space". The model further explains the process of "approximating home and community" and another component related to place integration and that is "instability" as an on-going challenge.
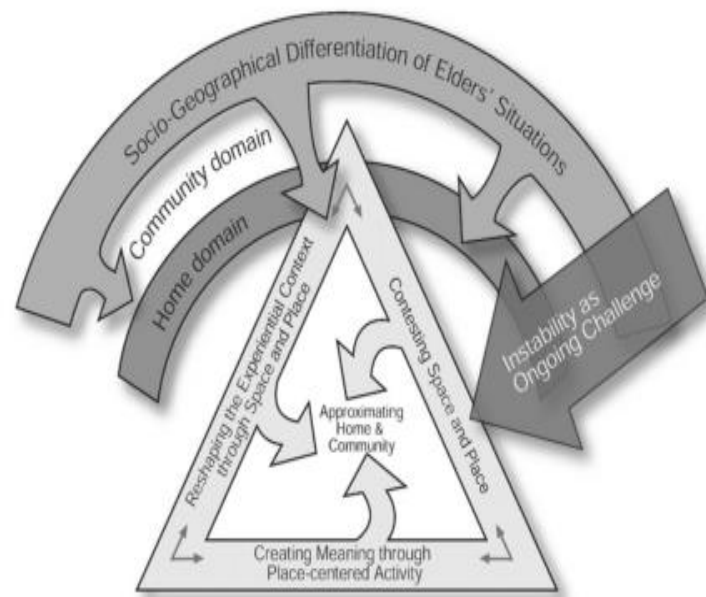
Figure 2.2: Cutchin, (2003) model: Place integration for older adults
Source: (Cutchin, 2003, p. 1081)

On the other hand, Rowles and Ravadal (2002) argued that aging in place is the evolving experience of place, thus it represents a dynamic phenomenon because the person-environment relationship is continuously changing in order to adapt to the new circumstances. It involves an understanding of the continuous relationship of individuals to place. The concept of aging in place is associated with active living because it involves formulating policies, providing services and designing the neighbourhood that enables the older people to live healthily and actively (Dumbaugh, 2008).

The WHO defines active aging as:

> -"Active aging is defined as the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age". (WHO, 2007, p. 4).

Several initiatives are needed to achieve the implementation of the WHO, (2007) program to promote active lifestyle for people as the age. The *WHO, (2007)* "age-friendly community" model was built on the active aging model and focuses on how a neighbourhood can support an active lifestyle of its elderly population (Figure 2.3). The model illustrates the factors determining active aging as influenced by health, social participation and safety. Active aging is influenced by social factors as well as physical conditions that impact people's behaviour. These factors interact to determine aged-friendly cities.

Determinants of Active Aging

Figure 2.3: Active aging Model "Age-Friendly Communities", (WHO, 2007, p. 5)

Similarly, King (2006), discussed individual and neighbourhood effect on active lifestyle and social isolation and proposed an ecological model explaining neighbourhood social and structural factors influencing elderly's active lifestyle. Her model illustrated the various factors that influenced the overall activity level among the elderly; perceived safety from crime factors was the most important factor. The model shows the different outcomes from various types of factors, (Figure 2.4).
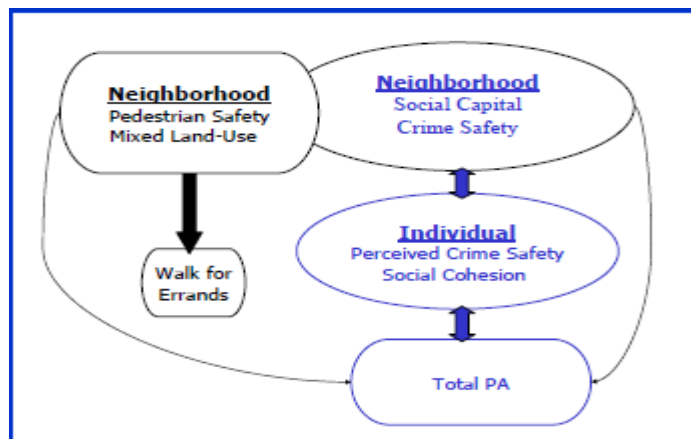
Figure 2.4: Relative Importance of Perceptions and Objective Features to Older Adult Activity, (King, 2006, p. 206).

Aging population involves major demographic changes in the age structure and family size. Such changes will alter the communities and consequently the housing. Population aging includes changes in the socio-economic and demographic trends, such as the structure and size of the family, an increased number of individuals living alone and new urban policies to address issues of sustainability and urban sprawl (Antonnetti, 2009). A significant trend is the change in the work and retirement pattern that includes the wish of many recent retirees to be allowed to work beyond the specified retirement age. Aging in place concept is linked to UD (Neal, 2003); because it involves modifications of the indoor and outdoor environment to meet the needs of seniors who wish to live in their homes for as long as possible (Cutchin, 2003). The concept was developed to assist the seniors to remain in their homes to avoid the emotional stress of having to move out of the place that holds many meanings, as well as to reduce the burden of the elderly on both society and family (Cutchin, 2001).

The aging in place model was first developed in the United States. A research conducted by the AARP found that the majority of Americans (9 out of 10) aged 60+ would like to remain in their homes as they age (AARP, 2006). Hence, many initiatives are launched to develop communities or villages that assist the older people to stay in their own homes for the longest period possible (Neal, 2003). Moreover, these villages

aim at promoting social cohesion among the elderly in their communal neighbourhood regardless of their declining physical health. The first implementation of the age-friendly village was in Massachusetts and the Beacon hill Village found in 2001. People aged 50 and over, who desire to age in their own communal neighbourhood and who do not wish to move to retirement living facilities are provided with needed services and facilities that help them stay in their own communities, such as the wellness programs, social events, shopping and recreational trips (www.beaconhillvillage.org).

As mentioned earlier in the chapter, the concept of 'Liveable Communities' was developed in the past decade in the USA by the AARP to help people age in place. Co-housing concept was also developed by the Californian architect Charles Durrett to join people with similar interests and who desire to live together in a shared housing project. In such projects, a number of housing units share the same kitchen and dining room to strengthen social cohesion and are provided with services to promote physical activity (Antoninetti, 2008). However, a number of researchers disapprove the crucial role of place in later life. For instance, Bengston et al. (2009), argued that there exist some factors across the different residential areas that affect the elderly regardless where they live, such as fixed income and whether it could cover their needs of declining physical and mental health and of equal importance accessibility difficulties to benefits, services and information.

2.6.2 Place Attachment

Whatever people are attached to in life, have a meaning to them as humans, because it is the heart of being human. Throughout the history, man has developed a close relation and strong bond with places. This kind of attachment determines the place where people prefer to settle. Such place attachment could vary from the individuals own

home, city and neighbourhood to a place of significance (recreational, cultural, worship, etc.). These become particular to this study as it focuses on the environmental perception behaviour and also because the quality of the physical place is central to attachment (Moore, 2000). However, the study of place attachment goes back to a study by Fried (1963), that reflected the sad emotions of the residents who were forced to move out of a residential area of Boston considered as a slum area. At that time, the slum clearance movement had decided to demolish the deteriorated area and build new housing complex to improve the environment and housing quality in the area. Other studies have covered the Drastic loss of people's homes due to natural disasters and found that the place attachment bond was quite strong and concluded that the grief that results from one's loss of place shows that the emotional ties to one's home is only realized when the home is lost, because it affects all areas of one's life (Taylor, 2001). Recently researchers have realized the importance of examining and defining the diverse elements of place in an attempt to understand the different community place experience and the human aspects to address environmental and social issues.

2.6.3 Place Attachment Definition

Place attachment exist in a diversity of contexts (social, psychological and spatial), thus can be defined indifferent ways. For the purpose of this study, place attachment simply means the positive connection the young elderly have with their own direct environment. Taylor (2001), defines place attachment as the affecting bond with environment that meets important human needs such as, comfort, joy and safety and security, whereas Rowles and Ravadal (2002), defines place attachment as the emotional relationship between man and the landscape. On the other hand, Molcar (2006), and Pretty, Chipur, and Bramston (2003), defined place attachment as the

positive bond between the person and the environment that develops a strong desire to remain close to that particular urban setting.

2.6.4 Place Attachment and the Elderly

Taylor (2001), identified the historical memory of the place as an important aspect of the elderly's life because it maintains their wellbeing and positive sense of place by being able to retain sweet memories and sense of belonging despite their grief. Ross, Renolds, and Geis (2000), examined the relationship between the older people and their homes and argued that the elderly differ in their perception and feelings of the places they lived in. She found that some elderly people had a conscious thought of the place they lived in that has a positive impact on their life and happiness, while for others the place they lived in before moving to home care centres, was only the scenery for the different experiences that took place in their life. These were the elderly who did not move home quite often during their youth and thus home was a fixed feature that did not need special thought. Ross et al. (2000), concluded that attachment to the place is a personal experience that could not be generalized to support a concept in older people needs. Supporting her conclusion, Cutchin (2003) argued that older people are more connected to family members and community friends rather than to the place because many people migrate to join family and friends and are quite able to maintain place attachment to the different locations, thus migration becomes significant to place attachment. However, as people age their attachment to place becomes of vital importance as it helps them to maintain their identity. On the other hand Molcar (2006), argued that place attachment is actually neighbourhood attachment that refers to people's friendliness towards their neighbours and the development of close and caring relations with them. Moore (2000), also argued that people are not attached to the physical characteristics of places but to the meaning of the place. This led Molcar

(2006), to conclude that place attachment is positively related to age, people have different needs of place across their life span and as they age, their connection to their homes increases Dramatically because it is important to them as it holds memories and meanings.

2.7 Active lifestyle

Researchers have also found that active lifestyle plays a crucial role in maintaining a quality of life for the older people as it reduces social isolation and mortality levels (WHO, 2002). However, the elderly active lifestyle is frequently faced with some obstacles as in many cases older people favour to age in place and live independently (Pretty et al., 2003). Consequently, this has led to relative loneliness and social isolation that influenced the older people active wellbeing.

The concept of co-housing has emerged in the early 70s in Denmark in an attempt to address the issue of loneliness and social isolation. Many organizations have adapted the concept as a means of increasing social interaction and reducing loneliness. Basically, co-housing was meant for those who want to stay in the neighbourhood community without compromising the privacy of their dwellings and families (Durrett, 2009). Hence, the concept was adapted by the older people who wish to age in place. Co-housing is a new approach to active elderly living, initiated by young families. A typical co-housing scheme consists of 20-30 families who plan a community neighbourhood where the outside space, kitchen and dining room are used to create social cohesion. Senior citizens co-housing adapt the same concept, except that promotion of social interaction and prevention of loneliness are more emphasized, (Bamford, 2005). The concept has been largely implemented in Northern Europe such as in Sweden and the Netherland as well as in Denmark (Choi, 2004). In line with the concept, independent living communities have come to the fore, providing amenities to

build social cohesion and increase activity among the young elderly. Such communities are called "active adult communities" (Brecht, 2002), "leisure oriented retirement communities (Streib, Folts, & Peacock, 2006). They consist of single family or multi - family dwellings with amenities and recreational facilities and are mainly designed for young retirees who are neither in need of support services nor medical assistance (Brecht, 2002).

A large body of research has focused on the neighbourhood characteristics and its influence on social relationships and social isolation, and further examined their relation with both psychological wellbeing and wellness (Owen, Humpel, Leslie, Bauman, & Sallis, 2004; Routasalo, Savikko, Tilvis, Standberg, & Pitkala, 2006) ; . Other Studies, for example, Dill et al. (2010); Sugihara and Evans (2000) have explored the relationship between neighbourhood design and physical activity and documented the benefits of providing activities in older people communities. For example, Dill et al. (2010), examined the relationship between communal green space and the older people's social interaction. Their findings showed that the older people who are more exposed to green spaces enjoy better social cohesion which consequently resulted in an improved relation with neighbours and friends. Thus, they concluded that daily verbal and visual contact between the residents enhanced the residents' friendship among the senior community. Therefore, communal space plays a vital role in developing social relations between members of the community (Aelbrecht, 2010b). On the other hand, accessibility to activity centres facilitates and enhances social interaction among the elderly. For example, Sugihara and Evans (2000), investigated the role of the physical environment in retirement communities and have proven that the distance travelled from the individual's dwelling unit to the centre of activity in line with accessible activity areas determines the level of social interaction between the older residents in the community. Similarly, Dill et al. (2010) studied the influence of green streets on the

elderly physiological health and found that vibrant streets with street furniture encourage walkability and promote social interaction. Therefore, for the elderly to be active the physical environment has to be designed to enhance social cohesion and promote physical activity (Lui et al., 2009). Based on these findings the researcher concluded that social cohesion and physical activity are the two domains explaining active lifestyle among elderly; which in turn determine aged-friendly neighbourhoods.

2.7.1 Social Cohesion

Social cohesion is an integral aspect of place attachment. du Toit, Ester Cerin, Evie Leslie, and Owenet (2007), defined social cohesion as the social interaction between family members, individuals, friends and groups who make up the social unit within the community.

Putnam (1995), argued that social cohesion promotes a sense of belonging, trust and cooperation among community members and achieves goals of healthy aging. On the other hand, Kawachi and Berkman (2000), argued that society is determined by collective societies and community characteristics. They further argued that attachment to social groups results in positive health outcomes particularly in later life as it improves the physical and mental health of the older individuals.

Slovic, Peters, Finucane, and Macgregor (2005), argued that throughout their youth people usually tend to be interested and quite engaged with pursuing their career, raising their children and purchasing homes. Their interest is focused on gaining material possessions. As they approach retirement age, their interest deviate from goods and wealth as they tend to be increasingly interested in gaining experience, social interaction and religious activities. Slovic et al. (2005), further argued that they always seek quality rather than quantity, consequently their choice of housing area changes as they tend to choose the housing area that considers problems related to aging such as

mobility. Thus, the housing choice may differ in later life than in earlier life. The role of neighbourhood characteristics becomes crucial. The capacity of the older people to participate in community life and socialize has become a problem and a challenge and always brings out the question of the role of the outdoor environment on our public life. Urban designers and architects have been seeking to provide new, stylish, clean and safe outdoor environment in an attempt to promote their public life (Avermaete & Teerds, 2007). However, Low and Smith (2005), argued that researchers who had studied public life did not provide an understanding to whether there exists a direct relationship between public life and public space, nor an understanding to whether the problems in public life is connected with those of public space. Nevertheless, neighbourhood design should promote active lifestyle to encourage social interaction and physical activity that would compensate for a deteriorating physical and mental health in later life (Dill et al., 2010). It appears that King (2006)'s contribution was built on solid foundation, she found that encouraging social interaction and promoting physical activity through neighbourhood design can have a great impact on the chances of elderly people maintaining their independence for a longer period of time. Moreover, Aelbrecht (2010b), discussed the role of urban design in promoting social interaction amongst strangers and argued that interaction among individuals is part of the social fabric. In her study about the relationship between the urban park design and social cohesion, she found that the existence of leisure activities, street furniture (benches) and the connectivity between the different outdoor activities play important roles in promoting social interaction between community members. Thus, the urban environment provides different opportunities for interaction among community residences (Aelbrecht, 2010b). The design concept of the built environment to promote social cohesion among the elderly is also well-known in the literature with great concern to both indoor and outdoor environment. The outdoor environment has a

distinctive role in enhancing social interaction rather than the internal furniture as quality of the outdoor environment influence social engagement (Kaczynski, Potwarka, & Brian E. Saelens, 2008). The elderly do not use beautifully furnished rooms as they prefer sitting in places where they can meet others and socialize. They further argued that when architectural design forces people to socialize in common areas, it reduces social interaction level. She concluded that older persons are happy to socialize but not when they are forced too.

2.7.2 Physical Activity

There are many definitions in the literature of physical activity. Generally physical activity is defined as the actions performed by individuals to enhance the individual's health and the wellbeing. The most common physical activity among older individuals is walking (Menec et al., 2011; Saelens & Handy, 2008). Physical activity is also defined as moderate/heavy exercise accompanied with leisure.

Physical activity has been associated with the health and the wellbeing especially among the older adults. A decline in physical activity results in increased health problems among the elderly and researchers have indicated physical activity as the key mechanism in promoting health and functioning amongst older individuals (Moudon et al., 2006). Furthermore, recent researches have documented the role of physical activity in promoting cognitive performance amongst aged individuals (Abbott et al., 2004; Weuve et al., 2004) . It is generally agreed that if the neighbourhood characteristics are improved, physical activity in the form of walking will be greatly encouraged. Duncan et al. (2010); (Macintyre, Ellaway, & Cummins, 2002), found that characteristics of the built environment such as width of walkways and pedestrian walks conditions and litter encourage physical activity in the form of walking among the elderly. Harris-Kojetin, Kiefer, Joseph, and Zimering (2005), had examined the patterns of physical activities of

retired individuals living in independent dwelling units in Continuing Care Retired Communities (CCRC) in the United States of America. Their finding shows that older individuals who live in campuses that greatly support physical activity are more physically active than those who live in campuses with less support of such activities.

However, physical activity in the elderly is affected by two factors-personal factors and neighbourhood factors (King, 2006; King, Warnes, & Williams, 1998; Satariano & McAuley, 2003). The personal factors include demographic characteristics, beliefs, attitude and knowledge about the importance of walking and psychological factors including self-efficacy, health status, and perceived barriers to walking (Resnick & Nigg, 2003). The neighbourhood factors that might influence physical activity among the elderly include aesthetics and the surroundings of the neighbourhood, walkway conditions (uneven surfaces), perception of neighbourhood safety, lighting, traffic flow, presence of kerbs at cross walks and proximity to amenities (Cunningham, Michael, Farquhar, & Lapidus, 2005). The desire of the older individuals to remain active is influenced by neighbourhood environmental factors, such as conditions of the walkways, street furniture, attractiveness of the neighbourhood, access to daily needs and street connectivity. For the purpose of this study, the factors influencing the participation of the elderly in physical and social activities are: social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety.

2.7.3 Elderly Needs

Successful aging is attributed to how older individuals are successful in meeting their own social and personal needs. Maslow (1970)'s hierarchy of needs consists of five main categories that put the needs of the older individuals in parallel with successful aging (Figure 2.5).

Out of Maslow's Hierarchy of Needs concept and the above discussion of the relationship between the built environment and the elderly active lifestyle, the researcher could identify some factors that have an impact on elderly active life style and meet the needs of the elderly in maintaining successful aging. Such factors are social interaction, walking, convenience, accessibility, permeability, maintenance and safety.

Figure 2.5 Maslow's hierarchy of Needs (Maslow, 1970)

a) Social interaction

The study aims at developing an understanding of the role of the built environment in the social interaction among the older individuals and also contributes to the vital role of the physical environment within the changing social life of the elderly.

Soltani, Frank, Andrew Allan, and Somenahalli (2006), and Alves and Aspinall (2008) argued that the neighbourhood characteristics support physical activity and provide opportunities for social interaction. However, the capacity of the older individuals to participate in community events and socialize has become a problem and a challenge that always bring out the question of the role of the outdoor environment on our public life (Avermaete & Teerds, 2007; Dill et al., 2010).

Urban designers and architects have been seeking to provide new, stylish, clean and safe outdoor environment in an attempt to promote public life. However, researchers who studied public life and public space did not provide an understanding of the relationship between public life and public space. They also did not provide an understanding on the interrelation of the problems of public life and public space (Low & Smith, 2005). As people age, they experience a decline in personal relationships, therefore, personal and the support of families and friends become crucial. King (2006), argued that social relationships and support networks need to adapt to the changing needs of the older individuals, as maintaining good social relationships in older age is critical for the physical and mental health of the older individuals, because lack of social support leads to loneliness, depression and poor health. Thus, social interaction is central to successful aging. Furthermore, several studies have shown that people who enjoy strong social ties are more likely to experience longevity, better health and functioning than those with less social contacts.

b) Walking

Walking represents the best moderate form of physical activity for older individuals (Owen et al., 2004). Nevertheless, walking has been neglected because car dependent designs and traffic congestion have discouraged people from walking (Frank, Andresen, & Schmid, 2004; Saelens & Handy, 2008). Furthermore, as people age, their engagement in physical activity decreases (Aelbrecht, 2010b). However, this increased car dependency has led to several social problems among the community members regardless of their age, such as social exclusion and loss of street/community life (Southworth, 2005). Thus, to improve social cohesion and physical activity, the neighbourhood design has to be based on walkable and pedestrian-friendly design. Satariano (2010); Gauvin et al. (2008), tend to agree and concluded that the older

people living in a mix-use residential area were found to socialize and walk more than older people in residential area of a single use.

c) Facilitators to Walking

Ewing and Handy (2009) argued that recently many researchers have been investigating the relationship between certain factors of the neighbourhood as facilitators to physical activity in its simplest form walking. A large portion of their researches suggested that neighbourhoods with access to recreational facilities, street connectivity, safe crossing at intersections, shorter distances to destinations and where safety is no concern facilitates walking and are hence, considered more walkable.

d) Physical Barriers to Walking

The design of the built environment impact greatly the elderly desire to use the environment. Such environmental demands increase with the decreased ability of the elderly to use the environment, i.e. the existence of physical barriers hinder the possibility of elderly with declined functional capacity to use the services or facilities. Lack of accessibility to facilities represents a major barrier for elderly to remain active (Crombie et al., 2004). Ewing and Handy (2009), argued that lack of certain neighbourhood facilities deters physical activity in its simplest form walking and make mobility difficult. Some examples include, lack of adequate public transport to recreational facilities, lack of kerb-cuts at road intersections, lack of sidewalks, presence of cul-de-sac, lack of ramps and lack of access to public places.

e) Convenience

Takano, Nakamura, and Watanabe (2002), Gauvin et al. (2008), and Satariano (2010), argued that convenience is a measure of residents satisfaction with the housing cost,

services provided, attractive scenes, incentives to move around (adequate public transport) i.e. general satisfaction with the neighbourhood (Strath et al., 2012). The basic needs of elderly for living and aging healthy in an urban setting are affordable housing that are accessible, well connected to public transport, in close proximity to services and health care; and provide leisure facilities and other public amenities. The level of satisfaction with all the above mentioned factors influences the elderly's decision to age in place or to move elsewhere (Insch & Florek, 2008).

The physical environment plays an important role in shaping the quality of life of individuals. If these individuals are satisfied with their environment they will be satisfied with their life (Wahl & Weisman, 2003). Moreover, they argued that residents' positive perception of their physical environment depends greatly on whether the environment is meeting their needs.

On the other hand, Insch and Florek (2008), argued that convenience with the physical environment is associated with place attachment. Lee and Sirgy (2004), focused on consumption satisfaction with goods that result in the purchase and use of goods and viewed convenience with housing or housing satisfaction as the uses of services offered by the community. Based on this assumption, Insch and Florek (2008), suggested that to achieve the elderly convenience or satisfaction with their residences, it is important to provide the services that meet their needs in that particular environment and direct the residents to maximize their use of the services offered.

A model of Customers Satisfaction Index (CSI) was developed in the USA to measure the levels of satisfaction of the city dwellers with the goods and services offered (ACSI, 2008). However, Insch and Florek (2008), stated that the customers do not always report their dissatisfaction with goods and services, resulting in missing data that might influence the effectiveness of the model.

Based on the above concept of CSI model a model to measure the residences satisfaction in the context of places was developed to measure the city's Residents' level of satisfaction on services offered by the physical environment (Figure 2.6). The model shows that the residents' perception of their environment and the services they expect is central to their evaluation of the perceived value offered by the city (Insch & Florek, 2008).

Figure 2.6: Working Model of Residents' place Satisfaction (Insch & Florek, 2008)

f) Accessibility

The majority of the elderly do not travel any longer for work. Their primary activity needs is to acquire services and goods in addition to participation in social activities. Therefore, the degree of easiness for the elderly to reach their destination within a walking distance or within a short travelling distance from their homes becomes crucial. Accessibility refers to the possibility to navigate easily and safely within and around the neighbourhood. Accessibility includes two components; the first one refers to mobility, i.e. the ability to navigate through places; the second one refers to land use characteristics, i.e. the spatial distribution of the different activities/facilities. Therefore, within the neighbourhood, the land use development should be designed to enhance the accessibility level in order to ease the access to various activities/facilities for the

elderly who might have mobility constraints. The street layout and design that enable the residents to walk around and use places and reach safely their destinations, is one of the major factors influencing the elderly's desire to go out (Glanz, 2011). On the other hand, Bowling (2005) and (Aspinall et al., 2010), argued that accessibility is a measure of distance travelled from home to basic amenities and safe navigation in the neighbourhood. Furthermore, Cervero and Duncan (2003), opined that residents who live in neighbourhoods characterised as having a mix-use and greater street connectivity i.e. well-connected walkways, are found to walk more and use public transport than their counterparts who live in suburban neighbourhood.

However, older individuals have some constraints both physical and financial that might restrict their travelling modes. The neighbourhood design impact greatly their travelling behaviour as it either acts as a facilitator or barrier to their travel choice. This means that the elderly's access to certain facilities and activities could be restricted to one mode of travelling. For example, auto-dependency developments make travel a necessity rather than a choice. Therefore, elderly who live in such neighbourhoods are obliged to drive despite their health declination. Researchers found that the number of elderly who drive for basic needs are increasing globally (Aelbrecht, 2010a; Handy, Xinyu., & Mokhtarian, 2008). Hu (2006), in his PhD study examined the association between various land use characteristics, such as accessibility with the elderly's travel behaviour using a multi-variety regression model and found that the elderly used more public transport in high accessibility areas. Furthermore, the elderly might not be encouraged to walk if the traffic conditions in their neighbourhood are dangerous for walking. Minimum improvement in enhancing active lifestyle environment could offset the elderly competence loss; therefore an elderly active life style can be maintained. For example, pedestrian-friendly design or new sidewalks could encourage young elderly to walk. Normally elderlies are sensitive to environmental press compared to other age

groups due to their loss of competence. Thus, enhancement in the quality of the environment could influence their active lifestyle more than other age groups. Building on this assumption, land use strategies should be formulated to enhance local accessibility in order to resolve issues of activities access for the elderly.

g) Permeability

Permeability is defined as easy-way finding, barrier-free walkways and the route-choice opportunities available within the neighbourhood. Lee and King (2003), and du Toit et al. (2007) argued that pedestrian-friendly and neighbourhood design that provides various destinations within walking distances have attracted the attention of many researchers from various fields. A high permeable neighbourhood that is characterised by grid-like street pattern makes it easier for the elderly to reach local activities and promote walkability (Saelens, Sallis, & Frank, 2003). Easy way finding and route-choice alternatives are expected to reduce trip distance and thus encourage the elderly to walk rather than use car. Furthermore, findings of varying strengths, support evidences that neighbourhood safety and level of isolation, pedestrian friendly environment, high-connectivity streets and proximity to destinations play a role in encouraging active lifestyle (Glanz, 2011; Owen et al., 2004).

The New Urbanism planning theory, discussed earlier in the chapter, also suggested that permeable neighbourhoods incorporating a pedestrian-friendly design encourage walking and reduces car dependency. However, studies to support this hypothesized association between the built environment and elderly active lifestyle are still limited.

h) Maintenance

When examining the association between neighbourhood environmental factors and active lifestyle to determine aged-friendly neighbourhoods, many factors emerge.

Deterioration of buildings and sidewalk, housing condition, environmental noise, and waste management have been suggested as influencing active lifestyle among the elderly (Aspinall et al., 2010; Diez-Roux, 2004). Poorly maintained neighbourhoods are associated with decreased physical activity and decreased neighbourhood cohesion among elderly due to fear of fall and cri me. On the other hand,   well maintained neighbourhoods with walkways and parks are found to promote healthy aging (Takano et al., 2002). The findings by King (2006) support Takano et al. (2002) findings. King (2006), found that deterioration of the neighbourhood physical condition, the general poor appearance of the neighbourhood, noise were important factors promoting active lifestyle among the elderly. She further argued that poor cleanness and poorly maintained neighbourhoods contribute to increased fear of crime and decreased friendliness of neighbours "social cohesion". Strath et al. (2012), argued that the general satisfaction with the neighbourhood influence active lifestyle among the elderly. She explained the general satisfaction of the neighbourhood as being influenced by the poor maintenance, noise, graffiti, litter and pollution. In general, the high importance of the neighbourhood physical appearance is due to the fact that aesthetics represents an important factor encouraging elderly to participate in both physical and social activities. Therefore, identifying the relationship between the contextual factors of the neighbourhood such as land use, physical activity resources, neighbourhood deterioration and access to senior citizens services is important to understand relevant active lifestyle interventions.

i) Safety

The majority of empirical studies, for example Newman (1981); Ewing and Handy (2009), have identified the important relationship between neighbourhood environmental factors and perceived security of the neighbourhood and individuals'

safety. Researchers have explored concerns about neighbourhood crime and traffic safety and how it influences elderly's active lifestyle. Newman (1981), placed concerns about residents' safety and neighbourhood security within a spatial context and examined neighbourhood design that could create a defensible space. Similarly, researchers from the transportation field studied traffic safety and found significant association between neighbourhood traffic characteristics and pedestrian safety (Handy et al., 2008). On the other hand, Handy, Xinyu, and and Mokhtarian (2006) and Kramer, Maas, Wingen, and Kunsi (2013), argued that environmental factors at the neighbourhood level are likely to impact the elderly chance to socialize or engage in outdoor activities. For example, availability of parks, pedestrian walkways, proximity of destinations, accessibility, transportation services and the perceived safety and security are all factors that encourage outdoor activities.

The two components of the ecological models: social ecology and physical ecology, mentioned earlier in the chapter, advocate such concepts (King, 2006). The social ecology is defined as the neighbourhood social network and its associated social cohesion (Strath et al., 2012). It assumes that neighbourhoods with strong social cohesion encourage active lifestyle. Alternatively, neighbourhoods with high crime rate and violence deter active lifestyle (Newman, 1981). On the other hand, the physical ecology is defined as the characteristics of the built environment such as street network, parks and physical services that are believed to encourage active lifestyle. Lack of these facilities gives negative results on active lifestyle (Strath, Isaacs, & Greenwald, 2007) .

Different researches revealed different finding regarding the association between neighbourhood environmental factors and level of safety among the elderly (Strath, Isaacs, & Greenwald, 2008). This could be explained by the fact that the variable of safety is measured in different ways in the different attitudes. For example some studies did not differentiate between the various categories of safety: safety from falling, safety

from crime, safety from speedy traffic, etc. Furthermore, some studies examined the association of neighbourhood design and level of safety using objective measures (Newman, 1981), while others examined perceptions of safety level (Hoffman, 2009). Since the present study used mixed research methods, it used both objective and subjective measures in measuring the association between neighbourhood environmental factors and safety level. Gender also influenced the relationship between neighbourhood environmental factors and safety level (Young, He, Harris, & Mabry, 2002). They found that safety concerns are common among women which deter them from having an active lifestyle. They further argued that women walked less than men because of their fear of potential victimization. Findings by Young et al. (2002), showed that despite the fact that women live in safe neighbourhoods, women do not exercise outdoor freely as traffic and personal safety are a concern for them. These feelings are heightened among the elderly; they are also concerned about all the safety categories: safety from falling, safety from crime and pedestrian safety/speedy traffic. Elderlies cannot really defend themselves; this explains their fear of being potential victims and fear of traffic/pedestrian collisions is due to the fact that traffic signals are not timed normally to consider the elderly potential slow road-crossing. Fear from falling is due to the deteriorated and poor conditions of neighbourhood walkways (King et al., 2003). Thus, safety is considered as an important aspect of aged-friendly neighbourhoods (Alley, Liebig, Pynoos, Banerjee, & Choi, 2007).

However, all categories of fear influence the elderly lifestyle. The vulnerability of elderly results in suppression of social engagement and avoidance of all outdoor activities. Although the above mentioned researchers have well proved the association between neighbourhood design and safety level they admit that safety feelings are insufficient to convince people especially the elderly to engage in outdoor physical/social activities. Therefore, policy interventions and neighbourhood design

should be enhanced to provide formal and informal surveillance to encourage outdoor activities and should be tailored to cater for the most vulnerable group such as the elderly and their needs.

2.8 Summary

A good theory should allow researchers to make statements about the phenomenon and consequently about the subject under study. Prevalence of statements signifying that the young elderly have an active lifestyle and that it is influenced by the existence of certain neighbourhood environmental factors allows the promotion of aged-friendly neighbourhoods and hence prevention/reduction of chronic diseases at an older age. The global increase in population aging makes social cohesion and physical activity as two domains explaining elderly active lifestyle important issues that have an impact on the elderly's both mental and physical health. Multi-disciplinary research attempt to provide measures that promote aged-friendly neighbourhoods and improve elderly active lifestyle and thus encourage the elderly to age in place as long as possible. Earlier active lifestyle approaches focused on the frail elderly health or on improving their socio-economic conditions, yet they did not physically improve neighbourhood conditions to meet elderly's needs of healthy aging. Recently, age-friendly neighbourhood strategies proposed by WHO (2007), provide a holistic approach that focuses on the social aspects of the neighbourhood as well as the physical environment and its manipulation in an attempt to promote active lifestyle among elderly and other age groups. The principles of aged-friendly neighbourhood have also evolved through the work of many multi-disciplinary researchers. From the urban planning perspective, there is a need to know how the patterns that are associated with age, such as health and longevity, are influenced by differences in place, socio-economic status and demographic characteristics (race, gender, and ethnicity). The urban planning

profession is concerned about the impact of the built environment on the health and urban planners' research focus on the role of spatial planning on health outcomes. However aged-friendly neighbourhood is a planning tool to promote physical activity and to enhance social cohesion as two domains explaining elderly active lifestyle with a mechanism to control neighbourhood environmental factors. Researchers have also agreed that for these aged-friendly neighbourhood strategies to be successful it need cooperation with local authorities, health committees, and elderly participation at all levels.

In summary, aged-friendly neighbourhoods that promote active lifestyle among elderly are an issue that require serious and considerable attention at local and national levels. How elderlies behave is a view point that is continually proposing solutions and Drawing various significant comments that still requires further investigations. In fact, aged-friendly neighbourhoods' strategies remain unproven for the most part. Building on the WHO (2007), model of age-friendly neighbourhood, previous aging theories and empirical studies, the researcher had identified nine neighbourhood environmental factors that influence physical activity and social cohesion as two domains explaining young elderly active lifestyle to identify determinants of aged-friendly neighbourhoods. Consequently the researcher had formulated the research objectives and questions to provide a better understanding and to enable evaluation of determinants of aged-friendly neighbourhoods.

In the next chapter, the researcher provided a review of the population aging trends and policy framework available for the elderly in Malaysia. This aimed at identifying key factors that enable answering research questions and achieving research objectives.

<center>**Chapter 3**</center>

<center>**Contextual Background**</center>

<center>**Aging Population in Malaysia: Trends and Policy Framework**</center>

3.1 Introduction

Population aging has been a phenomenon of developed industrialized countries since the early 70s, as it is believed to be the result of improved medical care and good nutrition. Researchers, for example Bengston et al. (2009), and Gardner (2011), have argued that population aging is a result of low fertility and increased longevity. However, developing countries are currently experiencing a significant increase in the percentage of its elderly population, therefore there is a growing concern in many developing countries to plan and prepare for its aging population (WHO, 2002). The challenge facing government, decision makers and planners is to prepare for the growing needs of this population. Malaysia being a fast developing country has been much concerned to adapt its government policies to meet the needs of its elderly population. This chapter reviews the population aging trends and policy framework available for the elderly in Malaysia. It provides a context in an attempt to address the research questions, identify key factors and determine the adequacy of the existing planning methods for the active elderly. The chapter is divided into three sections each with sub sections.

3.2 Background

Malaysia is one of the South-East Asian countries and covers an area of approximately 331,000 sq. km. It is made up of three parts- Peninsular Malaysia (previously known as Malaya) and occupies an area of 132, 00 sq. km; Sabah and Sarawak (East Malaysia) occupying an area of 199,000 sq. km. 80% of the population is concentrated in the

Peninsular Malaysia. Malaysia is located in the heart of the South-East Asian countries and borders to the north with Thailand, to the south with Singapore. Sabah and Sarawak are separated from the Peninsular Malaysia by the South China Sea. Sabah and Sarawak border with Indonesia to the south and Brunei Darussalam to the North-east and Federal Territory of Labuan Island (which was previously part of Sabah) to the south west of Sabah.

Malaysia is made up of 15 states. Malaysia's population is 28,402.6 in 2010 compared to 23,494.9 in 2000 giving an average annual growth rate of 2%. 91.8% of this population is Malaysians, 60.4% are Bumiputera, 22.9% are Chinese, 6.8% are Indians, 1.7% is other races and 8.2% are Non-Malaysians (Department of Statistic, 2010).

Malaysians elderly population is increasing; older people represent 7.7% of the total population. A review of the Malaysian age structure shows that the percentage of the age group 0-14 is significantly decreasing, the age group of 15-44 is increasing and the elderly age groups reveals a significant increase. This trend will continue to increase for the next coming decades; (Table 3.1) shows the increase in the elderly population.

Table 3.1: Population percentage in Major Age Group, Malaysia, 1970-1980, 1991, 2000, 2010

Age Group	1970	1980	1991	2000	2010
0-14	44.9	39.6	36.7	33.5	27.6
15-44	40.7	45.6	47.6	48.8	50.17
45-59	9.2	9.2	9.9	11.6	14.25
60-74	4.4	4.6	4.6	5.0	6.25
75^+	0.8	1.1	1.2	1.3	1.5

Source Department of Statistics, Malaysia, 2010

3.2.1 Ethnic Variations

Malaysia is a multi -racial country and is composed of three major ethnic groups, namely the Bumiputera (Malay and other indigenous groups), Chinese and Indians. The different ethnic groups show different demographic characteristics. Table 3.2 shows that the percentage of Chinese senior citizens has also increased from 8.8% in 2000 to

12.16% in 2010, representing the highest among the other ethnic groups and indicating that the Chinese population is   well into the aging process of the population. The percentage of Bumiputera senior citizens has increased significantly from 5.7% in 2000 to 8.4% in 2010 exceeding both projections of 2000 census for 2010 (6.2%) and for 2020 (8.0%). The percentage of Indian senior citizens has increased at a lower rate from 5.6% in 2000 to 7.1% in 2010. Table 3.2 shows the number and percentage of elderly by ethnic group (1991-2020).

Table 3.2: Elderly Percentage by Ethnic Group, Malaysia, 1991-2020

Ethnic Group	Percentage				Numbers (000)			
	1991	2000	2010	2020*	1991	2000	2010	2020*
Bumiputera	5.4	5.7	6,2	8.0	552.1	785.4	1,117.4	1,788.6
Chinese	7.6	8.8	12.0	16.6	349.4	473.9	784.4	1,189.0
Indians	5.4	5.6	7.4	11.6	71.1	89.5	146.5	257.3
Others	6.9	4.8	5.4	8.3	39.5	11.9	18.7	35.1
Total	6.0	6.5	7,7	10.2	1,012.1	1,360.7	2,067.0	3,270.0
Total**	5.9	6.3	7.4	9.9	1,032.3	1,398.5	2,134.8	3,439.6

Source Department of Statistics, Malaysia, 2000, 2010

*Projection   **Total includes Non-Malaysian Citizens

3.2.2 Patterns and Trends of Population in Malaysia

The phenomenon of population aging in Malaysia cast light on the impact of the fertility trends and the gradual change in the pattern of age structure and their long term implications. Table 3.3 shows that the number of elderly has increased from 54600 in the year 1970 to 1.03 million in1991 showing an increase of almost 50%. In 2000 the number of elderly was 1.3985 million showing an increase of 35% from 1991. In 2010 the number of elderly has further increased to 2.1927 showing an increase of 57%. In 2030 the number is expected to increase to 4.9 million.

Table 3.3: Past, Present and Future Trends of Elderly in Malaysia, 1960-2010

Year	Number of Elderly (000)	% of Total Population	Growth Rate	
			Elderly	Total Population
1960	386.5	4.8	-	-
1970	546.1	5.2	3.5	2.6
1980	745.2	5.7	3.1	2.3
1991	1,032.3	5.9	3.0	2.6
2000	1,398.5	6.3	3.4	2.6
2010	2,134.9	7.4	4.2	2.2
2020	3,439.6	9.9	4.8	1.9
2030	4,933.4	12.0	3.6	1.7

Source: Department of Statistics, Malaysia 2010

This aging trend is further shown in the population projection. The age pyramid shows that the older age group is increasing and that the percentage of young elderly (60-75 years) is more than the percentage of old-old (75 years and over) Figure3.1.
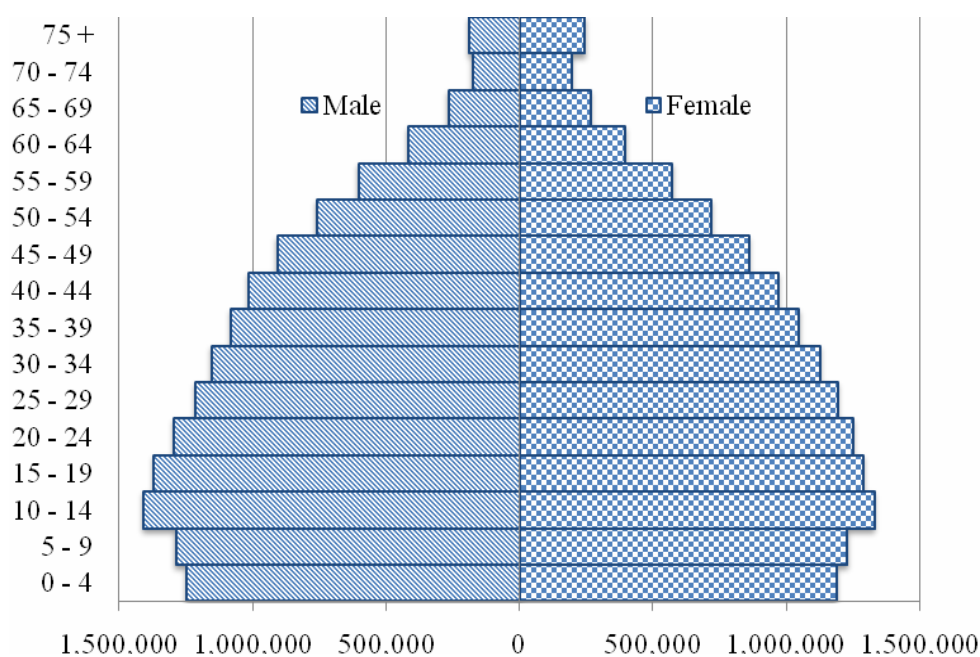
Figure 3.1: Population Pyramid by sex and age group 2010, *Population and Housing Census, Malaysia, 2010*

The present study recognizes two elderly age groups: the old-old as the frail elderly and the young elderly as the active elderly and focuses on the young elderly. As the

percentage of the young elderly is higher, there will be greater need to plan and prepare

for this segment of the population (Table 3.4).

Table 3.4: Percentage Distribution of Elderly by Ethnic Group and Age Cohorts,
Malaysia, 2000, 2010

Ethnic Group	2000		2010	
	Young-old	Old-old	Young-old	Old-old
Bumiputera	80.0	20.0	79.4	20.6
Chinese	80.9	19.1	79.3	20.7
Indians	83.0	17.1	80.1	19.8
Others	77.1	22.9	72.5	27.5
total	80.5	19.5	77.8	22.5

Source Department of Statistics, Malaysia, 2000 and 2010

Although Malaysia is not yet considered aging, the Malaysian government has

formulated the National Policy for the Senior Citizens 1995 to meet the needs of the

elderly. Unfortunately, the policy for the senior citizens covers only the old-old group

from the socio-economic perspective as dependent individuals who need social and

economic support.

3.2.3 Senior Citizens Marital Status

Marital status has a great influence on the life of older individuals as it indicates their

living arrangements and the nature of care-giving. Table 3.5 shows that widowhood is

higher among the female elderly. The trend is most likely due to higher mortality rate

among male elderly and high life expectancy among females, furthermore, remarriage

is more common among males than among females. The significant decrease in the

percentage of married elderly among both males and females reveals that there will be

more single older individuals without a spouse.

Table 3.5: Percentage Distribution of Elderly by Sex and Marital Status, 2000, & 2010.

Marital Status	2000		2010	
	Male	Female	Male	Female
Never Married	2.2	1.9	0.7	0.8
Married	85.5	49.9	85.4	49.3
Widowed	11.3	45.5	9.6	42.7
Divorced/Permanently Separated	1.0	2.7	4.3	7.2
Total	100	100	100	100

Source: Department of Statistics, 2000 and 2010

3.2.4 Urban-Rural Distribution of Elderly

According to the 1991 Population and Housing Census an urban area is the gazetted area and its adjoining built-up area (area with modern toilet facilities) that has a population of 10,000 persons and over. Through time the data on urban and rural population shows that the percentage of elderly population in rural areas is increasing progressively. Figure 3.2 shows that the urban elderly population has remained stable till1980 and has shown a significant increase in 1991, 2000 and 2010, while the proportion of elderly population in rural areas has grown significantly over the last five censuses.

The trend is due to the rural urban migration of the younger population for better job opportunities and education. The older individuals are less likely to migrate, thus their proportion is increasing in rural areas.

Year
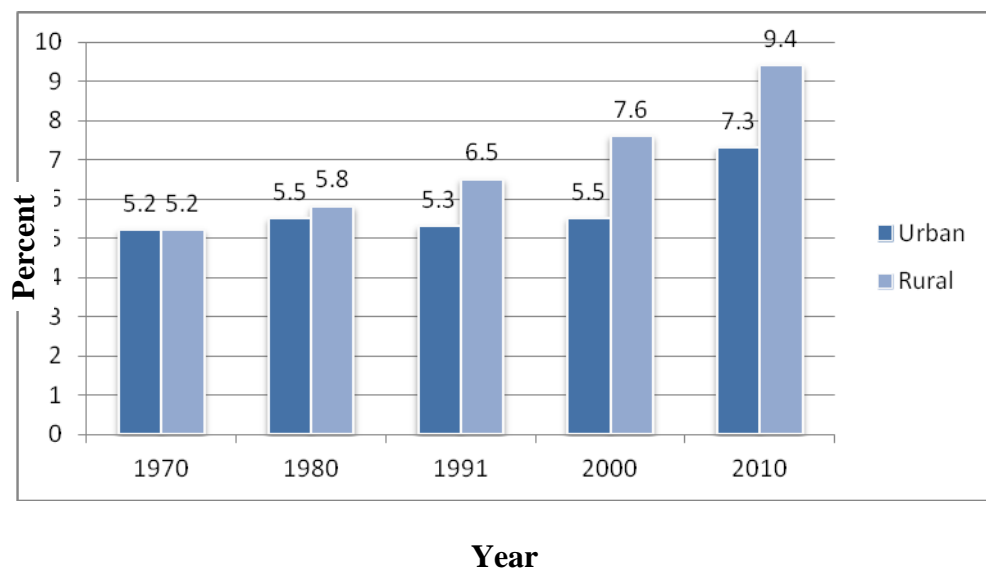
Figure 3.2: Percentage of elderly population in urban and rural areas, Malaysia, 1970-2010

3.2.5 Settlement Pattern of Elderly in Malaysia

Researchers have proven that the older individuals' residential mobility helps the government, decision makers, planners and all people in the gerontology field to prepare and plan for the future in order to provide basic amenities and services close at the hand of the elderly to help them age successfully (Antoninetti, 2008; Fobker &

Grotz, 2006). The settlement pattern of the elderly in Malaysia cannot be predicted as there is no data of older individuals' residential mobility after retirement, that is, whether the Malaysians age in place, move to another state/district, home town or travel abroad to join younger family members or friends. However, according to the Department of Statistics, Malaysia, 2010, the majority of older individuals aged 60 and over lives in Perak, but no study revealed whether these elderly are locals aging in place or grey haired migrated from another parts of the country. There is no specific information of the residential mobility of retirees or older individuals. This is a gap in knowledge identified by the study. Table 3.6 shows the distribution of older individuals in different states in Malaysia.

The spatial distribution of Elderly in Peninsular Malaysia is not uniform; of some significance is the high percentage of elderly in Kuala Lumpur and Pulau Pinang and in states of less economic effluence such as Perak and Perlis. In such places of low economic effluence, basic amenities and services will most likely put more burdens on the government to implement. This scenario might justify the high percentage of elderly in major cities with better services and facilities such as Kuala Lumpur and Pinang. However, there are some factors that influence the decision of the elderly to age in place or to move, such as the level of residential satisfaction in terms of contextual neighbourhood attributes and the personal preference. Another important factor is the ability to relocate depending on three factors such as health factors (physical and mental) - elderly move due to declined functional ability, social factors-elderly move to be near family and friends, community factors-elderly move to better amenities and to enhance quality of life (Gardner, 2011).

Table 3.6: Percentage of Elderly Distribution by State, Malaysia, 2000 and 2010

2000			2010		
State	**%**	**N(000)**	**State**	**%**	**N(000)**
Johor	5.8	120.8	Johor	8.3	278.0
Kedah	7.3	95	Kedah	9.5	184.1
Kelantan	6.6	78.4	Kelantan	8.8	135.9
Melaka	7.7	39.1	Melaka	9.7	79.4
Negeri Sembilan	6.7	46.3	Negeri Sembilan	9.0	91.9
Pahang	4.4	45.7	Pahang	8.1	122.7
Perak	7.8	146.2	Perak	11.9	280.1
Perlis	7.9	14.5	Perlis	11	25.5
Pulau Pinang	7.5	80.2	Pulau Pinang	10.2	159.2
Sabah	3.4	59.4	Sabah	4.3	138.3
Sarawak	6.1	99.8	Sarawak	8.5	211.2
Selangor	4.7	106.8	Selangor	6.1	334.1
W.P. Kuala Lumpur	4.8	54.8	W.P. Kuala Lumpur	7.6	127.4
Terengganu	5.7	43.5	Terengganu	5.9	61.6
W.P. Putrajaya	-	-	W.P. Putrajaya	1.2	8.8

Source; Department of Statistics, Malaysia, 2000 and 2010

3.2.6 Senior Citizens Economic wellness

The socio-economic data revealed by the Department of Statistics 2010, shows that there could be some factors influencing the elderly Malaysians' ability to stay in their place after retirement. The labour force participation percentage of senior citizens has increased from 23% in 2000 to 35% in 2010 showing a Dramatic increase in the proportion of employed senior citizens (Department of Statistic, 2010). Table 3.7 shows that the percentage of self-employed senior citizens has declined significantly from 68.2% in 2000 to 57.7% in 2010 for males and decreased from 61.2 in 2000 to 43.7 for females in 2010, indicating a trend towards secondary sector employment among male senior citizens, while the percentage of employed senior citizens has significantly increased from 25.6% in 2000 to 32% among males in 2010 and decreased from 27.1 in 2000 to 26.6 in 2010 among females. The percentage of those who are employers has also increased from 4.4% in 2000 to 9.2% in 2010 for males; and from 2.6 to 2.8 for females, showing a better economic independence and participation. The

percentage of unpaid family workers has decreased among male elderly and increased significantly among the female elderly with a 15.9 point increase.

Table 3.7: Percentage of Employed Senior Citizens by Employment Status and Sex, 1999, 2000, 2010

Employment status	Male			Female		
	1991	2000	2010	1991	2000	2010
Employer	4.0	4.4	9.2	1.2	2.6	2.8
Employee	21.7	25.6	32.0	16.4	27.1	26.6
Self Employed	72.7	68.2	57.7	63.1	61.2	43.7
Unpaid Family worker	1.6	1.8	1.1	19.2	9.1	27.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Department of Statistics, Malaysia 2000, 2010

3.2.7 Occupational Pattern

The occupational patterns among the senior citizens in Malaysia have changed Dramatically (Table 3.8). The trend observed is the significant decrease in the involvement of elderlies in the agricultural and fishery activities from 51% in 2000 to 37.4% in 2010. A notable increase is in "Legislators, Senior Officials and Managers" category, from 9% in 2000 to 10.2% in 2010, indicating that the senior citizens are more active in managing their own business enterprises and are wealthier. Clerical occupations do not show significant increase (1.3% in 2000 to 1.5% in 2010) showing its unpopularity among senior citizens. A significant increase is in the service and sales occupations from 11.6% in 2000 to 17.6% showing that senior citizens are likely to stay longer working than in the past decade. Professional occupations recorded increasing participation among the elderly from 1.6% in 2000 to 2.9%, also participation among the senior citizens as technicians and associate professionals (semi -professional occupations) recording an increase from 3.1% in 2000 to 5.5% in 2010 indicating that the elderly are more educated than their precedents and are contributing beyond the traditional retirement age. The percentage of elderly in elementary occupations has decreased from 11.4% in 2000 to 9.6% in 2010 showing that the

number of elderly with limited schooling is decreasing and supports the assumption that the future elderly will be more educated.

Table 3.8: Percentage Distribution of the Elderly by Occupation, Malaysia, 2000 and 2010

Occupation	2000	2010
Legislators, Senior Officials and Managers	8.9	10.2
Professionals	1.6	2.9
Technicians and Associate Professionals	3.1	5.5
Clerical Workers	1.3	1.5
Service Workers and Shop Market Sales Workers	11.6	17.6
Skilled Agricultural and Fishery Workers	51.0	37.4
Craft and Related Trades Workers	5.5	8.2
Plant and Machine-operators and Assemblers	5.5	7.2
Elementary Occupations	11.4	9.6
Total	100.0	100.0

Source Department of Statistics, Malaysia, 2000 and 2010

3.2.8 Living Arrangement

Living arrangement of elderly greatly differ among countries with different levels of developments. The most common type of living arrangements among older individuals in Asia is living with children, where 75% of the people aged 60 and over live either with their children or with their grandchildren (United Nations, 2005). However, recent research showed that there is a trend towards independent living among the elderly in Southeast Asian countries (Chan, 2005b; Teng, 2007) ; , but the pace of this changing trend is rather slow.

In Malaysia, different ethnic groups have different living arrangements for the elderly according to the different socio-economic and cultural aspects. For example, the elderly Malay live near their children and help each other but do not actually live together. Parents and children live together only incise of physical disability of the parents, indicating the support and care between old and young generations. The Chinese and Indian Malaysians, unlike the Malays, prefer to live with their children especially the unmarried ones. However, the Chinese elderly are more likely to live alone due to the desire of the children for more privacy and their parents' refusal to take complete care

of the children (Teng, 2007). Teng (2007), further argued that older individuals live with their children in urban and more developed areas; this is mainly due to the higher cost of living in urban areas than in rural areas as well as the difficulty for the elderly to navigate around safely in urban areas. This indicates that the Malaysian society is changing in terms of family structure and household and that there is a trend towards nuclear and smaller family households. Such living arrangements have implications for planning and preparing adequate services, as it shows that the role of family as the main care giver of the elderly is declining. Table 3.9 shows the continued decline in the average household size over the past four decades.

Moreover, there are some challenges to consider. First with the declining fertility, future older individuals might have fewer or no children to live with. Second, with more younger families moving abroad for work or study, the elderly chance to live with their children decreases. Thus, policies should focus on providing the necessary services and facilities for the elderly to live independently.

Table 3.9: Average Household Size, Malaysia, 1980-2010

Household Type	1980	1991	2000	2010
Average household Size	5.2	4.8	4.6	4.5
Percentage of nuclear family household	55.2	59.9	65.2	70.3

Source: Department of Statistics, 2010

Furthermore, the socio-economic factors discussed above show that there could be some factors influencing the Malaysian elderly to stay in their place of residence after retirement. First the retirement age was 56 years in 2005 and has been pushed up to 58 years in 2009 and to 60 in 2011. This means that the decision to relocate place of residence will be delayed and older individuals will be staying in their place of residence after retirement for a longer period,

The second factor is the uneven increase in housing prices among the different states in Malaysia. It is evident that the housing prices differ according to location and physical attributes (Figure 3.3). Despite the fact that Malaysian housing policies are formulated

to ensure that all Malaysians have access to affordable and adequate shelter (7th Malaysia Plan, 8th Malaysia Plan, 9th Malaysia Plan, 10th Malaysia Plan), the Housing Price Index in Malaysia shows an increase of 75% (Valuation and Property Services Department, 2010). The selling price for low-cost housing unit is RM42, 000 and below, low-medium-cost RM42, 000-RM70, 000, high medium RM70, 000-RM100, 000 and high-cost RM100, 001 and above.
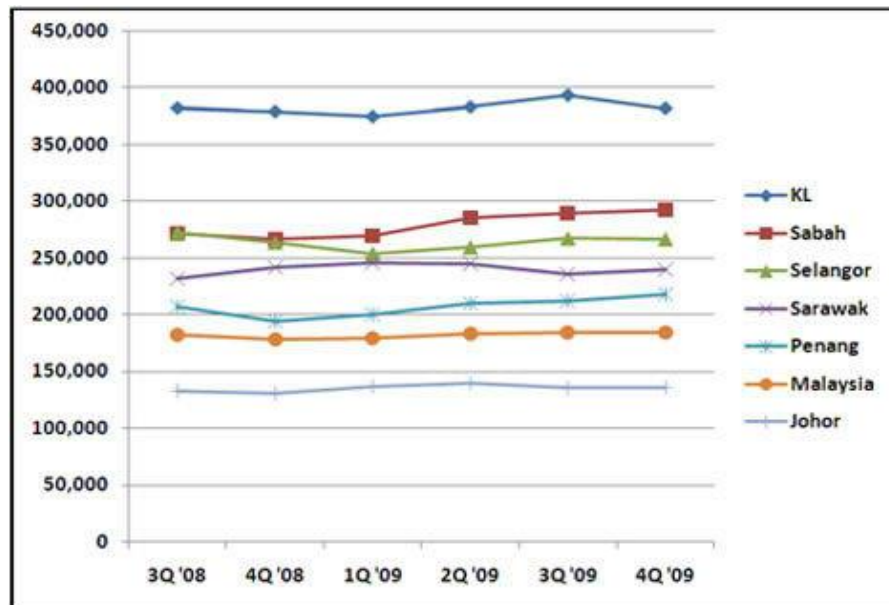
Figure 3.3: Housing Prices by State, Malaysia, 2008, 2009
Source: Valuation and Property Services Department, 2009

Housing affordability is important to ensure that older individuals have access to adequate shelter. Flavin and Yamashita (2002), argued that population growth rate, income growth rate, household formation and housing prices are among the factors that determine home ownership demand. Relatively, the Federal Territory of Kuala Lumpur exceeds Pulau Pinang in all aspects of social and economic growth. In Kuala Lumpur income growth has been quite strong and resulted in an increase in house ownership rate and made housing affordability high. The Federal Territory of Kuala Lumpur with increased population growth, high income and economic growth experience a more affordable house ownership among its population, thus supporting the argument from (Flavin & Yamashita, 2002). The average terrace house price has increased from

RM168, 189 in2009 to RM182, 129 in 2010 making an increase of 8.3%. Meanwhile, the average high rise unit price has increased from RM166, 337 in 2009 to RM170, 339 in 2010 (Valuation and Property Services Department, 2010). Furthermore, the housing prices among the different states are not equal. The Drastic difference might discourage retirees from moving to neighbourhoods with better facilities and services for the aged. In Kuala Lumpur the prices are higher; the average terrace house price has increased from RM401, 525 in 2009 to RM426, 071 in 2010 showing an increase of 6.1%. In Pulau Pinang, the prices are much lower; the average terrace house price was RM252, 167 in 2009 and has increased to RM269, 136 in 2010 making an increase of 6.8%. The high rise unit in Pulau Pinang also showed an increase of 1.5%, from RM168, 788 in2009 to RM166, 219 in 2010. Such an increase will impact the decision of the elderly to stay in their homes or relocate after retirement, some elderly might choose to stay in their residential setting as the increase furthers their ability to relocate, and others might choose to relocate due to financial ability.

Thus, the third factor influencing the decision of the elderly Malaysians to relocate could be the financial ability of the elderly to afford living in certain neighbourhoods. The economic inability might force many Malaysians to move from their present place of residence. This economic in ability also might force some elderly to move from desirable areas to less desirable areas to afford the cost of running a residence. However, Malaysians aging in place is a fact of life and most elderly might be staying in their place of residence after retirement regardless of the neighbourhood characteristics and the services provided for them as there is a lack of the well-established retirement communities.

As mentioned earlier the Malaysian culture is of care and respect to the elderly, and Malaysian elderly living independently is not an indicator that care and support are not given by the younger family members. However, the significant change in the family

structure and the increase in life expectancy require planning and preparation by the policy makers and planners to meet the needs of elderly and to help them age successfully.

3.2.9 Health Status of the Elderly

Maintaining good health is an important aspect in the elderly's life. This section discusses the functional status, self-rated health, causes of death and the lifestyle among the elderly in Malaysia to enable policy makers to identify specifically the elderly's leisure activities patterns that promote activity and reduce major chronic illness.

a) Functional Status

As people age their ability to maintain independent functions becomes a real challenge. According to the National Survey carried out by the Mental Health and Quality of Life of Older Malaysians (2002-2005), the most common functional dependency is 21.4%. The survey findings show that there is a significant difference in the functional dependency among females, the young-olds (60-75 years), non-Bumiputera, rural elderly and those without spouses (Table 3.10).

Table 3.10: Functional Status of Elderly in Malaysia

Variables	Functional Status		Chi -Square Test	
	Independent	Dependent	c	p
Sex				
Female	538	199	0.083	0.000
Male	530	92		
Missing data: 1				
Age				
Young elderly	862	163	0.256	0.000
Old old	171	85		
Oldest old	26	43		
Missing data: 10				
Ethnicity				
Non Bumipetura	250	819	0.061	0.03
Bumipetura	61	230		

Table 3.10: Continued

Stratum				
Urban	581	141	0.108	0.005
Rural	488	150		
Marital Status				
No Spouse	417	192	0.192	0.000
With Spouse	650	97		
Missing data: 4				

Source:(NHMSIII, 2006)-Mental Health Data, 2005

b) Self-rated Health

Self-rated health (SRH) is a method used to measure the overall health and is considered as a reliable predictor of morbidity and mortality (Sharifah & Aizan, 2007). An IRPA project "Problems and needs of elderly population in the community", found that 58.1% of the elderly aged 60 years and over considered themselves as having good health. Males demonstrated a better health perception than women and were found to have less medical problems, better functional status and higher life satisfaction (Sharifah & Aizan, 2007).

c) Main Causes of Death

The main cause of death among the Malaysians aged 55 years and over is due to diseases of the circulatory system (38% of the overall population), 20.7% is due to parasitic diseases, 17.56% diseases of the respiratory system and 12.8% neoplasm. Approximately 60% of the fetal heart diseases are due to physical in activity (DBKL, 2011).

d) Active lifestyle of the Elderly Population

Physical activity represents a vital component of a healthy lifestyle and is documented to be the main factor in the prevention of chronic illnesses. In Malaysia, 48.8% among the elderly aged 60 and over suffer from chronic wellness such as type2 diabetes ,

hypertension, coronary heart disease and stroke (NHMSIII, 2006; Ong et al., 2010). The National Health and Morbidity Survey showed that only 30.9% of Malaysians did exercise.

Researchers, for example, Strath et al. (2007); du Toit et al. (2007); Dill et al. (2010), have documented that there is strong and positive relationship between physical activity and healthy aging. Relatively, older individuals who are more active would possess positive perception of their neighbourhood design and are more likely to maintain active lifestyle and tend to lead healthier, happier and more satisfied lives.

Planners should focus on the elderly's needs for physical activities to promote healthy aging and sustain their wellbeing. Walkable neighbourhoods in relation to physical activity have for many years attracted the attention of urban planning profession. Providing the older population access to activities is a great challenge to policy makers and planners. Assuming that active lifestyle is influenced by the neighbourhood characteristics, planners should view aged-friendly neighbourhoods as a means to enhance and maintain the older individuals' access to activities.

In Malaysia, the highlighted fact is that the elderly lack good neighbourhood design that promotes healthy aging. Hence, the challenge facing Malaysian planners and architects is to create neighbourhoods that are aged-friendly to provide quality services and care for the aging population and thus, achieve the objectives of the Vision 2020.

3.3 Initiatives for the Elderly in Malaysia

The Malaysian government has put great efforts and formulated policies to care for its elderly welfare and has been successful at both international and national level.

At the international level Malaysia has supported and participated in many programs, conferences and seminars in response to the United Nations 18 Principles of Older Persons (resolution 46/91) and the International plan of action on aging include:

- The World assemblies on Aging Spain (2002).

- The Macao plan of Action on Aging (1999).

- The Shanghai Implementation Strategy (2002) for the region.

- 5th Asian and Pacific Conference Plan of action on Population and Poverty in Bangkok, 2002.

3.3.1 Policy Framework

At the national level, Malaysia held many conferences and seminars together the necessary information and has drawn recommendations in planning for its aging population, for example:

- The National Social Welfare Policy formulated in1990, identifying the role of families and communities as the main caregivers for the elderly.

- In1990, Malaysia has launched the Caring Society Project to discuss caring issues including issues of elderly care.

- In1992, October 1st was announced as the National Day for the Elderly in coincidence with the International Day of Older Persons.

- In1993, Malaysia has formulated the Care Centre Act to ensure that the elderly care centres and institutions are to standards and meeting the minimum requirement for elderly care.

- The National Policy for the Elderly formulated in1995 aims at:

    "To establish a society of the elderly, who are contented, dignified, possessed of a high sense of self-worth, and optimizing their potential, as well as to ensure that they enjoy all opportunities besides being given the care and protection as members of a family, society and the nation"

The policy has three objectives that included encouraging the respect for the elderly in family, society and nationwide, capitalize on the potential of the elderly to remain active and productive and the provision of the necessary facilities to care for and protect them. These objectives initiated a number of action plans and six sub-

committees (religion and training, education, health, housing, research and publicity). In line with these, several programs were started and planned. Item 6 of the Action Plan acknowledged that:

> *"Existing and future houses should include facilities suitable for the elderly to enable them to live comfortably."*

Both the National Policy for the Elderly and the Action Plan are reviewed every ten years after 2005.

- ➢ In1996, the National Advisory and Consultative Council for the Elderly (NACCE) were formed to draw recommendations to assist the government in responding effectively to the phenomenon of population aging.

- ➢ In1996, The Elderly Health Care Program was introduced by the Ministry of Health and established the National Health Council for the Elderly (NHCE).

3.3.2 Gaps in the Policy

The policy is a good step in considering the changing demographics in Malaysia and is a milestone in providing care and meeting the needs for the frail elderly resulting in15 day care centers built throughout the country. Nevertheless, there are some gaps;

- The action plans do not cover adequately the housing needs for the young elderly (active elderly aged 60-75).

- The policy emphasizes on social aspects and provisions for the frail elderly and is wedded to theories of how to care for them and not to how the present situation of the elderly is and in the process denied the housing needs of the active elderly.

- The elderly active lifestyle is mentioned in objective 1 in the Health Care Program for the Elderly and not in the housing program:

> *"To improve the health of older persons to enable them to lead and enjoy full and active lives through primitive and preventive health care"*

3.3.3 The Ninth Malaysia Plan (2006-2010)

The plan has taken different strategic measures to create a more balanced regional development. Among the planned strategies that are related to the elderly: improve the urban services quality, accelerate the pace of development in rural areas and provide low and medium income housing to improve the quality of life of Malaysian citizens. The plan offers a promise of concern for the elderly; nevertheless, the highlighted evidence is that the young elderly (recent retirees) lack neighbourhood design that promotes active lifestyle and hence healthy aging.

3.3.4 The Tenth Malaysia Plan (10MP, 2011-2015)

The Tenth Malaysia Plan was tabled in June 2010 and introduces the programs needed to achieve the vision 2020 objectives, aiming at making Malaysia a developed and competitive country. The plan is based on ten concepts further interpreted into ten main premises. To achieve these concepts, five key strategic thrusts are identified, the fifth thrust relates to planning for the elderly. The fifth thrust states:

> *"Building an environment that enhances quality of life"*

This includes measures to ensure that the elderly will stay active, productive and healthy as they age. The programs will focus on:

- ➢ Enhancing aged-friendly infrastructure.
- ➢ Improving access to affordable health care.
- ➢ Ensuring provision of adequate housing.
- ➢ Improving financial security.
- ➢ Improving employment opportunities.

The programs aim at involving the senior citizens in both social and economic activities by covering different domains that include transport, healthcare, housing, financial security and work participation.

The government seems to be committed to promoting healthy aging. The plans provide the broad framework for preparing and planning for the aging population and emphasis should be on the implementation mechanisms that ensure fulfilment of the objectives of the plans. Proper and continuous monitoring of services and activities is of equal importance to put the plans in place.

3.4 Summary

The purpose of the contextual background is to review the population aging trends in Malaysia and to discuss the policy framework available for the elderly. The overall trends of senior citizens in Malaysia show an ever increasing aging population that will grow at a quicker pace over the coming decades. As the Malaysian population has aged it is vitally important to consider the consequences of the older population on public policy. States with more concentration of elderly population will require different policy and planning requirements than states with less concentration of elderly population. Similarly, states with high percentage of elderly have implications for age structure and the social and health benefits provided by the government. The review has also identified important gaps in knowledge; the first gap is the lack of data regarding the residential mobility of the elderly at retirement age. The second gap is the linkage between elderly residential mobility and the occurrence of life events (retirement) and health events (declined functional ability). The review also identified the gaps in the National Policy for the elderly; the first gap is the in adequate coverage of active elderly housing needs. The second gap is the focus on social aspects and provisions for the frail elderly and negligence of the young elderly's needs. The third gap is the emphasis on health programs to promote healthy aging rather than neighbourhood planning and design.

The initiatives introduced by the government in addressing the needs of the aging population have been very successful for the frail elderly. A comprehensive planning of aged-friendly neighbourhoods is required to address the increasing needs of healthy aging among the elderly. A key factor is the effective management of the programs to implement the plans to improve outcome. Malaysia still has time to plan and prepare for its grey population and has a big chance to learn from other countries experiences in dealing with elderly issues.

Thus, there is a need to fill up the gaps in knowledge and policy so that the future policy is formulated on the young elderly or active elderly. Studies that examine the neighbourhood factors that would encourage the older people to go out and navigate safely in their area and promotes active lifestyle are needed. Such studies would help in developing a model that addresses the older active lifestyle in neighbourhoods. The next chapter presents the methodology employed to identify determinants of aged-friendly neighbourhoods.

Chapter 4

Methodology

4.1 Introduction

The purpose of the study is to investigate whether neighbourhood environmental factors have an impact on young elderly active lifestyle to identify determinants of aged-friendly neighbourhoods, through personal experience with regard to physical activity and social cohesion depending on social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety.

The study has adopted a triangulation approach to answer the research questions and achieve the research objectives. The triangulation approach included combining information from both quantitative and qualitative methods. This involves two stages; the first stage employed a quantitative approach that involved the use of a structured questionnaire and personal observation of the neighbourhood environmental factors. The second stage employed a qualitative approach; semi-structured interviews were conducted with purposively selected participants who showed an understanding of active lifestyle as influenced by neighbourhood environmental factors during the questionnaire survey, from the two neighbourhoods in addition to interviews with officials in the planning and design fields. The purpose of the qualitative approach is to clarify issues that emerge from the fieldwork during the first stage. The study focus moved slowly from inferential statistics towards gathering rich qualitative data based on the elderly own experience and the officials words.

The chapter is organized according to the methodological approach sequence. Thus, the chapter starts by describing the approaches used, followed by a description of the research tools and measures used for measuring the elderly active lifestyle. Evaluation

of the measurements, survey procedures and data analysis techniques are also discussed. The chapter also further discusses issues on ethical concerns.

4.2 Mixed Method

Theory-based research consists of two main approaches deduction (quantitative) and induction (qualitative) approaches. A deductive approach is an approach in which the researcher develops theory, hypothesizes and designs a research strategy to measure the hypothesis developed. An inductive research is one in which the researcher collects data and develops a theory as a result of data analysis (Collis & Hussey, 2003; Creswell & Maietta, 2002; Saunders, Lewis, & Thornhill, 2009). Table 4.1 presents some of the main differences between deduction (quantitative) and induction (qualitative) approaches.

Table 4.1 Major Differences between Deductive and Inductive Approaches to Research

Deduction emphasis	Induction emphasis
Scientific principles Moving from theory to data	Gaining an understanding of the meanings humans attach to events
The need to explain casual relationships between variables	A close understanding of the research context
The collection of quantitative data	The collection of qualitative data
The application of controls to ensure validity of data. The operationalization of concepts to ensure clarity of definition A highly structured approach	A more flexible structure to permit changes of research emphasis as the research progresses
Researcher independence of what is being researched	A realisation that i is part of the research process
The necessity to select samples of sufficient size in order to generalise conclusions	Less concern with the need to generalize

Source; Saunders et al. (2009)

The study aims at understanding the young elderly active lifestyle from the facilities and constraints provided by the neighbourhood environmental factors and the social structure of the urban setting and equally from the young elderly perception of their physical and social environment to identify determinants of aged-friendly neighbourhoods. As mentioned earlier in Chapter One, the neighbourhood

environmental characteristics and personal characteristics determine how the person-environment relationship should be analysed. This study is designed around two interrelated explorations; the first includes a socio-physical analysis of the spaces examined that employs a structured questionnaire and is supported by fieldwork observation (quantitative/Deductive method). The second explores the actual experience of the active lifestyle lived by the young elderly to enable capturing their experience in the selected urban environments through their own verbal description (qualitative/Inductive method). Data collected from both methods were used to discuss further and clarify topics relevant to elderly active lifestyle with interviewees. Therefore, the research components were designed to connect the description of the elderly personal experience to real life through the analysis of the physical environment. Thus, the purpose of the mixed method is to create a more comprehensive and integrated form of physical-environment analysis. Such approach will provide an understanding from the activities of its residents as well as understanding of the elderly needs from the facilities and constraints provided by the built environment.

4.2.1 Reasons for Choosing a Mixed-method

Combining both quantitative and qualitative methods of data collection provides a focus towards both objective and subjective elements that explain the subjective relationship with places and how they are examined by individuals in their contexts. As (Creswell, Polano Clark, Gutmann, & Hanson, 2003; Hakim, 2000 ; Robson, 2002) and have argued neither approach is more correct nor weighs more than the other. The two approaches complement each other to provide a consistent bigger picture of what they are measuring.

Quantitative and qualitative research approaches are viewed as providing 'macro' and 'micro' levels perspective of the social world (Dooley, 2001; Gilbert, 2005). At the

macro level, a quantitative approach provides a valid and reliable method of data collection which can be statistically analysed to explain how the social world works. At the micro level, a qualitative approach collects data from individuals or groups to examine problems in some detail (Neuman, 2005; Saunders et al., 2009). Quantitative and qualitative methods parallel positivism and constructionism philosophical orientations of research methods.

The two methods are identical in two respects. The first one is that both methods are built on empirical reality; second both agree that social research requires a systematic adherence to specific rules and procedures (Easterby-Smith et al., 2008). Therefore, the researcher chose a mixed method for the following reasons:

1. A mixed method highlights different perspectives and dimensions of social problems (Creswell, Hanson, Vicki, Plano, & Alejandro, 2007; Creswell et al., 2003).

2. A mixed method approach is particularly effective in policy-oriented research and contributes to policy evaluation (Gilbert, 2005).

3. The quantitative approach provides an estimate of the prevalence and types of the various types of a social problem and identifies individuals and groups who are most likely to experience the problem. On the other hand, the qualitative approach describes the actual impact the problem has on individuals. The data collected from both approaches can help policy makers to evaluate current policies and plan future services.

However, both methods should be viewed as points of emphasis rather than opposed points (Creswell et al., 2007). Table 4.2 shows the points of emphasis and commonality of the mixed methods used by the researcher.

Table 4.2 Points of Emphasis and Commonality between Quantitative and Qualitative Methods

	Quantitative method	**Qualitative Method**	**Common Themes**
Theoretical stance on elderly active lifestyle	How can we use objective research methods to capture the essence of elderly active lifestyle?	How elderly active lifestyle is socially constructed?	Importance of empirical data
Research Aim	What are the neighbourhood environmental factors that explain the causes of elderly active lifestyle?	How do cultural and situational variations shape elderly active lifestyle?	Production of knowledge
Enduring Question	How can we use the research finding to improve the elderly active lifestyle?	What are the practical consequences of the research?	Internal variations and logical inconsistencies

Source; adapted from (Silverman, 2000)

4.2.2 The Quantitative Approach

A quantitative approach is a deductive approach which owes more to positivism research philosophy. It is the most common approach used in social science and involves the employment of standardized procedures in representing constructs in numerical forms (Dooley, 2001; Gilbert, 2005). It belongs to the school of thought that believes that knowledge is obtained from inferential statistics and direct observation.

A quantitative approach is one in which the researcher develops a conceptual framework which is subsequently tested using data. It explains the casual relationship between the variables. An important characteristic of quantitative approach is that it enables the researcher to generalize by selecting a suitable sample size and hence make inferences about the subject matter and therefore allows laws as a basis for explanation to be controlled (Collis & Hussey, 2003). Marvasti (2004), defines qualitative approach as;

> "....involves the use of methodological techniques that represent the human experience in numerical categories" (Marvasti, 2004, p. 7)

According to Robson (2002), quantitative research proceeds through the following sequential stages:

1. Deducing a hypothesis from a theory.

2. Indicating how variables are to be measured.

3. Testing the hypothesis.

4. Examining the outcome (accepting/rejecting the hypothesis).

5. Modifying the theory according to the findings.

The present study adopts a quantitative approach to look at the patterns and relationships of the young elderly active lifestyle and express them numerically. The study used descriptive statistics to describe the behavioural patterns of the elderly, additionally; inferential statistics was used to enable generalisation of the findings from the sample to the population under study. Sampling selection will be discussed in more detail in the survey procedures section.

4.2.3 The Qualitative Approach

Inductive approach involves exploring the data to develop theories from them that will subsequently be related to the literature. It describes in detail and analyses the quality of human experience (Gilbert, 2005; Marvasti, 2004).

A qualitative research is a research that is based on field observations and is analysed without using numbers. It is based on descriptive data; this means that under a qualitative research words are used to express words rather than words are used to express numbers like in the case of quantitative research. In contrast to quantitative approach, a qualitative approach seeks to build up theory rather than test it. This helps in filling the gaps in the existing theory.

Although the questionnaire is a useful method for collecting data, it might be better to use another method such as in-depth interviews to complement the questionnaire and

give a deeper understanding of the subject under study to enable the researcher to further explore the issues. Therefore, in representing the qualitative research, the researcher used a thematically organized style with sections each representing a different concept.

The main purpose of the qualitative method in this research is to extract the changing dimension of involvement and relationship with the outdoor environment of everyday life from the personal experiences of the young elderly living in different urban settings. According to the continuity theory mentioned earlier in Chapter Two, this evolution would follow transformation patterns to uphold modes of habitudinal behaviour. The study theoretical framework hypothesized the interaction between the young elderly active lifestyle and their environment. This could be defined as the socio-physical transformation construct that involve both persons and characteristics of the residential neighbourhood in which they live. Based on this assumption, the contextual experiences description must be collected through personal and direct interactions between the subject and the interviewer. Therefore, the task of the researcher was to capture the thoughts and actions dynamics of the young elderly within the opportunities and constraints of their neighbourhood.

It is worth noting that although residential areas in neighbourhoods are usually designed with fixed physical characteristics, the lives of its residents change either by necessity (health decline) or choice (lifestyle), (Antoninetti, 2008). These changes necessitate that residents respond, especially in older age, to be able to maintain a positive perception of a stable quality of life. Such assumption impacted the design of the research. Thus, the researcher has formulated five strategies that enabled answering the research questions:

1. The aim of the research is to identify the needs of the young elderly. In order to achieve this, the researcher employed a strategy to investigate the spatial issues

by focusing on daily activities at familiar places (Why were the young elderly encouraged to go out?).

2. The second strategy was to follow considering these places as containing human involvement (social participation) and activities, thus, investigate the relationship between man and environment (What sort of activities encouraged the young elderly to go out?).

3. The third strategy was to link the personal lifestyle to the nature of transformation of the aging bodies (how do needs changes through time as young elderly age?).

4. The fourth strategy was to address the existing connection between the individuals' personal experiences and their immediate surroundings where these experiences occurred (how the young elderly perceived their environment?).

5. The fifth strategy was to communicate the results by emphasized description rather than explanation, to enable involvement of new ideas rather than explain existing ones.

Based on the five strategies, phenomenological interviewing was conducted as it provides description of the meaning and essence of the elderly lifestyle, in other words, it explores their essential experience. Phenomenology focuses more on understanding than on explanation by using interpretive approach to knowledge (Marshall & Rossman, 2006). The phenomenological approach will be discussed in more detail under the section of the methods of data collection in this chapter. Table 4.3 shows the procedures of data collection of the qualitative approach.

Table 4.3 Log of data gathering activities

Place	Activity	Who	What
KL/Ipoh	Observation/ interviews	Residents of Tmn Tun/ Tmn Meru.	Seeing how the young elderly move around the neighbourhood/perception of their neighbourhoods
KL/Ipoh	interviews	Elites	Strategies for aged friendly neighbourhoods
KL/Ipoh	interviews	Stakeholders	Challenges/supports

4.3 Methods of Data Collection

Data for the study were collected from both primary and secondary sources. Data from primary sources were collected from the survey questionnaire, phenomenological interviews and observation. Data from secondary sources were collected from local authorities.

4.3.1 The Survey Questionnaire

The most important part of research was the development of the questions that would collect the relevant and valuable data that would answer the research questions and meet its objectives. Questionnaires represent popular ways of conducting research and gathering data from a large number of a target population, either by means of post, telephone or face-to-face interviews. Questionnaires include all data collection techniques in which people are asked to respond to exactly the same set of questions. There are two main types of questionnaires-the first type is the self-administered questionnaire and the second type is the interviewer-administered questionnaire. In the self-administered questionnaire the questions are completed by the respondents, this could either be through internet/intranet mediated questionnaires administered electronically, postal questionnaires where questions are posted to respondents and delivery and collected questionnaires, where questionnaires are delivered by hand to respondents and collected later (Figure 4.1).

Questionnaire

Self-administered · Interviewer-administered

Internet and intranet-mediated questionnaires · Postal questionnaires · Delivery and collection questionnaires · Telephone questionnaires · Structured interviews
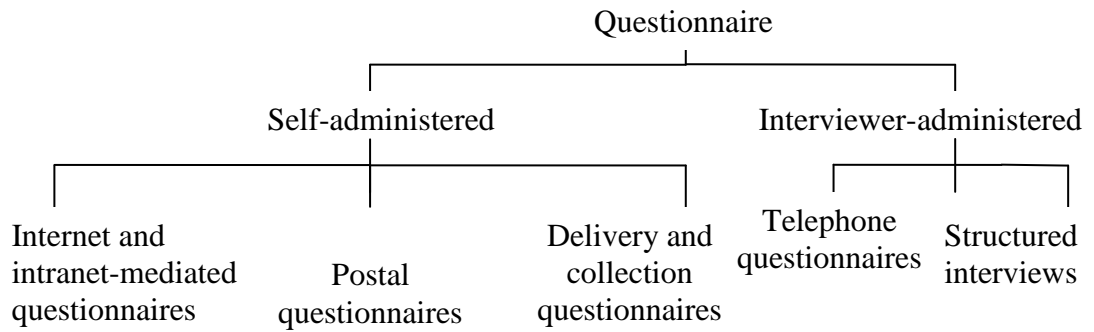
Figure 4.1 Types of Questionnaires
Source: Saunders et al. (2009, p. 363)

4.3.2 Choice of a Questionnaire Type

Choosing a method of questioning is determined by the subject matter of the research. Thus, the researcher needs to know about 'what constitutes young elderly active lifestyle?' (i.e. identify what is meant by active lifestyle and ways to measure the concept), 'who are the active young elderly?' (i.e. focus on particular age group-young elderly), 'where do they reside?'(i.e. select areas with highest elderly population), 'when does active lifestyle occur?' (i.e. is it part of everyday life, how regular and for what length of time?), 'how do they stay active?' (i.e. examine the behavioural pattern of active lifestyle, explore ways in which the neighbourhood design influences their active lifestyle), and 'why it occurs in some areas and not others?'(i.e. the main purpose of the study- to identify the neighbourhood environmental factors that promote active lifestyle to identify determinants of aged-friendly neighbourhoods).

However, there are several factors influencing the choice of questionnaire type, such as:

❖ Characteristics of the respondents.

❖ Importance of reaching a specific respondent.

❖ Sample size.

❖ Types and number of questions.

❖ Time available to complete data collection.

❖ Field workers and interviewers available to help.

❖ Ease of conducting data entry.

Based on the above mentioned factors, the researcher has chosen to administer a face-to-face questionnaire. The advantages of this type of questionnaire are that it maximizes trust and cooperation between the researcher and the respondents, decreases refusal and ensures high response rate, allows the researcher to question on more friendly topics and includes respondents with limited access to internet or limited ability to read. The disadvantages of this type of questionnaire are the high cost of transportation and more time involved, as the researcher has to make more frequent visits to find the respondents at home (Bell, 2005; Cooper & Schindler, 2008).

4.3.3 Criteria for Selecting the Respondents

Respondents are selected to meet the following criteria;

1. Age 45^{+} and less than 75 as the study focus is the young elderly.

2. Have lived in the area for more than one year as it takes time for certain variables to develop (Handy et al., 2008), such as social cohesion and social interaction. Therefore, a period of one year is thought to be adequate to develop social cohesion and residents who have lived for less than one year are excluded from the study.

3. Have not been admitted to a nursing facility before.

4.3.4 Main Survey

The questionnaire reflects the local situation of the elderly active lifestyle and the main issues to be addressed. The researcher has employed five items to measure each construct in order to obtain measurement reliability. To avoid lengthy questionnaires that might influence cooperation, the researcher divided the

questionnaire into four sections. The first section includes two active lifestyle attitude variables, each consisting of five items and based on five-point Likert format. The second section includes seven questions each consisting of five items about the elderly active lifestyle in the study area facilitated or obstructed by the neighbourhood design. These questions are based on a five-point Likert format. The third section included the background information of the respondents. These are placed at the end of questioning to ensure cooperation in the crucial early stage; respondents might refuse to answer if personal questions are placed at the beginning of the questionnaire (Dooley, 2001; Saunders et al., 2009). The fourth section focuses on the area and included an observation sheet measuring the neighbourhood environmental factors that might have impacted the elderly active lifestyle, such as the housing conditions, lighting and facilities. This last section was completed by the researcher. Table 4.4 shows the structure of the questionnaire.

Table 4.4: The Structure of the Questionnaire

Section	Variables	Number of Items	Scale	Source
A	Elderly Active lifestyle 1- Physical Activity 2-Social cohesion	 5 5	 5 pt. Liker format 5 pt. Likert format	(Handy et al., 2006); (Chan, To, & Chan, 2006)
B	Neighbourhood Environmental factors 1-Social interaction 2-Walking 3-Facilitators to walking. 4-Barriers to walking 5- Convenience 6- Accessibility 7- Permeability 8- Maintenance 9- safety	 5 5 5 5 5 5 5 5	5 pt. Likert format 5 pt. Likert format 5 pt. Likert format 5 pt. Likert format 5 pt. Likert format 5 pt. Likert format 5 pt. Likert format 5 pt. Likert format 5 pt. Likert format	(Chan et al., 2006), (Ewing & Handy, 2009) (Ewing & Handy, 2009) NEWS-A (2007) (Ewing & Handy, 2009) (Oluseyi, 2006); (Osmond, 2005), NEWS-A (2007)
C	Demographics	15	Categorical	Researcher (Standards)
D	Check-list	17	1-5	Researcher (Standards)

4.3.5 Observation

Observation is a research aspect that adds to the richness of the research. It involves observing, recording, describing, analysing and interpreting people's behaviour (Lees, 2007; Robson, 2002). There are two types of observation–participant observation and structured observation. Participant observation is qualitative in nature and emphasizes on describing the meanings attached to people's actions. Structured observation is quantitative and is concerned with the actions frequency (Brannick & Coghlan, 2007; Gill & Johnson, 2002).

The researcher did not employ observation in the above forms because the research was conducted in two geographical locations and it is rather difficult to be in the research setting to observe the actions taking place, and collecting data in the forms mentioned is slow and expensive (Marvasti, 2004; Saunders et al., 2009). Rather, the researcher used observation in the form of an observation sheet (Saunders et al., 2009), recording the existence of the neighbourhood environmental factors that might have promoted the elderly active lifestyle to identify determinants of aged-friendly neighbourhoods. The observational data were combined with the survey questionnaire data to provide an explanatory picture of the elderly active lifestyle.

4.3.6 Phenomenology

The study aimed at discovering the elderly's attitude towards active lifestyle. As already mentioned, the quantitative method provides the necessary measures for representing and spatially analysing the urban environment. However, the questionnaire has to be complemented by in-depth interviews to understand and explore these attitudes. In conducting the interviews the researcher was interested in understanding the elderly activities from their subjective opinion. This focus on the subjective opinion is called phenomenology. It is a technique that describes a social group from their own

point of view of lived experience (Dooley, 2001; Saunders et al., 2009). It includes four principles according to Moustakas (1994); Creswell et al. (2007):

1. Intention-identifying a phenomenon to study.

2. Description-understanding the world of the research subjects from their point of view and lived experience.

3. Reduction-collapsing the information to significant quotes or statements and setting aside unexplained assumptions.

4. Essence-coding the data into themes and then analysing it to unveil the central message 'essence' of the experience.

a) Justification for Choosing Phenomenology

Choosing the appropriate qualitative approach to answer the research question is a rather difficult decision. Creswell et al. (2007), argued that such a decision assumes a philosophy linked to the research epistemology and methodology, as well as has an impact on the research design and management.

The quantitative approach established two parameters that provided opportunities and limits for deciding about the appropriate qualitative approach. First, the study is interested in providing a deep understanding of the personal experience of the young elderly. Therefore, focusing on the elderly everyday activity contributed to shaping their personal experience. Second, is to consider the spaces where these activities took place, i.e. the person-environment relationship.

Creswell et al. (2007), explained five approaches to research design: biography, grounded theory, ethnography, case study and phenomenology. In relation to the present study the researcher thought that the phenomenological approach addresses the subjective nature of the young elderly real life as it engages their own experience and exposes the spatial relationship between them and their neighbourhood. It also highlights the importance of individual experience and focused on describing the

dynamic relationship between subjects and places (Antoninetti, 2008; Creswell et al., 2007; Creswell & Maietta, 2002). These places are often planned with disregard to the needs of individuals as they age.

The main method of understanding and accessing a social phenomenon is by describing it in the individuals' own words and lived experience (Creswell et al., 2007). Similarly, the personal point of view and the lived experience of the young elderly obtained from in-depth interviews provide a deep understanding of the spatial relationship between the young elderly and their neighbourhood, thus, a phenomenological approach uncovers the underlying essence of their active lifestyle and enables identification of determinants of aged-friendly neighbourhoods.

4.4 Sampling

In a phenomenological research the participants represent knowledgeable informants who discuss their lived experience with the researcher and are quite aware of the purpose of the research. These participants must be capable of sharing their lived experience with the researcher and contribute equally to the study. The study participants were purposely chosen to meet the following criteria:

1. Participants are to be 60^+ and less than 75 years old and are able to communicate their experience.

2. Participants are to be living in the study areas for more than one year.

3. Participants freely chose to participate and share their experience.

4. Participants have to be able to communicate in English in order to share their experience and views with the researcher.

4.4.1 Selection Procedure

The potential study participants were selected from two neighbourhoods: Taman Meru residential area in Ipoh- Perak and Taman Tun Dr Ismail (TTDI) residential area in W.P. Kuala Lumpur. (Polkinghorne, 1989), recommends 5-25 persons to develop the possibilities of the experience. According to Creswell (1998), and Boyd (2001), a sample size of ten participants is considered sufficient for a phenomenological study. However, according to Saunders et al. (2009), in qualitative research generalisations are not about a population rather they are made to theory and therefore, researchers may continue to conduct interviews until data-saturation is reached. Thus, the researcher has decided to conduct interviews until the saturation level was reached, i.e. where more interviews no more add to the knowledge that result from the interviews or provided more insights. This resulted in seven participants from TTDI neighbourhood and five participants from Taman Meru. An explanatory letter and a consent form were distributed to the potential participants. The participants who were interested to take part in the study were asked to contact the researcher to set an appointment to conduct the interview at the time and place most convenient to them. The interview took about 30 minutes-1hour.

4.4.2 Locating Participants from Local Authorities

Interviews with officials provided opportunities to address issues that have emerged during the field survey and residents' interview. This approach has the advantage of having triangulation and faulty misunderstanding become clear in the contrast of the different viewpoints. Therefore, the researcher looked for those who have experiences related to the elderly active lifestyles. Planning department managers, senior planners and architects were identified as people who are concerned with elderly issues and hold some responsibility for promoting aged-friendly neighbourhoods. Interviews were

arranged with these managers. Additional participants were involved using snowball sampling (Neuman, 2005; Saunders et al., 2009), where participants were asked to recommend other individuals who are co-responsible for aged-friendly neighbourhoods for interviewing. Participants were asked to choose between two forms of sharing their experience: taped conversation interview and formally written responses (Creswell et al., 2007; Saunders, Lewis, & Thornhill, 2007).

4.4.3 Data Collection

Phenomenology emphasizes that social facts are only recognizable because of what they mean to members of the society (Creswell et al., 2007), therefore, researchers are expected to understand a social phenomenon from the point of view of the social group of interest rather than testing the hypothesis.

The study is interested to understand why some young elderly are active while others are not. Active lifestyle seems to be significant in relation to social cohesion and physical activity. Unlike in a mono-method study, it is difficult to formulate research questions in a mixed –method because questions have to be formed within the same inquiry. Therefore, from the literature review the researcher could extract the following questions that could be used in both approaches:

1. What do elderly understand by active lifestyle?

2. What is the extent to which active lifestyle meet their needs for healthy aging?

3. What sort of support do they get from the physical environment?

4. What are the services the elderly feel that the physical environment should be providing for them to remain active?

Based on the above questions, the researcher has set a list of themes that reflect the variables to be studied and needed to be explored. Therefore, the themes were organized with the following topics:

Theme 1: Elderly active lifestyle:

This is where the analysis of active lifestyle started as explained by social cohesion and physical activity. The participants were asked to answer four related questions:

1. What does active lifestyle mean to you?

2. What are the things you do to stay active?

3. What is your daily routine activity?

4. What are the benefits of staying active in your opinion?

Theme 2: Issues related to active lifestyle of the elderly:

This where the issues were identified in relation to the following variables of interest:

Issue 1: Neighbourhood perception (accessibility and permeability); two questions were asked:

1. How easy would you navigate in your area?

2. How would you rate the level of isolation of your neighbourhood?

Issue 2: Neighbourhood satisfaction (convenience), one question was asked:

1. Could you please describe the services and amenities provided by the neighbourhood that have provided opportunities for elderly to meet/ interact and perform physical activities?

Issue 3: Residents' satisfaction, this includes sub-heading to further elaborate on the concept, three questions were asked:

1. Trust in people (social interaction): How do you maintain close relationship with your neighbours?

2. Concerns about leaving home (safety): How do you view your neighbourhood safety? Do you feel safe to go out at any time?

3. Concerns about neighbourhood conditions (maintenance): Do you possess any fear of falling due to bad walkways conditions?

Theme 3: Barriers and facilitators to active lifestyle:

This involves more exploration of the neighbourhood environmental factors that are responsible for promoting elderly active lifestyle. Three questions were asked, the variable of interest for the first two questions is walking and for the third question the variable of interest is management:

1. In your opinion what are the facilitators to physical activity in its simplest form 'walking'?

2. In your opinion what are the barriers to physical activity in its simplest form 'walking'?

3. Is there any program in your neighbourhood that helps you stay active?

4.4.4 Content Analysis

Establishing the meaning for the interview documents involved arriving at a deeper understanding by a form of interpretative understanding or structured analysis. Dooley (2001), argued that understanding the surface message of a document is difficult because language use differs between the various groups and cultures. Content analysis provides a good overview of the subject matter under study as it gives structure to the research. It categorizes variables in a specific manner to see them separately and weighs them equally (Gilbert, 2005). The questions were coded to reduce the data into analytical categories for analysis. Content analysis is defined as:

> *"....methods that count occurrence of selected lexical (related to words) features in samples of text or speech" (Dooley, 2001, p. 105)*

Therefore, the researcher asked questions that represent important themes to the study and could be measured with variables. The questions were coded to identify key variables. The answers to these questions were sought through quantification by content analysis, where the importance of each topic was measured by the number of times it is mentioned. Moreover, to further test the internal validity of the findings, the

researcher asked a question "Would second readers of the phenomenological data explication be able to identify the phenomenon only by having read through the report?" This question remained unanswered until the researcher summarised the data explication and presented it to a senior lecturer and four other colleagues. All their reports were positive.

4.5 The Questionnaire Survey

The research was conducted to cast light on the elderly active lifestyle provided by aged-friendly neighbourhoods. Aged-friendly neighbourhoods identify environmental factors that assist older individuals to remain both socially and physically active as they age. Elderly active lifestyle is promoted by enhancing social cohesion and promoting physical activity (Table 4.5). These included promoting social interaction (Fisher, Li, Michael, & Cleveland, 2004; Glanz, 2011), encouraging walking (Black & Macinko, 2008; Glanz, 2011; Saelens et al., 2003; Sallis & Owen, 2002; Takano et al., 2002), enhancing accessibility (Bowling, 2005), and (Aspinall et al., 2010), improving permeability (Lee & King, 2003), satisfying the residents with their residences and neighbourhood facilities (convenience) (Gauvin et al., 2008; Satariano, 2010; Takano et al., 2002), decreasing concerns about falling due to bad walkway conditions (maintenance) (Aspinall et al., 2010) and decreasing concerns about leaving home due to fear of crime (safety) (Mendes et al., 2009). (Table 4.6) shows measures and items of the independent variables.

Table 4.5: Dependent Variables

Dependent variables	Items to measure dependent variables
Social cohesion is a measure of attitudes towards social relations and participations (Chan et al., 2006).	1. Maintaining close relations with old neighbours and existing social group. 2. Making new friends in the community 3. Contribution to local community work 4. Positive perception of the neighbourhood. 5. Neighbourhood design as enhancing social relations.

Table 4.5 (continued)

Physical Activity is a measure of how physically active the elderly are within the neighbourhood in relation to the neighbourhood environmental factors as encouraging or discouraging physical activity (Handy et al., 2008).	1. Conditions of sidewalks. 2. Conditions of Parks. 3. Neighbourhood programs. 4. Efficiency of public transport. 5. Proximity of Locations

Table 4.6: Independent Variables Examined against Elderly Active Lifestyle

Independent variables	Items to measure independent variables
Social interaction (Oluseyi, 2006); (Lund, 2009), is a measure of how neighbours interact within their neighbourhood.	1. Neighbourhood watch group. 2. Knowing neighbours. 3. Visiting neighbours. 4. Trusting neighbours. 5. All
Walking (Ewing & Handy, 2009) is a measure of how often people walk, i.e. the frequency of walking within the neighbourhood.	1. Never go for a walk. 2. Rarely go for a walk. 3. Sometimes go for a walk. 4. Often go for a walk. 5. Every day go for a walk
Facilitator to walking is a measure of the factors that encourage people to walk (Ewing (Ewing & Handy, 2009).	1. More choice interconnected streets. 2. Shorter distances to destinations. 3. Well-connected pedestrian walkways. 4. Safe crossing. 5. No fear of potential victimization
Physical barrier to walking is a measure of the factors that deters people from walking (Ewing & Handy, 2009).	1. Lack of walkways. 2. Poor conditions of walkways. 3. Lack of shading paths. 4. Lack of kerb cuts. 5. Lack of street benches
Convenience (Ewing & Handy, 2009); (Strath et al., 2012) is a measure of residents' satisfaction with the housing cost, services provided, attractive scenes, incentives to move around.	1. Affordable housing. 2. Adequate services. 3. Street furniture. 4. Adequate public transport. 5. Mix use neighbourhood
Accessibility (Alfonzo et al., 2008) and (Aspinall et al., 2010) is a measure of distance travelled from home to basic amenities and safe navigation in the neighbourhood	1. Access to and within the neighbourhood. 2. Connectivity to basic amenities 3. Grade changes limitation. 4. Provision of walkways. 5. Provision of handrails
Permeability (Lee & King, 2003) is a measure of easy and barrier free walkways, choice of travel routes and easy way finding.	1. More route choice. 2. Link to facilities. 3. Level of isolation. 4. Alternative routes. 5. Distance to daily needs

Table 4.6 Continued

Maintenance (Aspinall et al., 2010) is a measure of how well the neighbourhood is cared for	1. Level of noise. 2. Graffiti. 3. Watch group. 4. House maintenance. 5. Neighbourhood is well cared for
Safety (Mendes et al., 2009) is a measure of the residents perception of how safe they feel while navigating in their neighbourhood	1. Blind corners. 2. Lighting. 3. Gaps in the walkways. 4. Heavy and speedy traffic. 5. Crime risk

4.5.1 Measures Description

This section explains instruments employed by the researcher in measuring the environmental factors that promote active lifestyle. Measures of active lifestyle and its components verifying active lifestyle in labels (physical activity and social cohesion) were discussed first, followed by measures of social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety.

4.5.2 Measuring Active lifestyle

Active lifestyle is a concept which by its very nature can be measured in both laboratory setting (Owen et al., 2004) and residential settings (Frank, Engelke, & Schmid, 2003). In a laboratory setting, there is no control over research aspects, for example selection of samples and the context within which the experiment occurs. In a residential setting, studying active lifestyle includes studying the correlations and associations occurring between the variables.

Active lifestyle of the elderly and its impact on healthy aging describe older residents within the different urban setting. Active lifestyle is a socio-physical activity that requires some form of social interaction and physical activity in its simplest form walking (Ewing & Handy, 2009; Morrow-Jones, Erwin, & Roe, 2004). From the literature review the researcher could extract two variables as measures of active

lifestyle attitudes. These include physical activity and social cohesion (Hoehner, Brennan Ramirez, Elliott, Handy, & Brownson, 2005; King, 2006; Lynch & Kapalan, 2000; McNeil, Kreuterb, & Subramanian, 2006; Rohe, 2009). Thus, the dependent variables constructing active lifestyle are physical activity and social cohesion, each with five statements adapted and modified based on the work of previous studies such as the study carried out by (King, 2006). The variables were measured using multiple-item scales, because active lifestyle is a complex concept that includes several dimensions. A multiple-item scale helps in identifying these dimensions more accurately and hence develops a better measure of the construct. On the other hand, a single-item scale is more likely to be misclassified and misinterpreted. Using multiple-item scale helps in minimizing and avoiding such problems, moreover, it reduced the effect of badly worded questions.

The items were measured on a five-point Likert-style rating scale in which the respondents were asked on how strongly they agree or disagree with the statements. The respondents were asked to choose whether they strongly disagree, disagree, neutral, agree and strongly agree with the attitude statements. Using the scale with these choices kept the options simple and gave the respondent a chance to have an opinion about the subject matter. Furthermore, bearing in mind that the respondents were older individuals who might be with low level of education, the simple options made it easier for the respondent to remember and select an answer.

a) Measuring Physical Activity

The dependent variable physical activity is a measure of how physically active are the elderly within the neighbourhood in relation to the neighbourhood environmental factors as encouraging or discouraging physical activity. To measure the elderly perceptions of the neighbourhood environmental factors that hinder or promote

physical activity, the respondents were asked to agree or disagree with the physical activity attitude statements. They were asked to indicate whether 1- poor conditions of sidewalks discourage physical activity, 2- poor conditions of parks/open spaces discouraged physical activity, 3- lack of neighbourhood programs discourages physical activity, 4- inadequate public transport discourages physical activity, and 5- location of amenities and facilities are too far, thus discouraging physical activity. This question was adapted from (Handy et al., 2008).

b) Social cohesion

Social cohesion is the strength of the community members' ties measured by the number and types of contacts, the duration of their relationship and the participation in community activities (Diez-Roux, 2004).

Chan et al. (2006), defined social cohesion as a state which is influenced by a number of processes. Accordingly, the study has identified three dimensions of social cohesion, first, sense of community-the attachment people experience towards each other, second, attraction-the attachment people experience towards a specific place by the physical features of the place, third, neighbouring-the attachment people experience towards a specific neighbourhood that encourage them to continue residing in it (Chan et al., 2006).

Social cohesion measures consisted of items that measured attitudes towards social relations and participations. The measures were adapted and modified based on previous work of (Chan et al., 2006). They consist of five statement measured on a five point Likert scale. The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the social cohesion attitude statement. They were asked to indicate whether 1- they maintain close relationships with old neighbours and existing social group, 2- they can make new friends in the community,

3- they are willing to contribute to local community work, 4- the neighbourhood is a good place to stay and 5- the neighbourhood design enhances social relations.

4.5.3 Social interaction

Social interaction refers to how neighbours interact within their neighbourhood (Glanz, 2011; Lund, 2009). Measuring social interaction involves assessment of the built environment to identify how the young elderly in their neighbouhood maintain close good relations with each other and with other community members. According to Oluseyi (2006), and Lund (2009), social interaction is achieved if neighbours know each other, visit each other, trust each other and watch out for each other. The measures were adapted and modified based on the work of Oluseyi (2006) and Lund (2009), (2009). They consist of five statements measured on a five point Likert scale. The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the social interaction statements. They were asked to indicate how well they maintain good social relations within their neighbouhood, i.e. whether they 1- know neighbours, 2- visit neighbours, 3- trust neighbours, 4- have a neighbourhood watch group and 5- all of the above.

4.5.4 Walking

Walking refers to the spaces created by the built environment (streetscape, buildings, etc.) in which walking takes place (Southworth, 2005; Wood, Frank, & Giles-Corti, 2010) ; . Measuring walking involves assessment of the built environment to identify how the community members specifically the elderly are encouraged to walk by the design of the physical environment. This enables the researcher to identify the facilitators to walking and the obstacles that deter people from walking. Therefore, measuring walking involved three sections, the first includes the frequency of walking

within the neighbourhood, the second includes facilitators to walking and the third section includes barriers to walking. The walking measurement included gathering of perceptual information. The measures were adapted and modified based on the work of Ewing & Handy, (2009). They consist of five statements measured on a five point Likert scale. In the first section the respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the walking frequency statements. They were asked to indicate the frequency of their walking in the neighbouhood, i.e. whether they 1- never go out for walking, 2- rarely go out for a walk, 3- sometimes go out for a walk, 4- often go out for a walk and 5- go out for a walk on a daily basis.

4.5.5 Facilitators to Walking

This includes that the persons were encouraged to walk because the physical environment is designed to allow individuals to walk freely within the urban setting. Thus, walking measures included assessing the physical environment through gathering personal perceptions of the neighbourhood. According to (Ewing & Handy, 2009) the determination of the degree of walking is achieved through examining the physical environment which usually includes features such as streets width and connections block length and pedestrian walkways width. Therefore, the measures consist of five statements measured on a five point Likert scale. The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the walking facilitators statements. They were asked to indicate whether they were encouraged to walk because the neighbourhood design provided, 1- more choice street connections, 2- shorter distances to destinations, 3- walkways that are well connected, 4- safe crossing and 5- safety from potential victimization.

4.5.6 Physical Barriers to Walking

This section examines the physical elements that affect the walking of the neighbourhood. The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the walking physical barriers statements. They were asked to indicate whether they were discouraged to walk because of 1- lack of walkways, 2- poor conditions of walkways, 3- lack of shading paths, 4- lack of kerb cuts and 5- lack of street benches.

4.5.7 Convenience

The housing affordability, neighbourhood amenities and services have an impact on the older individuals' desire to age in place (Lee & Sirgy, 2004). The convenience of the neighbourhood depends on the accessible facilities and useful services provided by the neighbourhood. The measures were adapted and modified based on the NEWS-A (2007). They consist of five statements measured on a five point Likert scale. The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the convenience statements. They were asked to indicate whether the neighbourhood, 1- provides affordable housing, 2- provides adequate services, 3- provides street furniture, 4- provides efficient public transport services and 5- provides mix-use developments.

4.4.8 Accessibility

Accessibility is a measure of providing access to and use of facilities, amenities, public transport and services (Burton & Mitchell, 2006; Ewing & Handy, 2009). This includes measuring of the ease, enter, reach and navigate around places in the neighbourhood. It also includes integrating land uses and transportation. The measures were adapted and modified based on the work of Ewing and Handy (2009) and the NEWS-A (2007).

They consisted of five statements measured on a five point Likert scale. The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the accessibility statements. They were asked to indicate whether accessibility was achieved through the provision of the following, 1- access to and within the neigbourhood, 2- connection to basic amenities. 3- limited grade change, 4- wide walkways and 5- handrails on walkways.

4.4.9 Permeability

A permeable network significantly influences the movement of individuals within the urban setting. At the neighbourhood level, permeability is estimated to evaluate the neighbourhood efficiency (Osmond, 2005). It is achieved by providing alternative ways of movement through places. Measures of permeability include facilitating access to destinations and decreased travel distance. This involves high connectivity to services and facilities. The measures were adapted and modified based on the work of Osmond Osmond (2005), and Oluseyi (2006). The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the permeability statements. They were asked to indicate whether the neighbourhood design provides the followings 1- route choice, 2- good link to facilities, 3- isolation 4- diverse patterns of access, and 5- decreased travel distance to daily needs.

4.4.10 Maintenance

In addition to the physical elements that influence active lifestyle there are qualities that are often discussed and are important and should be considered when studying active lifestyle such as maintenance. Maintenance refers to the extent to which the neighbourhood is cared for. Measures include neighbourhoods that are calm, clean, graffiti -free and where the houses are well maintained. Measures were adapted and

modified from NEWS-A (2007). The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the maintenance statements. They were asked to indicate whether 1- the neighbourhood is noisy, 2- there is graffiti around, 3- there is a watch group in the neighbourhood, 4- houses are well maintained and 5- no litter laying around in the neighbourhood.

4.4.11 Safety

Good neighbourhood design brings a lot of benefits to its residents such as less crime and more efficient movement. Safety is a measure of how safe people feel while moving around without fear of falling and being attacked. Safe streets have separate walkways, smooth pavements and are well lit. The measures were adapted and modified from NEWS-A (2007). The respondents were asked whether they strongly disagree, disagree, neutral, agree and strongly agree with the safety statements. They were asked to indicate whether the neighbourhood is unsafe to walk around because of, 1- lots of blind corners, 2- poor lighting, 3- gaps in the street, 4- heavy and speedy traffic and 5- high crime rate.

4.4.12 Demographics

Demographic measures the reflection of personal aspects, such as age, gender and ethnicity. Demographic questions may affect cooperation and may be considered boring (Saunders et al., 2009). To overcome these threats they are included in the last section of the questionnaire and the researcher inserted some questions among them to overcome the boredom taking into consideration the flow from item to item. For example, the first two questions included the length of stay in the neighbourhood and the house ownership followed by a skip question about the house rent; the age question

was followed by the health and functional status and the last three questions included preference of housing location, type and living arrangement.

The ethnic background question consist of the three major ethnic groups in Malaysia: Malay, Chinese, Indians and others included the minor ethnic groups.

Demographics questions consist of inherently sensitive questions such as age and income. Such questions might lead to refusals and biased answers (Dooley, 2001; Gilbert, 2005). One approach to overcome this threat is to phrase the questions even at the expense of precision. Therefore, age and income questions were asked in terms of categories rather than in terms of exact terms. Age question consists of: 1- 45-50 years, 2- 51-55 years, 3- 56-60 years, 4- 61-65 years, 5- 66-70 years. The income question consisted of: 1- RM 1000-2000, 2- RM2001-3000, 3- RM 3001-4000, 4- RM 4001 and above.

The health and functional status questions were asked using a semantic differential scale (Cooper & Schindler, 2008), in which the respondents were asked to rate the status on a bipolar rating scale described by a pair of opposing adjectives is. For the health status, the scale ranges from very poor to very good. For the functional status, the respondents were asked whether they could perform tasks on their own without assistance, the scale ranges from very difficult to very easy. The educational attainment question consisted of: 1- Junior, 2- High School, 3- College, 4- Bachelor Degree, 5- Master and 6- PhD.

The marital status question includes 1- Single, 2- Married, 3- Separated, 4- Divorced and 5- Widowed. The employment status included 1- Unemployed, 2- Retired, 3- Self-employed, 4- Employer and 5- Government employee.

The preference of housing location after retirement includes 1- Rural, 2- Suburban, 3- Urban and 4- CBD. The preference of housing type after retirement included 1- High-rise, 2- Terrace house, 3- Semi-detached, and 4- detached. The preference of living

arrangement after retirement includes 1- Alone, 2- With children, 3- With Relatives, and 4- With friends.

4.6 Measurements Evaluation

It is important that the measurements mentioned above should both accurately measure the concept, i.e. valid, and consistent from one measurement to another, i.e. reliable (Easterby-Smith et al., 2008; Raimond, 1993). A description and the procedures used to measure the validity and reliability of the measurements are discussed below.

4.6.1 Validity

Validity is concerned with how well a measure reflects the concept. However, the objective of achieving a perfect measure is practically unachievable, since the majority of the measures consists of some true scores (target construct), some reliable scores (other constructs) and some random errors (Saunders et al., 2009).

Validity involves a Uni-dimensionality Test. A unit-dimensional scale reflects a single underlying dimension measured by all the items (Dooley, 2001). The test for uni-dimensionality involves measuring whether each item in the scale measures the same concept. This is achieved by ensuring that response of a specific item reflects the responses' pattern on the other items. This was done by calculating the correlation coefficient between the score of the respondents on a specific item with the rest of the scale score. This calculated coefficient is called the item-to-scale coefficient. The correlation coefficient ranges between 0-1. A coefficient of 1 indicates that the measure corresponds perfectly and that the item belongs to the scale. If the measures have weak or 0 correlation, the measure is regarded as invalid. Saunders et al. (2009), argued that it is unusual to get a perfect correlation in business research and they rarely obtained a coefficient higher than 0.8. However, in social research deVaus (2002) and Nunnally

and Bernstein (1994) suggest a coefficient of 0.3 as the minimum value for a unidimensional scale. The researcher used this value of 0.3 for the study and items below 0.3 were dropped. If a measure has a high validity, it must also have a high reliability, but a high reliability does not guarantee a high validity. If it has a low validity, it is misnamed with no regard to its reliability.

4.6.2. Reliability

Reliability refers to the consistency of scores. It is based on the assumption that the scores will yield consistent findings with different samples at different times (Dooley, 2001; Saunders et al., 2009).

There are three approaches to assess reliability: test re-tests internal consistency and alternative form (Saunders et al., 2009). The test re-test reliability is obtained by correlating the data collected with those from the same questionnaire under as similar conditions as possible. This requires that the same questionnaire will be conducted twice to the same individuals after a certain period of time. However this is often impractical because it might be difficult to convince the respondents to answer the same questionnaire twice.

The internal consistency involves checking the consistency by correlating responses with those on other items in the scale. This is known as item to item correlation. The most frequently used method for calculating the internal consistency is Cronbach's alpha (α). Alpha refers to the variance proportion that is related to the true score. The higher α indicates that the scale is more reliable. Nunnally and Bernstein (1994), argued that increasing reliability involves increasing the number of items and this is costive and time consuming, therefore, they suggested that a reliability value of 0.5-0.6 is accepted. On the other hand, Kline (2005), suggested that the minimum accepted α value is between 0.6-0.7. Moreover, Alpha value of 0.7 was used as the minimum

accepted value for a scale by (deVaus, 2002). Items with low reliability are dropped to increase the value of α. However, the study employed the above method and used 0.7 as the minimum accepted α value.

The 'alternative form' approach involves comparing the answers to alternative forms of the same question. These are often called 'check questions'. However it is used sparingly because it increases the questionnaire length and respondents might refer back to their earlier answers.

4.6.3 Questionnaire Translation

The official language in Malaysia is Malay. Nevertheless, the majority of the people can easily communicate in English. Taking into consideration that the target population was elderly who might be with limited ability to communicate in English, the researcher decided that the questionnaire should be translated to ensure cooperation and high response rate.

Translating questionnaires requires great care if the target questionnaire (translated questionnaire) is to be answered in the way intended by the source questionnaire (questionnaire to be translated) to ensure that both questionnaires have the same meaning to the respondents (Saunders et al., 2009). Usunier (1998), suggested four important points to be considered when translating source questionnaires. First, the individual words' precise meaning (lexical meaning), second, the group of words' meanings that are natural to the native speaker and not deduced from the meanings of individual words (idiomatic meaning), third, the equivalence of words meaning for individuals in their everyday experience (experiential meaning), and fourth is the correct use of the language (grammar and syntax). Taking into consideration the above mentioned points, the questionnaire was translated by a landscape architect whose native language is Malay, who speaks English fluently and is familiar with field

surveys. Both questionnaires (source and target) were included in the same sheet; i.e. each question has its translation in the same sheet to allow individuals familiar with both languages to check the equivalence of the questions.

4.6.4 The Pilot Survey

A pilot survey is a small scale study conducted prior to the main survey to test a questionnaire, observation and checklist, to reduce the possibility of participants having problems in answering the questions as well as to enable the researcher assess the validity and the reliability of the data to be collected (Dooley, 2001; Saunders et al., 2009).

The researcher developed the questionnaire and after the supervisors had casted a critical eye over the questions and the order in which they were placed, necessary changes were made and it was ready for pilot testing to ensure that the questions were appropriate, understandable and easy to answer by the target group. According to Gilbert (2005), a pilot sample between10 and 20 respondents is acceptable for a survey of 2,000 respondents, i.e.0.5%-1% of the sample size. On the other hand, Saunders et al. (2009), suggested that the minimum number for pilot testing for student questionnaires is 10 respondents. However, to include major variations in the population that are likely to affect the responses, the researcher pilot had tested the questionnaire on 50 respondents residing on different urban setting. Five of the respondents were elderly residing in Taman Meru-Ipoh, 30 were elderly residing in Taman Tun Dr Ismail, Kuala Lumpur and 15 were elderly residing in the researcher's local area. The group surveyed in the researcher's local area had the same characteristics to those of the target group to be studied.

An introductory letter introducing the researcher, supervisors, the University and briefly stating the aims and objectives of the study was first introduced to the

respondents. The letter also included that the confidentiality of the respondents will be maintained and that the information provided will only be used for the purpose of the research.

The pilot survey revealed that the questions are understandable and are easy to answer, except for the social interaction question item 1 and 5 which were unclear and needed rewording to enable the respondents to answer. Each respondent took an average of 10-15 minutes to answer all the questions. The respondents were very cooperative, patient and showed interest in answering the questions. The necessary amendments were made and the amended questionnaire was finally ready for the final survey.

4.7 Survey Procedures

To enable generalization of the findings to the population in question, it was important to select the subjects of the study randomly. However several issues were addressed during the survey procedure, these included the followings:

4.7.1 Sampling Frame

The sampling frame is a complete list of all the elements in the population from which the sample is drawn (Dooley, 2001; Gilbert, 2005). The sampling frame for the study was developed first, by developing a table of elderly population in Malaysia. This was done earlier in Chapter Three section 3.2.5 Table 3.6. States with the highest percentage of elderly were chosen. Perak is the state with the highest elderly population, Kuala Lumpur was chosen because it is the capital city and the most populated city, and hence it has the highest elderly population in Malaysia. Second, having identified the two states, a table of elderly population in each city was drawn. Areas with the highest percentage of elderly were chosen. Therefore, an adequate sampling frame of the city elderly was stratified by highest percentage of elderly in

each area. The target population was residents of Taman Meru in Ipoh, and Taman Tun Dr Ismail in Kuala Lumpur.

4.7.2 Sample Size

Sampling is used when it is not possible and is impractical to collect data from the entire population. The decision of sample size selection is a matter of choice as well as a matter of calculation. This is due to the fact that sample size requires information about the variables' distributions that are not normally available. Moreover, surveys normally measure a number of different variables, each requiring different measurement levels and consequently different sample size. Therefore, although researchers know the optimum sample size, they carry out their work with smaller samples because they are constrained by budget limits and time needed to finish the research, (deVaus, 2002).

However, the present study uses the table of sample size at a 95 confidence level as a rough guide to the minimum sample size required for the study given a 95% margin of error. 95% confidence level means that in 95 out of 100 repetitions of the survey, the results will not differ more than ± 5% (Table 4.7).

Table 4.7: Level of Confidence and Associated z-values

Level of Confidence	z-value
90% certain	1.65
95% certain	1.96
99% certain	2.57

Source: Saunders et al. (2009, p. 581)

Saunders et al. (2009), suggested that if researchers do not know the percentage of responses expected to have a specified attribute, they may assume that 50% of the sample to have the particular attribute. The sample is taken from the table below:

Table 4.8: Sample sizes for different population at a 95 Confidence Level

Population	Margin of Error			
	5%	**3%**	**2%**	**1%**
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	**132**	**168**	**185**	**196**
250	151	203	226	244
300	**168**	234	267	291
400	196	291	343	384
500	217	340	414	475
750	254	440	571	696
1000	278	516	706	906
2000	**322**	**696**	**1091**	**1655**
5000	357	879	1622	3288
10 000	370	964	1936	4899
100 000	383	1056	2345	8762
1 000 000	384	1066	2395	9513
10 000 000	384	1067	2400	9595

Source Saunders et al. (2009, p. 219)
N.B. Shaded areas represent selected sample size for Taman Meru and TTDI

Steps followed for calculating the sample size for the study included the following:

1. Selecting the state with the highest number of elderly in Malaysia.

2. Selecting a district in the state with the highest elderly population.

3. Calculating the percentage of elderly in the district in relation to its total population.

4. Selecting randomly neighbourhoods in the district.

5. Selecting randomly a residential area in the neighbourhood and calculating the number of elderly in relation to the total population of the area.

6. The sample size was assumed using the table from Saunders, et al (2009) for sample size.

Calculating the sample size for the study areas included: a) Calculating the sample size for Taman Meru- Ipoh, and b) Calculating the sample size for Taman Tun- Kuala Lumpur. The population of the residential area is calculated by the following formula;

Total housing units × Average household size in the state

a) Calculating sample size for Taman Meru- Ipoh

Ulu Kinta is the district with the highest population of elderly. Total Population of Ulu Kinta is 749, 474. Total number of elderly aged 60-74 years is 72,421. The percentage of elderly in Ulu Kinta is 9.7% (Department of Statistic, 2010). Using the above steps the sample size is calculated as follows:

Taman Meru total housing units are 715 (DBI, 2012), therefore, population of Taman Meru = 715×4.04 = 2,888.6. 9.7% of this population is elderly aged 60-74 years (Department of Statistic, 2010). Therefore, the number of elderly aged 60-74 years is 298. From the above table the sample size for Taman Meru is 168.

b) Calculating sample size for Taman Tun- Kuala Lumpur:

The number of elderly aged 60-74 years is 23,986 and the total population of Kuala Lumpur is 346,211. Therefore, the percentage of elderly in KL is 6.9% (Department of Statistic, 2010). Taman Tun DR. Ismail's total housing units are 9,626, (DBKL, 2011), therefore, population of Taman Tun = 9,626×3.72 (average household size in KL =3.72, (DBKL, 2011) = 35808.72. 6.9% of this population is elderly aged 60-74 years. Therefore, the number of elderly aged 60-74 years in Taman Tun DR. Ismail is 2470.80. From the above table the sample size for TTDI is 322.

Therefore, the total calculated number of elderly in the selected residential areas was 2768.80; the estimated sample size for both Ipoh and Kuala Lumpur was 490, i.e.18% of the elderly in the chosen areas. The respondents were randomly selected from each housing area.

In Taman Meru, a total of 125 questionnaires were completed out of 168 calculated sample size making a response rate of 74.40%. In TTDI, a total of 260 out of 322 questionnaires were completed making a response rate of 80.7%. The researcher agreed with the supervisor to suffice with this amount for time, financial and human resources

constraints and most importantly the number is considered optimum to conduct most of the statistical techniques needed to address the research questions and achieve the research objectives. Furthermore, the study had interviewed older individuals aged 45+years to be able to identify active lifestyle needs as people as, hence, although the calculated sample size was based on older individuals aged 60-75 years (Table 4.8, 119), it also included individuals aged 45+years.

4.7.3 Sampling Method

Sampling is a method of selecting an adequate number of elements from the population to provide an understanding of its characteristics to enable researchers to generalize these characteristics to the elements of the population (Neuman, 2005). Its primary objective is to obtain accurate and reliable data about the target group at the least possible cost, time and energy. The sampling technique is divided into two types: probability sampling (representative sampling) and non-probability sampling (judgment sampling). Probability sampling represents an unbiased frame where every element in the population has an equal chance of being selected. It is often associated with survey based research strategies to enable researchers to make inferences from the sample to answer the research questions and meet the objectives. Non-probability sampling allows researchers to choose samples purposively based on their own judgment. It is usually used when working with small samples such as case study research (Dooley, 2001; Neuman, 2005).

Having chosen the sampling frame appropriate for the study and calculated the sample size required, a technique used by Saunders et al. (2009), for selecting the most adequate sampling was adopted to obtain a sample that would represent the population (Figure 4.2).
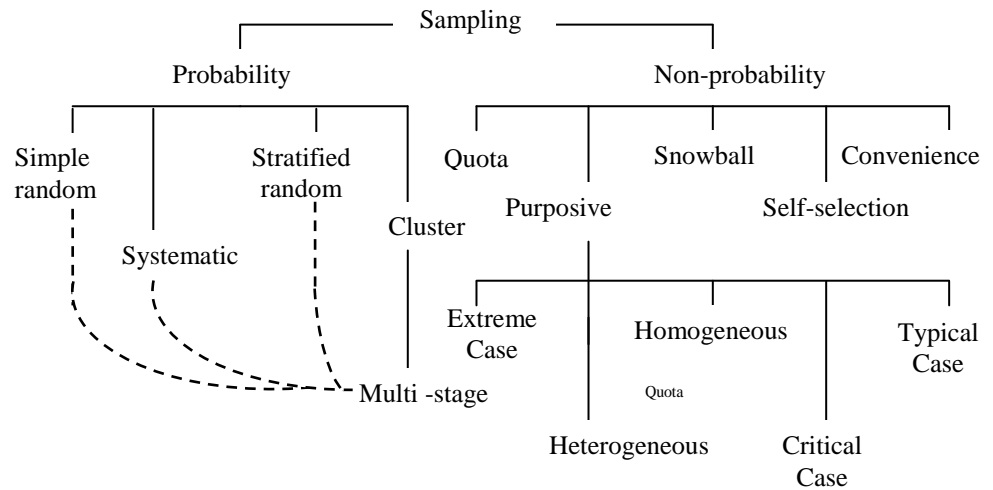
Figure 4.2 Sampling Technique
Source: Saunders et al. (2009, p. 213)

For the purpose of the research, the sampling involves two stages; clustered sampling design and a stratified random sampling, used to select samples from the target population.

The first stage involves clustering. Clusters are usually geographical areas. A clustered sampling method involves more than one selection stage. It is used to reduce time and cut costs of conducting surveys. Clustering reduces precision and increases standard errors (Saunders et al., 2009). To overcome this problem, the researcher built stratification within each stage of selection (Dooley, 2001). Thus, for the selected sample of elderly, all residential areas were stratified by age and housing type and for Ipoh ethnicity a stratum was formed. This ensured that the elderly samples are correct representation of the characteristics used to form the strata.

The second stage involves stratification. A stratified random sampling is a probability method which aims to ensure that the samples are representative on the characteristics used to form the strata. A stratified random sampling divides the population into two separate groups (strata), and selects a simple random sample from each stratum. It provides a greater degree of population representation and decreases bias in the

sampling error such as underestimation or overestimation the true parameter values (Saunders et al., 2009).

To answer the research questions and meet the objectives, the researcher needed to select a sample of elderly to undertake the survey about their active lifestyle. As the researcher had limited resources to pay for travel and other costs associated with data collection, the decision was to survey the neighbourhood residential areas from a cluster of districts with planning units of highest elderly population. A list of all planning units with highest percentage of elderly formed the sampling frame.

The process of area sampling included the following stages:

1. Develop a list of elderly in all Malaysian States.

2. Select states with highest elderly population.

3. Select residential areas with highest elderly population.

4. Select randomly sub-areas.

5. Select randomly unit samples from sub-areas.

Two clusters were chosen as having the highest percentage of elderly population: Ulu Kinta in Ipoh and Kuala Lumpur in W. P. Kuala Lumpur. The sample was all the elderly residing in the selected clusters. The clusters were then stratified into planning units with highest elderly population from which residential areas were randomly selected to be the study areas. Unlike Kuala Lumpur, Ipoh's residential areas were stratified not only by age but also by ethnicity as the different ethnic groups live in different areas. Therefore, for Ipoh three residential areas were chosen, namely Taman Meru (Malay), Taman Canning (Chinese) and Taman Butong Jaya (Indians). Elderly residing in Taman Meru were randomly chosen as the target samples.

The housing areas were selected based on the following criteria:

1. The housing areas under the housing department in both cities with highest population and hence highest percentage of elderly,

2. The housing area that has been occupied for more than ten years and therefore viable for assessment.

In selecting the sample, the researcher took all the measures to ensure that the characteristics of the data to be collected represent the total population characteristics.

4.7.4 Sampling Error

Sampling error does not imply some sort of mistake. It refers to sampling variability, i.e. sample to sample variation that refers to the fact that any given sample might overestimate or underestimate the true value in the population (Gilbert, 2005). However, the researcher has designed the sampling method that would provide minimum error.

4.7.5 The Respondents

The target population is elderly residing in Taman Meru, Ipoh and TTDI in Kuala Lumpur. Although the study had identified elderly aged 60-75 and calculated sample size accordingly, older individuals aged 45 and above were also identified for the questionnaire interview to enable comparison and consider changes in active lifestyle needs as people ages.

4.8 Administration of the Survey and Informed Consent

This section discusses how the survey was carried out. It includes contacting the respondents, administering the questionnaire survey, recording and processing the data collected. The discussion involves three phases: planning for the field survey, Implementation and finally problems faced during the fieldwork.

4.8.1 Planning the Field Operation

The researcher had introduced a letter informing of the study to make residents aware of the nature of the research. Residents were also informed that information they give is in complete confidentiality and that their names will not be written on any page of the questionnaire. They were also reminded that they were free to withdraw at any time without any obligations.

At the start of the survey the researcher ensured that the respondents matched the criteria established for selecting the appropriate resident to answer the questionnaire. The study excluded respondents who are under the age of 45 years and above 75 years. The study also excluded residents who moved recently or who stayed for less than one year. Considering the educational level of the potential respondents and the difficulty in reading due to poor sights, the researcher administered the questionnaires orally to all respondents.

4.8.2 Implementation of the Field Survey

Field Surveys were conducted to both residential areas in Kuala Lumpur and Ipoh. Since the researcher does not speak the Malay language, there was a need for a translator to answer enquiries from those who do not speak English. The translator was chosen based on study background and Malay mother tongue to avoid difficulty in understanding certain terminologies and phrases. The translator was a Malay master student from the Department of Urban and Regional Planning and who also speak Chinese. This has helped with the Chinese respondents who speak little Malay and English. In both neighbourhoods, the researcher first conducted a face to face questionnaire approach. In TTDI field surveys started from 8am to 6pm and respondents were interviewed in their place of residence, worship areas and the area's public park. A total of 150 questionnaires were completed in four days. Since it was

very difficult to get the responses from residents in their place of residence and the people in worship and recreational areas were almost the same over the four days, the researcher decided to conduct a distribute-and-collect approach where the questionnaires were distributed and collected at a later date at the convenience of the respondents and the researcher. This approach resulted in a completion of 110 questionnaires. Therefore, for TTDI a total of 260 out of 322 (as calculated in Table 4.8, p.119) questionnaires were completed making a response rate of 80.7%.

A total of five visits were made to Ipoh for data collection. The first three visits were made in September, October and November, 2011 respectively and involved collecting data from local authorities (DBI and Department of Statistics, Ipoh). The fourth visit involved site visit and pilot testing the questionnaire and was made in January, 2012. The last visit was made in May 2012 and involved conducting the questionnaire survey and interviews with residents and officials. This required staying in Ipoh for three days to conduct the survey. Field surveys started from 8am to 9pm and respondents were interviewed in their place of residence and worship areas. A total of 125 questionnaires were completed out of 168 calculated sample sizes making a response rate of 74.40%. The translator also accompanied the researcher for the field survey in Taman Meru, Ipoh.

4.8.3 Problems in Conducting the Field Survey

The researcher faced some problems during the field survey. First, although the questionnaire was translated the researcher needed a translator to discuss some issues and answer some questions from respondents whose English was poor. Second, the low participation of Chinese in the study, albeit they constitute the highest percentage of elderly in Malaysia compared to other ethnic groups. Third, the time spent in data collection was increased as the two neighbourhoods were in different cities and quite

far from the researcher's place of residence. This has also resulted in increased travelling costs.

4.9 The Ethics of the Research

The study involved face to face contacts between the researcher and the interviewees. The researcher made sure that the participants participate on their own consent and were completely free to withdraw at any time. Furthermore, the ethical consideration includes the followings:

1. The study met the criteria specified by the University of Malaya-Faculty of the Built Environment,

2. Participants were free to participate and were voluntary.

3. Before agreeing to participate, participants were given an introductory letter introducing the researcher, supervisors and the university and explaining the purpose of the study and their role in it.

4. Before the interview, the researcher reminded the participants that their confidentiality was maintained and the data will only be used for the purpose of the research.

4.10 Data Analysis

This section outlines the factors which affect how the data were analysed. The subsequent sections examined the particular methods of analysis and related statistical techniques used in more detail.

The statistical techniques used to analyse the survey data were based on its appropriateness to address the research questions. The researcher used the Statistical Package for Social Science (SPSS) version 16 to analyse the data. This involved several steps; first statistical techniques used to examine the validity and reliability of

the items used in measuring active lifestyle among the elderly. The validity test involved the use of item to scale correlation and the reliability test involved the examination of Cronbach's Alpha values. Factor analysis was used to classify whether the measures of social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety could be combined to form a single active lifestyle scale. Descriptive statistics was then used to describe the sample characteristics and find patterns in the data. Cross tabulation was used to show whether the neighbourhood environmental factors make any difference to elderly active lifestyle. The analysis then moves to inferential statistics to address casual relations between the variables. This involved the use of Pearson (r) Correlation to measure the strength and direction of the relationship between the elderly active lifestyle and the neighbourhood environmental factors. Independent groups t-test and MANOVA were used to test the research hypotheses. Then bivariate regression was used to predict values on young elderly active lifestyle from values on neighbourhood environmental factors. The researcher further assumed that the nine predictors (independent variables) are important and wanted to see the highest possible multiple correlation of the predictors. This was achieved via multiple regression to explore how much variance in active lifestyle variables, the neighbourhood environmental factors were able to explain as a group. Multiple Regression indicates how much unique variance the neighbourhood environmental factors explain in active lifestyle variables. Furthermore, it was used to predict a dichotomous outcome (whether or not young elderly were active). Furthermore, since the study examines active lifestyle among young elderly in two different urban setting, the regression analysis was used to build a predictive model of a group of variables based on the characteristics of each respondent. It helps in identifying whether a combination of neighbourhood

environmental factors predicts young elderly active life style better than any one of these factors alone.

However, deVaus (2002) had outlined three main factors which influence how the data are analysed. These include: the number of variables examined, the level of measurement of the variables and the purpose for which the data is used, i.e. descriptive or inferential.

4.10.1 The Number of Variables Examined

There are three methods of data analysis: univariate (one variable), bivariate (two variables) and multivariate (three variables or more). In this study, to describe the characteristics of the sample such as gender, house ownership, education...etc. a univariate method (frequency distribution) was used. In describing the relationship between two variables a bivariate method (cross tabulation, regression, correlation and comparison of means) was used. In describing the relationship between three or more variables a multivariate method (multiple correlations and multiple regression) was used.

4.10.2 The level of Measurement

Each variable has one category or more. The variable level of measurement refers to how these categories relate to each other. There are three main levels of measurement: nominal, ordinal and interval/ratio.

A nominal variable is the variable where the researcher can distinguish between the variable categories but cannot rank them in any order, for example, gender is a nominal variable with two categories male and female.

An ordinal variable is the one where the researcher can rank the variables in order, but cannot quantify precisely the difference between the categories. Respondents were

asked whether they agree or disagree with a certain statement. The categories were ranked in terms of agreement strength they reflect towards the statement.

An interval/scale variable has a natural ranking and the difference between the categories can be quantified precisely, for example working hours, years of education, number of children.....etc.

However, the format of the questionnaire and the response category influence the level of measurement. For example, age is an interval category because the difference between the categories can be quantified precisely, unless the questions are ranked young, middle-aged, old or 10-20 years, 21-30 years....In such case the researcher do not know the precise number of years between the categories, therefore, it will be considered as an ordinal variable. Since the study is measuring attitude scale items all the variables are in ordinal scale. Nevertheless the variables were analysed as interval because the statistical tools employed to answer the research questions require interval variables.

4.10.3 Descriptive Statistics

Descriptive Statistics was used to describe and explore the collected data. This includes respondents' socio-demographic characteristics and other statistics such as the means and standard deviations to give more information about the variables distribution.

4.10.4 Independent Groups t-test

The independent groups t-test is suitable when different respondents have performed in different conditions. This is referred to commonly as a between-subject design. This test was used to test hypothesis one, i.e. to test whether the young elderly performed similarly in the two different urban setting; in other words, whether there was a significant difference in the active lifestyle among the young elderly in the different

urban settings. The independent groups t-test has some assumptions that needed to be met before undertaking the analysis. The assumptions regarding any statistical technique must be evaluated because the accuracy of interpreting the test depends on whether assumptions were violated or not. The assumptions of the independent groups t-test are:

1. Measurement scale - level of measuring the data should be either scale/interval.

2. Random sampling – scales must be randomly sampled from the population.

3. Normality – scores must be normally distributed in the population.

4. Independence of groups - respondents must appear in one group and groups must not be related.

5. Homogeneity of variance – groups must come from equal variance populations, for the test to be significant $p<0.05$.

Assumptions 1, 2 and 4 are research design matters, while assumptions 3 and 5 are tested in the independent groups t-test and normality was checked using descriptive statistics through the exploration and utilisation of factor list.

4.10.5 Multiple Analyses Of Variance (MANOVA)

MANOVA is a statistical procedure that compares a set of means to one another involving multiple independent variables. The hypothesis tested using MANOVA indicates that populations have equal means for all dependent variables. MANOVA incorporates information about several dependent variables measures; for example, it can detect whether the neighbourhoods environmental factors differ along a combination of the dependent variables (social cohesion and physical activity). The researcher used MANOVA to test the research hypothesis 2, that there is a significant association between neighbourhood environmental factors and active lifestyle among

the elderly in the different urban setting. Assumptions underpinning the use of MANOVA are:

1. Cell sizes – it is important to have in each cell more than the number of dependent variables.

2. Univariate and multivariate normality – multivariate outliers are identified using Mahalanobis distance in regression. Mahalanobis distance is a chi-square with a degree of freedom equal to the dependent variables number. An alpha value of 0.001 is recommended.

3. Homogeneity of variance matrices – At the univariate level, the Bartlett-Box F is used; homogeneity of variance is assumed if the test is not significant ($p>0.05$). At the multivariate level the Box's M test is used, which must also be not significant ($p>0.001$), an alpha level of 0.001 is recommended because the test is very sensitive.

4. Multi-colinearity and singularity – high correlation between the dependent variables indicates existence of problems of multi-colinearity and singularity. Multi-colinearity and singularity may be present when determinant of within-cell correlation matrix is (<0.0001) near zero.

4.10.6 Factor Analysis

Factor analysis is a data reduction technique that reduces a large variables number to a smaller set of variables that summarizes the important information contained invariables. Exploratory factor analysis is used to summarize the structure of data set; and confirmatory factor analysis is used to test a theory about a particular domain structure. There are seven methods of factor analysis: principle component, un-weighted least squares, generalized least squares, maximum likelihood, principle axis factoring, alpha factoring and image factoring. All these methods assume that the

sample used in the analysis is the population; therefore researchers cannot extrapolate the results beyond that specific sample. However, principle component and principle axis factoring are the most used methods and often result in similar solutions.

Factor analysis involve two stages: factor extraction (makes an initial decision about the factors number underlying the measured variables set), and factor rotation (statistically manipulating the results or rotating the factors to make interpretation easier; moreover, it enables making decisions about the underlying factors number. The first stage involved:

1. Extracting factors from a correlation matrix to enable initial decisions making about the factors number underlying the measures set. The first extracted factor accounts for the largest variability amount among the variables that are measured; the second factor extracted will be the second most variability and so on.

2. The Eigenvalue is the variability of the factor; Eigenvalues greater than 1 are extracted.

3. The screen test represent the relative magnitude of the Eigenvalues, it determines how many factors to retain.

4. The Kaiser-Meyer Olkin (KMO) determines whether the sampling is adequate for an analysis to proceed; values should not be less than 0.3.

5. Communalities of the items show how much of variance has been accounted for by the factors extracted.

The second stage involves:

1. The component factor matrix shows the loadings of the factors on extracted factors. The higher the value of the loadings, the more the factor contributes to the variable. The gaps in the table present loadings less than 0.3.

2. Rotation of factors to make them more interpretable and meaningful. The rotated factors may be correlated (oblique), or uncorrelated (orthogonal). The most common

rotational method is Varimax; factors are labelled by examining the largest values in the rotated matrix, linking the factor to the measured variables.

Assumptions Underlying Factor Analysis

1. Sample size – factor analysis requires a minimum of five items per variable.

2. Normality – Normally distributed variables ensures improved solutions.

3. Outliers – Outliers should be identified, removed or transformed and then brought into distribution because factor analysis is sensitive to outliers.

4. Factorability of the correlation matrix – a correlation matrix with sizeable correlations in excess of 0.3 to assess the variables sampling adequacy. Bartlett's test of sphericity and KMO are also measures of factorability; Bartlett's test of sphericity should be significant and large; KMO values should be greater than 0.6.

Active lifestyle among the young elderly is influenced by the existence of certain neighbourhood environmental that are definitely correlated. These neighbourhood environmental factors are not easily measured variables and are not well-defined either. A young elderly who is both socially and physically active would score well on all the analyses that are related to social cohesion and physical activity. This is how the definition of young elderly active lifestyle and consequently aged-friendly neighbourhoods was arrived at. Therefore, the researcher used factor analysis for three main reasons: firstly to measure the concept of active lifestyle among young elderly by using factors that can be directly measured; secondly, to provide an understanding of the variables set (neighbourhood environmental factors), thirdly, to reduce the set of neighbourhood environmental variables to a manageable set while retaining as much as possible the original data set.

4.10.7 Multiple Regression

Multiple linear regression is a statistical analysis with a number of important analysis. First, it tests the hypothesis concerning two quantitative variables. Second, it estimates the specific nature of the relationship between the variables tested. Third, beyond asking 'are the neighbourhood environmental factors and young elderly active lifestyle variables are related', it allows asking 'how the neighbourhood environmental factors and young elderly active lifestyle are related'. The study has considered the relationship between neighbourhood environmental factors and young elderly active life style to identify determinants of aged-friendly neighbourhoods. Each factor had the potential to make the young elderly both socially and physically active. Thus, the study hypothesized that the relationship between neighbourhood environmental factors and young elderly active lifestyle would be positive, i.e. the more certain factors exist the more active will the young elderly be. Formally the theoretical model of such a relation means that the independent variable X and the dependent variable Y yields a box when graphed, this means that Y changes by a constant amount each time a certain neighbourhood environmental factor exists. Therefore, multiple regressions was used to explain the variance in young elderly active lifestyle variables, the independent variables were able to explain as a group, and i.e. single effect has multiple causes. The regression analysis gives the line that fits the points better; how good is the fit is measured by coefficient determination represented by the r^2; r^2 ranges from 0.000 to 1, the higher the value of r^2 the better. The regression equations used are:

- ⊙ Simple linear Regression

$y = ß_0 + ß_1 + Ɛ$, where:

y=dependent variable

$ß_{0=}$ Intercept

$ß_1$=slope (independent variable)

Ɛ=random error

i.e.ALS= Intercept+slope (NEF) +random error

- ◉ Multiple linear Regression

$$y = ß_0 + ß_1X_1 + ß_2X_2 + ß_3X_3 + \ldots ß_nX_n + Ɛ, X$$

The researcher used the three main regression models (standard, stepwise and hierarchical regression) to answer the research questions. Assumptions underpinning the regression analysis are:

1. Ratio of cases to independent variables – minimum requirement is that number of cases needed should be at least five times the independent variables.

2. Outliers – outliers affect the regression solution and should therefore be deleted or modified.

3. Multi-collinearity and singularity – multi collinearity refers to the high correlation between the independent variables and singularity refers to perfect correlations between independent variables. This can be detected using the correlation matrix.

4. Normality – obtained and predicted dependent variables should be normally distributed.

4.11 Phenomenological Data Explication

The researcher aimed to describe the lived experience of the young elderly to elicit meanings of active lifestyle. Thus, there was a need to understand how they experience an active lifestyle. The researcher had designed the questions to explore what active lifestyle means to them and what is their lived experience of active lifestyle.

Huberman and Miles (1994) argued that qualitative data analysis is based on mainly three procedures: data reduction, data display and Drawing conclusion. On the other hand, Coffey and Atkinson (1996) argued that these procedures do not occur in

progressive stages, rather they are interrelated parts, i.e. the different phases of the research proceed concurrently and inform each other. Therefore, the researcher should view qualitative analysis as an inventive and dynamic process. Yet some degree of organization is important. However, based on the above assumptions, the researcher employed the organizational scheme explained in the following subsections to manage and bring some coherence to the data:

4.11.1 Data Reduction

Data reduction does not necessarily involve editing and summarizing the data after collecting it. It is a process infused throughout the entire research. For example, in this study, the interest in active lifestyle is the first step in the reduction of relevant data. Narrowing the topic to young elderly represented another reduction phase. Focusing on the impact of neighbourhood environmental factors on the young elderly active lifestyle is another way of zooming in on the data. Therefore, the interview questions are designed to generate key information to make things more manageable and reduce pages of transcription.

4.11.2 Displaying Data

The objective of displaying the data is to gradually transform mess of data into an organized conceptual scheme. This included the following:

1. Dividing the original data into statements, i.e. transcribing the tapes after the interview and highlighting the statements that appeared to be describing the young elderly active lifestyle.

2. Transforming the units into themes, i.e. the highlighted statements were selected to capture what meaning they conveyed to identify the themes.

3. Tying the themes to describe the experience of active lifestyle among the elderly and how they actually lived it. Following the identification of themes, the researcher discussed with the supervisors about the themes and areas requiring more exploration.

4. The researcher then wrote the themes and described how they are interrelated and captured as accurately as possible the way the young elderly experienced active lifestyle. The final report included the essence of active lifestyle as lived and that unified a single meaning of elderly active lifestyle.

As mentioned above, the last step in analysing the data was to draw meaning and structure out the data. This involved making meaningful statements about how the data illustrate young elderly active lifestyle. Figure 4.3 shows the flow chart of the study.

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                    ┌─────────────────────────────────────────┐
                    │           Preliminary Research          │
                    └─────────────────────────────────────────┘
                                       │
                                       ▼
                    ┌─────────────────────────────────────────┐
                    │      Identifying Issues and Problems      │      Preliminary
                    └─────────────────────────────────────────┘      Understanding
                                       │
                                       ▼
                    ┌─────────────────────────────────────────────────┐
                    │  Formulating Objectives and Research Questions   │
       Stage1       └─────────────────────────────────────────────────┘
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Stage1

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┌──────────────────┐      ┌────────────────────┐      ┌──────────────────┐
│   Review the     │ ◄──  │ Literature Review  │ ──►  │   Theoretical    │
│                  │      │                    │      │  Understanding   │
│ Malaysian Context│      │                    │      │  and Empirical   │
│                  │      │                    │      │     studies      │
└──────────────────┘      └────────────────────┘      └──────────────────┘
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Stage 2

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                    ┌─────────────────────────┐
                    │       Study Areas       │
                    │                         │
                    │  (TTDI and Taman-Meru)  │
                    └─────────────────────────┘
                                 │
                                 ▼
┌────────────────────┐   ┌─────────────────────┐   ┌──────────────────────┐
│   Primary Data     │   │   Data Collection   │   │   Secondary Data     │
│                    │◄──│                     │──►│                      │
│   Observation      │   │   Qualitative and   │   │  Books, journals,    │
│                    │   │    Quantitative     │   │   Newspapers,        │
│   Questionnaire    │   │                     │   │  seminar papers,     │
│                    │   │                     │   │  official reports,   │
│   Interviews       │   │                     │   │   guidelines,        │
│                    │   │                     │   │   Internets and      │
│                    │   │                     │   │  governmental data   │
└────────────────────┘   └─────────────────────┘   └──────────────────────┘
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Stage 3

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┌──────────────┐      ┌────────────────────┐      ┌──────────────┐
│     Data     │ ◄──  │   Data Analysis    │ ──►  │ Statistical  │
│  Explication │      │                    │      │  Analysis    │
└──────────────┘      └────────────────────┘      └──────────────┘
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Stage 4

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                    ┌─────────────────────────┐
                    │  Findings and Discussion │
                    └─────────────────────────┘
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Stage 5

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                    ┌─────────────────────────┐
                    │       Conclusion        │
                    └─────────────────────────┘
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Stage 6

Fig.4.3 Research Flow Chart

4.12 Summary

This chapter explained in details the research methodology used to answer the research questions and achieve the research objectives. Despite time, human resources and financial constraints that influenced the data collection procedures, the researcher obtained a good response rate. It took the researcher three months to administer the questionnaire. The chapter also explained the different methods used to measure the influence of neighbourhood environmental factors on young elderly active lifestyle to determine aged-friendly neighbourhoods. The methods used were mainly descriptive that involved frequency distribution, cross tabulation, means and standard deviations. The analysis, then moved to inferential statistics that involved correlation, factor analysis, MANOVA and multiple regression to identify the factors that best predicted active lifestyle among young elderly to identify determinants of aged-friendly neighbourhoods.

The researcher ensured that the privacy of the respondents and confidentiality of answers. Therefore, no names or addresses were revealed.

The next chapter presents a brief description of the physical and socio-demographic characteristics of the neighbourhoods where the study was conducted to enable understanding of the elderly active lifestyle in the two different urban setting. It gives a brief description of the site, socio-demographic characteristics of the respondents and the neighbourhood characteristics to enable evaluation of young elderly active lifestyle as influenced by the neighbourhood environmental factors to identify determinants of aged-friendly neighbourhoods in Malaysia.

Chapter 5

Study Areas (TTDI and Taman Meru)

5.1 Introduction

This chapter presents a brief description of the study areas; it starts by giving a description of the site and the physical characteristics of the neighbourhoods. It also describes the study areas' background to enable an understanding of the site. It starts with describing the socio demographic characteristics of the neighbourhoods then the physical layout, the different land uses and finally the physical characteristics of each neighbourhood. Examining the physical characteristics enables the evaluation of the young elderly active lifestyle as influenced by the neighbourhood environmental factors, and hence, identification of determinants of aged-friendly neighbourhoods. The methodology used for the evaluation includes observation, maps and photos.

5.2 The Study Areas Background

This section discusses the background of the major cities where the two neigbourhoods are located and then discusses each neighbourhood background in an attempt to give an understanding of the neighbourhood characteristics in each urban setting.

5.2.1 Kuala Lumpur

The federal territory of Kuala Lumpur is the national capital of Peninsular Malaysia. It was declared as a separate federal territory in1972. It occupies an area of 243 km^2 and has a total population of 1,627,172 and a total living quarters of 471, 297 with total households of 436, 865. Kuala Lumpur is surrounded by Selangor districts: Ampang on the eastern part, Petaling Jaya on the western part and Gombak on the northern part. Being the national capital city, it has shown several developments in the various sectors that are increasing with a rapid pace, resulting in the development of approximately

2328 residential areas scattered throughout the districts. It has five main districts with several neighbourhoods; although TTDI is under Damansara Penchala (DP) not the highest populated area, but it is the highest populated neighbourhood amongst all the neighbourhoods in all the districts. Table 5.1

Table 5.1: List of housing areas and population of districts in Kuala Lumpur

District	Total number of Houses (units)	Area (acres)	Population (0.000)	Strategic Zone
Bandar Tun Razak Highest populated neighbourhood (Taman Midah)	75, 803 4,400	4890.7 261.31	310,790 18,040	Bandar Tun Razak Sg. Besi
Bukit Jalil Seputeh (BJS) Highest populated neighbourhood (Bandar Baru Sri Petaling)	54.237 4,899	4801.64 640.40	222,371 20,086	Bukit Jalil Seputeh (BJS)
Damansara Penchala (DP)	29,478	3991.51	120,859	Damansara Penchala (DP)
Highest populated neighbourhood (TTDI)	9,626	731.19	39,467	
Sentul Menjalara (SM) Highest populated neighbourhood (Kepong Baru)	78,081 4,335	5049.84 294,21	320,135 17,774	Sentul Menjalara (SM)
Wangsa Maju Maluri (WM) Highest populated neighbourhood (Taman Melati)	309,693 4,148	3573.42 2 275.70	295,580 17,007	Wangsa Maju Maluri (WM)

Source: DBKL, 2012

5.2.2 Taman Tun Dr Ismail (TTDI)

Taman Tun Dr Ismail, usually known as (TTDI) neighbourhood is a major neighbourhood in Kuala Lumpur. It is located on the north-western part on the Kuala Lumpur and Selangor border (Figure5.1). It is administered by the Kuala Lumpur City Hall. TTDI is one of the neighbourhoods of Damansara Penchata (DP) with the highest population and occupies an area of 731.19 acres and a total of 519,166 houses. It has a fairly hilly topography, a grid-like street system with many intersections and very few cul-de-sacs. The population of TTDI is 35808,72 and 6.9% of this population is elderly

aged 60-74 (Department of Statistics, 2010). The average household is 3.72 (DBKL, 2011). Many young married couples live with their older parents. The majority of the residents live in extended families, where the elderly have their children staying with them, especially among the Malay and Indian ethnic groups. The block sizes are fairly large with a mixture of traditional housing style (two-storey terrace houses, multiple storey detached and semi -detached houses), Table 5.2. The walkways throughout the neigbourhood are narrow and mostly blocked by trees. The main street is busy with few bus-stops, fairly wide paved walkways and no retail shops or services. The area park is within a 20-25 minutes walking distance, but there are few small children playgrounds within the residential area. The commercial area (retail shops, restaurants, offices and services) is within20 minutes' walk. There are two worship facilities; one within the housing areas and the other along the main road. There are few community centers scattered throughout the neighbourhood.

Table 5.2: Housing Types at TTDI

Code	Housing Type	Number of Units
1.00	Bungalow Houses	845
2.00	Semi -Detached Houses	793
3.00	Terrace Houses	5,935
4.00	Town Houses	436
6.00	Low-medium Housing	48
9.00	Condominium and High Cost Apartments	1,075
10.00	Government Quarters	426
17.00	Other Types	50

Source: DBKL, 2012

5.2.3 Ipoh-Perak

Ipoh is the capital city of the state of Perak, the state with highest elderly population as mentioned earlier in Chapter Three. It has an area of $643km^2$ and a population of 767,794 (Department of Statistic, 2010). Ipoh is located at the Kinta River at a distance of about 125 mi les (200km) from Kuala Lumpur (Figure5.1d). It is considered the fourth largest city in Malaysia and is ranked as the sixth most populous city in the country. Ipoh is under the administration of Ipoh City Council. The architectural style

of the city is characterized by colonial shop houses. The railway station represents an impressive historical building from the colonial era; usually referred to as Tag Mohall of Ipoh. Ipoh was a tin-town in1930s. The city has many low density residential neighbourhoods and unlike Kuala Lumpur the three main ethnic groups live in different neighbourhoods. Therefore, the three main neighbourhoods in Ipoh are: Taman Meru (Malays), Taman-Canning (Chinese) and Taman Buntong (Indians), the largest neighbourhood is Taman-Canning (Table, 5.3), but as mentioned in Chapter Four the Chinese did not show any willingness to participate in the survey or cooperate for the study. Therefore, the researcher had surveyed the second larger neighbourhood Taman Meru (Figure 5.1e).

5.3 Main Neighbourhoods in Ipoh, Population and Number of Housing Units

Neighbourhood	Housing Units	Population	Elderly population
Taman Canning	1547	6,249.88	644
Taman Meru	715	2,888.6	298
Taman Buntong	459	1,854.36	208

Source: (DBI, 2012)

5.2.4 Taman Meru Neighbourhood

Taman Meru neighbourhood is located on the north-western part of Ipoh city, at a distance of approximately 10 minutes by car from the city centre. It has a fairly flat topography, a grid-like street system with few cul-de-sacs and moderate intersections (Figure 1e). The population of Taman Meru is 2,888.6 mainly Malay with few Chinese and Indians residing in Meru-Heights (approximately 1%). 9.7% of this population are elderly aged 60-74 (Department of Statistic, 2010). The average household is 4.04 (DBI, 2012). Most of the residents live in extended families, where the majority of young married couples live with their older parents. The area is characterized by large block sizes. The houses are mainly traditional Malay one storey detached houses with parking space provision. There are some newly built multiple-storey housing but there are no apartment flats. There are no walkways throughout the neighbourhood apart

from the main street and infront of the school area. The main street is fairly busy with no retail shops or services but with wide unpaved sidewalks. The area park is within a 15-20 minutes walking distance. There is also one worship facility and one community centre along the main road.
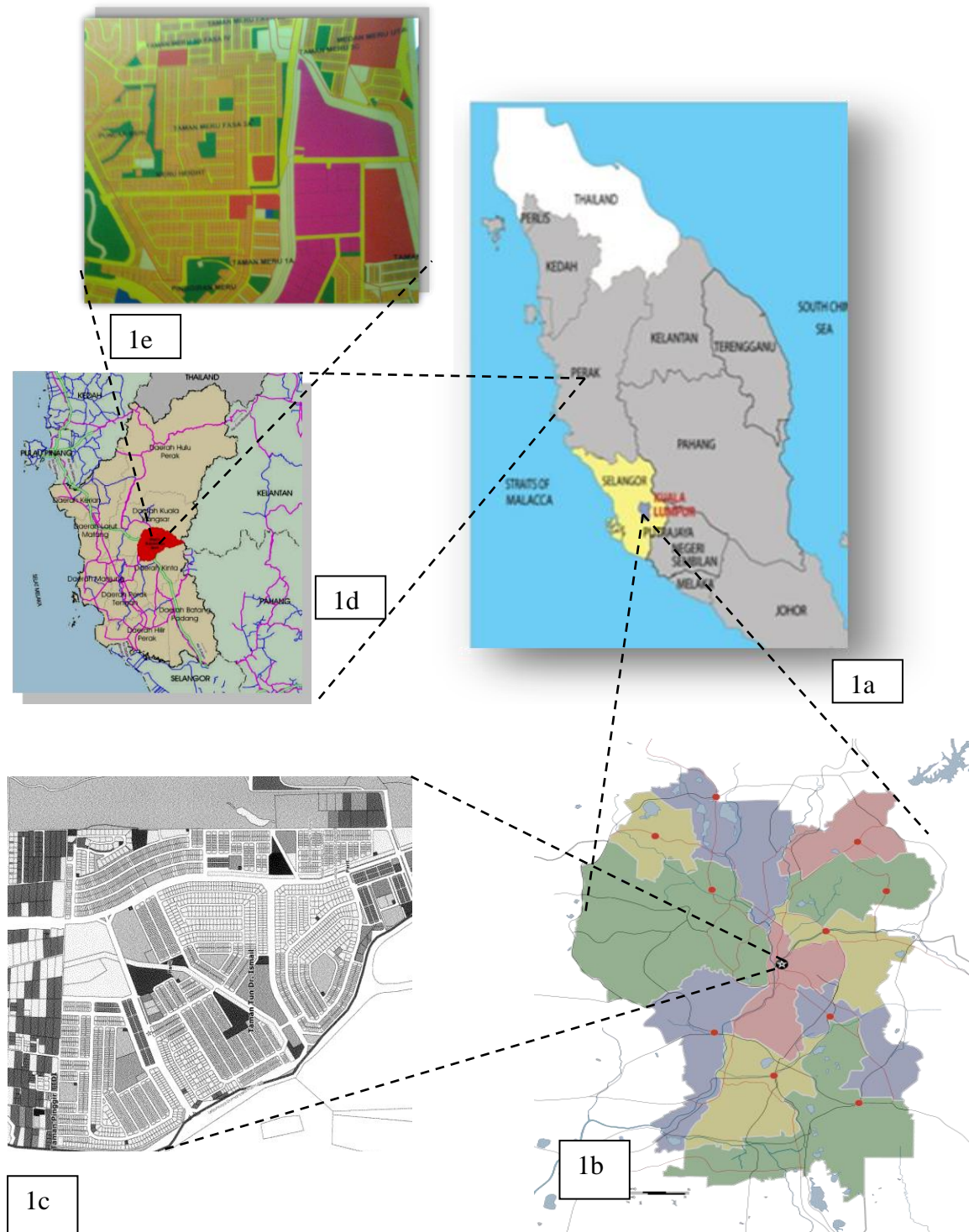
Figure 5:1a States Plan, Malaysia; b Key Plan of Kuala Lumpur; c- Plan of TTDI Neighbourhood; d- Key Plan of Perak; e- Taman-Tun Neighbourhood

5.3 Existing Conditions of Neighbourhoods

Landed properties dominate both neighbourhoods. In TTDI two storey terrace housing represent the majority of the housing in the area. The terrace houses are either located along the main roads and are very permeable, or planned around open spaces with few cul-de-sacs. The main roads have several bus stops along it and are meant to allow traffic flow from different access points. The terrace houses planned around the open spaces have less traffic flow as access is almost limited to residents. This allows the residents to apply security check points at the ins and outs of the housing area in an attempt to control potential offenders.

In Taman- Meru as a suburban neighbourhood, all the houses are either two storey or one storey detached houses. The majority of the homes includes town houses and is single-family homes. The neighbourhood has curvilinear streets and some cul-de-sacs. The bus stops are along the main road only and buses do not pass through the different areas in the neighbourhood; thus traffic flow is also limited to residents. The neighbourhood is quite and social relations are valued, this resulted in the community members watching for each other, and there are no security check points at the entries or at the exits of the residential area.

5.3.1 Land Use Planning of the Neighbourhoods

Land use planning can create a walkable neighbourhood and plays a crucial role in promoting active lifestyle within housing areas. Most of the public facilities in TTDI are located in the south western parts of the neighbourhood, such as the commercial area, offices, and schools. One school is situated along the main road and the other is situated near the commercial area on the south western end of the neighbourhood. The two worship facilities are located on either ends of the neighbourhood on the eastern

and western parts. Open spaces and children play grounds are situated in the middle of the housing area (TTDI land use map, appendix 5).

In Taman Meru, the commercial facilities are located in the north eastern part of the neighbourhoods and not within a walking distance; all the other facilities are located within a walking distance from the residential area, the school is located in the middle of the residential areas, the park is located at back of the residential area; the worship facility and the community centre are located along the main road. (Taman Meru Land Use Map, appendix 5).

5.3.2 Pedestrian Walkways

Pedestrian walkways are important elements of the urban planning that provides access and facilitates physical activity in its simplest form walking. Within residential neighbourhoods walkways provide opportunities for community members to interact and communicate. The sidewalks also ensure pedestrian's safety by providing adequate separation for them from the street. TTDI do not have adequate walkways, the walkways are either narrow, in a bad condition or blocked by trees or pot plants, (Figure 5.2a). In Taman Meru there is a noticeable absence of walkways except around the school area, (Figure 5.2b).

Figure 5.2a: Sidewalks in TTDI

Figure 5.2b: Sidewalks in Taman-Meru

5.3.3 Alleys and Backlanes

Alleys provide for ease of navigation through the neighbourhood and backlanes are normally planned as service areas, however, sometimes they can threaten the security of the houses by being potential entrapment areas and escape routes for potential offenders. The alleys in TTDI are moderately maintained, but poorly illuminated. Back lanes are usually used as service areas for the houses and in some parts are gated for security reasons, (Figure 5.3a and b). In Taman Meru the houses have no back lanes or alleys but there are some cul-de-sacs, (Figure 5.3c).

Figure 5.3a: Alleys i n TTDI   Figure 5.3b: Backlanes i n TTDI

Figure 5.3c: Cul-de sacs i n Taman-Meru

5.3.4 Open Spaces and Parks

Open spaces and parks in neighbourhoods are places planned to encourage social interaction and promote physical activity among residents and users from different

areas of the city. Moreover, it is used by community members for formal programs, activities and social events. TTDI open spaces in the middle of the house are fairly maintained and the area park is in a good condition apart from the bridge that needs some maintenance. Both have reasonable facilities (Figure 5.4 a and 5.4 b). Taman Meru has few open spaces and the area park has limited facilities, however, both are in a fairly good condition.

Figure .5.4a: Neighbourhood Park in TTDI

Figure.5.4b: Area Park in TTDI

5.3.5 Accessibility and Permeability

Traffic movement across the residential neighbourhood, ease of residents navigation through the neighbourhoods and their circulation around the the neighbourhood

determine the social and physical activities of its elderly residents. TTDI neighbourhood is very accessible and all facilities are within walking distances. There are also some traffic calming techniques in the area, such as, narrowing of the traffic lanes and different paving materials at intersections. This high permeability contributes to the active lifestyle of its residents. In Taman Meru, most of the facilities are within walking distances except for the commercial area which is within few minutes by car. However, as mentioned before the young elderly in both neighbourhoods are very auto-dependent and Drive their cars and motorcyles to all destinations . The problem in both neighbourhoods isthat , there is no provision for off-street parking and residents are obliged to park on the walkways, (Figure 5.5 a and b).

Figure 5.5a: Off-street Parking in TTDI

Figure.5.5b: Cars parking on walkways; no ill planned intersections in Taman-Meru

5.3.6 Lighting

Lighting in residential neighbourhoods plays an important role in increasing a sense of safety and therefore encourage both social and physical outdoor activities. Lighting of public open spaces, parks and walkways within the neighbourhood should be improved to increase the level of safety in the area. In TTDI, street lighting is fairly good but is sometimes obscured by trees. In Taman Meru, street lighting is poor and needs improvement. Young elderly in Tamm-Meru is discouraged to go for evening walks because of the poor lighting of the area.

Lighting is obscured by trees in TTDI

Figure 5.6 a: Lighting along the main road in TTDI

Lighting poles are placed apart at far distances

Figure 5.6 b: Lighting in Taman-Meru Main Road

5.4 Summary

This chapter has provided a brief description of the neighbourhood physical characteristics of the study areas. The description aimed at identifying the existing conditions and facilities by each neighbourhood environmental factor that might facilitate or obstruct young elderly active lifestyle. It has also given a brief description of the neighbourds land uses that provide different facilities for the young elderly and support active lifestyle among them. These brief descriptions are crucial for organizing priorities in promoting aged-friendly neighbourhoods.

The next chapter presents the methods used to explicate the phenomenological data in order to provide an understanding of the young elderly lived experience of active lifestyle as influenced by their neighbourhood environmental factors.

Chapter Six

Methods of Phenomenological Data Explication

6.1 Introduction

The aim of the qualitative research is to understand the subjective experience of active lifestyle as experienced by the young elderly residing in both neighbourhoods: TTDI and Taman Meru. This chapter represents the findings of the phenomenological data explication through the description the lived experience of the young elderly active lifestyle. It starts by illustrating the phenomenological methodology and explicating the data by using a simplified version of Hycner (1999) process. Interviews with official aimed at clarifying issues pertaining to young elderly active lifestyle to develop aged-friendly neighbourhoods. The last part includes a summary of the findings.

6.2 Phenomenological Data Explication

Hycner (1999), argued that the term analysis should be avoided in phenomenology as it means 'breaking the data' into parts and thus losing the whole phenomenology. On the other hand explication means investigating the phenomenon constituents while keeping the whole content.

Detailed interviews were conducted with seven participants from TTDI neighbourhood in Kuala Lumpur and five participants from Taman Meru neighbourhood in Ipoh. The researcher referred to the participants by Participant 1, Participant 2... Participant 12, to protect their identity. The analysis followed a modification described by Moustakas (1994):

1- Transcription: This step involved transcribing the recorded interviews. This in turn included literal statements and noting the general meaning units. To enable good analysis, the researcher had to read and reread the transcription and then wrote down

impressions while going through the data. Some of the information was not of quality as they did not add value or meaning, therefore only quality data were considered and the data explication proceeded accordingly.

2- Bracketing and Reduction (epoche): This step involved focusing on the wholeness of the experience in an attempt to search for the essence of the experience. The researcher had to set aside prejudgement and theoretical interpretations. This setting aside of prejudgements and preconceptions is called epoche (Creswell, 1998; Moustakas, 1994). Therefore, the researcher had focused the explication through two approaches. The first approach involved looking at how participants responded to each question identified earlier. Thus, the data was organized by question to enable the researcher to look across the responses and identify differences and consistencies. The second approach was to focus by neighbourhood, i.e. the researcher organized data about individuals from each neighbourhood separately, and then analysed it as a whole to get an overall picture of young elderly active lifestyle.

3-Delineating units of meaning: This step involved extracting the statements that seemed to highlight the research phenomenon. Therefore, having transcribed the interviews and reduced (bracketed) presuppositions and stayed as much as possible true to the data, the researcher managed to get a sense of the context of the interview. Then, the researcher began the process of going through words and sentences to elicit the interview meanings. This process helped in getting at the meaning essence. This involved crystallizing what the interviews have said using their literal words in an attempt to stay close to literal data. This general meaning unit expressed a unique meaning clearly different from the meaning that preceded and followed. This process continued until the researcher was able to identify all the relevant themes.

6.2.1 Bracketing and Reduction (epoche)

Having transcribed all the recorded data, the researcher assembled the textual and structural description through the bracketing and reduction process. The researcher was interested in describing the lived experience of the young elderly active lifestyle as influenced by their neighbourhood environmental factors. The researcher set her own prejudgement aside and described their lived experiences. Their own lived experiences were added into the description of the overall essence at the end. The following themes were set to describe their lived experience:

a) Theme 1: Elderly Active lifestyle

The young elderly were asked what active lifestyle meant to them. In describing active lifestyle as a lived experience, the themes of physical activity and social activity appeared throughout as main factors in their experience of active lifestyle. Participant 7 (TTDI) stated:

> *"Active lifestyle means that I keep fit and maintain good health and also have a social life not staying alone."*

Most of the participants stated that active lifestyle meant to them benefiting oneself and their community (Appendix 6: Tables 6.1 for TTDI; and 6.13 for Taman Meru). Participant 5 (TTDI) added:

> *"Active lifestyle means to me that I am busy doing something either by myself or with people".*

They all talked in detail about the benefits of physical activity and social activity. According to their experience those who are physically active often become socially active leading to the concept of active lifestyle. Participant 4 (TTDI) stated:

> *"Active lifestyle means that I do something I like such as painting or carving, walking and also go out and meet people and* talk."

The participants also mentioned the importance of certain neighbourhood facilities such as parks, restaurants, worship facilities and community centre to their active lifestyle. Participant 6 (TTDI) stated:

"I walk every day for 1 hour then go to the restaurant/cafe to have breakfast with friends".

Participant 2 (TTDI) stated:

"I usually wake up early and go to Masjid for Subuh prayer then go to the park for a walk after that I meet my friends for breakfast and then go back home if there is no voluntary work in the community centre".

Therefore, the participants have positively defined active lifestyle by virtue of having maintained both physical and social activities. They recognized the importance of active lifestyle to both their physical and mental health. Participant 7 (TTDI) stated:

"Keeps me healthy both in my body and mind because I am busy doing something".

Participant 5 (TTDI) stated about the benefits of active lifestyle as health and social benefits (Appendix 6: Tables 6.2 for TTDI and 6.14 for Taman Meru):

"Lots of benefits to my health, my heart, I suffer no high blood pressure or diabetes. Social life is also important especially in our age I like to share history and experiences".

Consequently the researcher appreciated that the notion of active lifestyle for these young elderly is related to positive issues of both physical and social activities. From their experience a loss of these two domains of active lifestyle could have an effect on active and healthy aging. Participant 1 (TTDI) stated:

"Walking is good for my heart and if I do not go out and meet my friends I will just be sitting watching TV all day."

Participant 4 (Taman Meru) talked about active lifestyle as:

"It is good for my heart and brain as it keeps me busy with useful work".

Their daily routine active lifestyle showed both physical and social activities, Participant 2 (TTDI) stated:

"I care very much to exercise every day; walk/jog and I always like to go to the cafe to meet my friends",

Participant 3 (TTDI) added:

"I walk for one hour everyday if it is not raining and I participate in voluntary work in the community centre."

Some young elderly enjoyed voluntary work as it gives them opportunity to compensate of lost roles, participant 6 (TTDI) stated:

> *"It is good for my health and my heart, being engaged in the voluntary work also gives me pleasure."*

Participant 3 (Taman Meru) stated (Appendix 6: Tables 6.3 for TTDI and 6.14 for Taman Meru):

> *"I enjoy being busy doing something that I like and helping my community."*

The researcher concluded that health and social benefits were expressed by the majority of the young elderly despite the varying level of both physical and social activities. (Appendix 6: Tables 6.4 for TTDI and 6.16 for Taman Meru)

The researcher also reported that there were no significant differences between the elderly active lifestyle in the two different urban setting. The pattern of routine daily physical activity, community-based activities and other relevant social activities are almost the same. Since most of the participants were Malay, the finding is consistent with Diez-Roux, (2004) who suggested that cultural and ethnicity affects neighbourhood environmental factors and thus influences active lifestyle among individuals. (Tables 6.1-6.4, Appendix 3). Theme 1 showed that the young elderly will be healthier as they age than elderly in the past and will have a more active lifestyle. While many studies have been done on elderly active lifestyle, only few of them focused on the lived physical and social experience of elderly. Throughout the theme both physical and social components were appraised as facets that most affected the young elderly active lifestyle. As planners, this enables us to understand active lifestyle from the young elderly's perspective. Such understanding would help in planning for the young elderly in urban settings and would also allow the young elderly perspective to be more effective in the development of community services and programs. The factors identified are "physical activity" and "social cohesion"; show the need for more

studies that would not only generate knowledge but would also provide direction for the development of aged-friendly neighbourhoods.

b) Theme 2: Issues related to active lifestyle of the elderly

The neighbourhood physical environment is important to young elderly active lifestyle. The young elderly perceptions about their neighbourhood environmental factors have the greatest influence on their active lifestyle. Theme 2 discusses measures of young elderly perceptions of their neighbourhood accessibility, permeability, convenience, social interaction and safety. Specifically, theme 2 identified issues in relation to the following variables of interest:

Issue 1: Neighbourhood perception (accessibility and permeability); the participants were asked how easy would they navigate in their area? All the participants stated that it was quite easy for them to move around their neighbourhoods. Participant 5 (TTDI) stated:

"Easy lah I have no problem to find my way".

They related this to specific neighbourhood elements such as shorter distances to destinations and well-connected streets (Appendix 6: Tables 6.5 for TTDI and 6.17 for Taman Meru). Participant 1 (TTDI) stated:

"Quite easy I can go anywhere from my place".

Neighbourhood location and environmental factors were major sources of active lifestyle through affecting destinations and providing facilities. When the elderly were asked to rate the level of isolation of their neighbourhood, the participants perceived their neighbourhood as not isolated and as well connected to basic daily needs. Participant 7 (TTDI) stated:

"Not isolated at all I can go to meet daily needs within a reasonable distance"

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Participant 2 (TTDI) stated:

> *"Not isolated I can go everywhere within few minutes".*

Participant 1 (Taman Meru) added:

> *"I cycle to get my daily needs; I do not have shops or groceries nearby;*
> *fairly isolated".*

Their active lifestyle was facilitated by the fact that the neighbourhoods provided the necessary facilities and all their needs were nearby. The researcher concluded that accessibility and permeability of the neighbourhood influenced and also contributed to active lifestyle among the elderly (Appendix 6: Tables 6.6 for TTDI and 6.18 for Taman Meru).

Issue 2: Neighbourhood Satisfaction (convenience); the participants were asked to describe the services and amenities provided by the neighbourhood that have provided opportunities for them to meet, interact and perform physical activities. Most the participants reported that the area park, the worship facilities and also the shopping centre provided opportunities for them to get involve in both physical and social activities. Participant 2 (TTDI) stated:

> *"Definitely the park and the worship facility"*

Participant 5 stated:

> *"For sure the area park and Masjid"*

The participants seemed satisfied with their neighbourhood facilities and amenities as promoting active lifestyle and enhancing physical activity. (Appendix 6: Tables 6.7 for TTDI and 6.19 for Taman Meru).

Issue 3: Residents' satisfaction, this included sub-heading to further elaborate on the concept; the participants were asked on how they maintain close relationship with their neighbours? The participants reported that they enjoy having a strong community and that the strength of this community was a key facilitator in both physical and social

activities. In TTDI, although the participants stated that they do not often visit each other but they maintain good relations built on trust.

Participant 1 (TTDI) stated:

> *"I visit my neighbour when I have time, we sometimes have tea together and yes I do trust my neighbours".*

Participant 3 (TTDI) stated:

> *"My relation with my neighbours might not seem to be strong because we are all quite busy with our private lives, but we respect each other and are there for each other".*

This strengthened by participant 4 (TTDI) stating that:

> *"We maintain a good relation full of respect and care though no many or regular visits".*

Participant 5 (TTDI) added:

> *"We do not visit each other regularly but we meet every day down the road while walking or in Masjid and we always have a chat".*

In Taman Meru the social relations are even stronger and young elderly not only know each other's names and visited each other but also arranged all the physical and social events in the neighbourhood.

Participant 3 (Taman Meru) stated:

> *"Our relationship is very strong we have known each other for many years and have shared all good and bad events, we support each other all the time"*

Participant 1 (Taman Meru) stated:

> *"we visit each other and are always together in private and social events"*

(Appendix 6: Tables 6.8 for TTDI and 6.20 for Taman Meru).

Participants were also asked regarding concerns about leaving home (safety): How they viewed their neighbourhood safety? Did they feel safe to go out at any time? Most of the participants especially in Taman Meru viewed their neighbourhood as quite safe apart from some petty crimes.

Participant 3 (TTDI) stated:

> *"Well everywhere there are opportunity offenders but the area is relatively safe. At the time I go for a walk around 5:00 pm the streets are normally safe because you can find many people going for a walk or jog, so I feel safe".*

Previous researches suggested that unsafe neighbourhoods experience low active lifestyle levels (Mendes et al., 2009), thus, the researcher concluded that both neighbourhoods have low crime rates because the elderly showed high levels of both social and physical activities.

One participant 2 (TTDI) stated:

"The neighbourhood is safe, there are some house breaks and street snatches but the crime rate is relatively low in the neighbourhood. I usually go for a walk in the park and the park is very safe".

Participant 4 (TTDI) with a knee problem stated:

> *"The neighbourhood is fairly safe, yes we hear about street snatching and house break-ins but we have been living in this area for over 22 years and have not been victims to any type of crime. As I told you before I rarely go for a walk but I possess no fear of crime when I do".*

(Appendix 6: Tables 6.9 for TTDI and 6.21 for Taman Meru).

The participants were also asked about their concerns about neighbourhood conditions (maintenance) and whether they possessed any fear of falling due to bad walkways conditions? Most of the participants reported that they do not really walk around their neighbourhood and they normally go to the area's park for walking or for performing other types of physical activity. However, they stated that walkways conditions in some areas are poor and the lighting needs improvement.

Participant 1 (TTDI) stated:

> *"Actually we do not really have walkways, besides I usually walk in the park";*

Participant 3 (TTDI) stated:

> *"The walkways are either too narrow, or not well maintained or full of plant pots. Anyhow I usually take my car to the park to walk there."*

But some participant in Taman Meru stated that walkway conditions did not really deter them from walking as their area is fairly quiet and no fear of speedy traffic.

Participant 2 (TTDI) stated:

> *"Well the area is fairly quite you can walk in the middle of the street no heavy or speedy traffic; however I go to park for a walk more fresh air and beautiful scenery".*

The importance of having a park for the young elderly to engage in both physical and social activities emerged almost throughout the themes. Generally, all the participants showed little concerns about traffic and crime deterring their active lifestyle. (Appendix 6: Tables 6.10 for TTDI and 6.22 for Taman Meru).

c) Theme 3: Barriers and facilitators to active lifestyle:

This involved exploring more the neighbourhood environmental factors that are responsible for promoting elderly active lifestyle. Three questions were asked, the variable of interest for the first two questions was walking and for the third question the variable of interest was management. The participants were asked about the facilitators and barriers to physical activity in its simplest form 'walking'? The participants agreed that provision of walkways, good lighting and enhancing conditions of parks are among facilitators to walking. Conversely, lack of walkways, poor lighting and bad conditions of parks deter their active lifestyle.

Participant 1 (Taman Meru) stated:

> *"I think if we have walkways in good conditions we will be encouraged to walk; poor lighting and lack of shading path could be barriers";*

Participant 5 (Taman Meru) stated:

> *"The park facilitates walking but lack of maintenance and services are real barriers";*

> Participant 3 (Taman Meru) stated:

> *"No heavy traffic, and safety facilitates walking but lack of walkways, benches and shading are Barriers".*

The participants showed awareness of the neighbourhood environmental factors that facilitated /obstructed their active life and that they would become less active if barriers are not eliminated. (Appendix 6: Tables 6.11 for TTDI and 6.23 for Taman Meru).

Participants were also asked if there were some programs in their neighbourhood that helped them stay active. The majority reported that they have both physical (sports groups, sports competitions) and social (voluntary community work) neighbourhood programs that help them stay active.

Participant 2 (Taman Meru) stated:

> *"Yes there are always different programs to join both physical and social; this weekend we had racing competition for the different age groups. I also have classes every day in the evening at the Masjid and everybody can join",*

Participant 3 (Taman Meru) stated:

> *"Yes the community centre arranges for different events and arranges sports competitions."*

(Appendix 6: Tables 6.12 for TTDI and 6.24 for Taman Meru).

d) Theme 4: Clustering units of relevant meaning to form themes

Having the list of significant statements, the researcher re-bracketed the presuppositions and stayed true to the phenomenon of active lifestyle among young elderly as much as possible. The next step involved finding units of relevant meaning that clustered together naturally, i.e. identifying themes that united the different significant statements or discrete units of relevant meaning. The themes emerged through the examination of each unit of relevant meaning to extract or elicit the essence of the specific unit of relevant meaning in the context of young elderly active lifestyle. For example, the essence of a number of units of relevant meanings pointed to the vital role of socializing as "benefit the community; meet people; seeing other friends" which occurred while investigating active lifestyle experience, those units of meaning were

put together under the theme or cluster of social cohesion . Here the context was critical because there might have been a number of different themes or clusters addressing active lifestyle as explained by social cohesion. Therefore, given the context of active lifestyle, most of the significant statements take the above separate themes. In this step the researcher involved her own judgement and insight. Thus, the researcher went back to the interview transcription and summarized each interview. This helped in providing the context for the themes' emergence as well as giving a sense of the whole issue (active lifestyle). (Appendix 6: Tables 6.25 for both TTDI and Taman Meru).

6.3 Interviews with Officials

The officials were selected strategically in the planning and design professionals and agreed to participate in the interviews. The researcher aimed at finding professionals with reflections over aged-friendly neighbourhoods as promoting young elderly active lifestyle and who could spare time to discuss the topic. Snowballing was also used to recruit professionals to participate in the interviews. The study interest focused mainly on the way they perceived contextual issues of aged-friendly neighbourhoods that promote active lifestyle among young elderly. A total of six interviews were conducted with professionals and each interview lasted approximately 30 minutes-1 hour. Four interviews were conducted in the manager's office as arranged by the Planning Department Manager, except for two interviews were in the Planning Directors' offices. The professionals were asked to reflect the questions shown in appendix 5.

The questions allowed the researcher to build a rich and detailed textual description centred on their concern for achieving planning goals and fulfilling basic needs and activities. They were engaged in explaining their understanding of aged-friendly neighbourhoods and how to address issues pertaining to active lifestyle. Furthermore, they were engaged in interpreting what frames and constrains their actions in

addressing such issues. The interviews with the professionals, thus, took the form of a practical and collaborative research that aims at promoting aged-friendly neighbourhoods and improving active lifestyle among young elderly by studying the problems and issues they face. This allows the researcher to discuss issues and problems raised during the quantitative research. Consequently the researcher could have a close insight into how the planning structures, practices and processes influence and shape the development of aged-friendly neighbourhoods.

6.3.1 Young Elderly Needs

The researcher asked the officials about how the primary needs of the elderly are met by the city. In fact most of the professionals felt that understanding aged-friendly neighbourhoods was considered crucial to understanding young elderly needs. During the interviews, phrases and words such as good infrastructure, enhancement of accessibility and provision of facilities were used to express meeting the needs. The officials used a language that helped the researcher to develop an analytical framework, for example:

An official stated:

> *"We are concerned to provide good infrastructure to enhance accessibility; we also consider green spaces and parks not only for the elderly to walk or practice some sports but also to meet and socialize"*

Another official stated:

> *"We provide parks, religious facilities and community centres to encourage the elderly to go out"*

In these simple sentences strong verbal constructions were used to describe meeting the young elderly needs: "provide, enhance, consider". Therefore the professionals described meeting the young elderly needs by virtue of having provided and enhanced some important services and facilities. Consequently the researcher appreciated that the notion "primary needs" for young elderly was primarily viewed as issues related to

physical facilities that encourage the young elderly to be active. In their account the professionals addressed the theme of active lifestyle in the context of two main components: physical activity and social cohesion; "we provide parks, religious facilities and community centres". From their perspectives absence of such facilities would have a traumatic impact on the young elderly active lifestyle. Therefore, the findings related to the professionals' perceptions of aged-friendly neighbourhoods were presented in the context of the impact of certain neighbourhood environmental factors on these two domains: physical activity and social cohesion. Accordingly, the aspect of the impact of the neighbourhood environmental factors on young elderly active lifestyle as explained by these two domains centred on the professionals concern for providing basic daily needs within an accessible distance:

An official stated:

> *"We need to improve accessibility to daily needs by providing walkways and ramps"*

They reported that their perceptions of meeting primary needs depended significantly upon the ability of the City Council to provide certain neighbourhood facilities and thus maintain a degree of young elderly autonomy in pursuing daily activities and routines.

6.3.2 Universal Design and Aged-friendly Neighbourhood

The researcher asked the professionals whether there is any development strategy to improve the housing physical environment for the young elderly. All professionals discussed the implementation of Universal Design principles (discussed earlier in chapter two under Theoretical Background) as optimum solutions to improve the housing physical environment for all age groups. This includes kerb cuts, traffic calming techniques, accessible public areas and transport and pedestrian-friendly neighbourhoods. It provides some kind of facilitators that young elderly can fit into in order to maintain an active life style.

One official stated:

> *"There is no specific strategy, but all new developments incorporate Universal Design principles that cater for the needs of all age groups"*

Another one stated:

> *"When we mention elderly we mean the old-old and all strategies are made for them because their needs are considered priorities. The young elderly can find alternatives, However, to keep them healthy we are concerned to provide more green spaces and ensure good lighting"*

As also evident in their perspectives on improving housing physical environment for the elderly most officials showed concern for accessibility, walkability, safety and maintenance with regard to both physical and social benefits for young elderly active lifestyle. Furthermore, they appreciated the usefulness of such factors in creating a positive experience of young elderly active lifestyle,

An official stated:

> *"We are more concerned about providing parks and green spaces because we observed that young elderly like to go to parks for entertainment and to meet people. However, the maintenance of these facilities has to be taken into account because it represents a financial burden on the City Council"*

6.3.3 Initiatives for Aged-friendly Neighbourhoods

The researcher asked the professionals about initiatives for aged friendly neighbourhoods. As mentioned before there are no specific programs, however in answering this question themes of "Negara Maju, Safe City, Green City and Sustainable Development" emerged as a key factor for describing initiatives for aged-friendly neighbourhoods. The officials believe that the core strategies of these concepts comply significantly with "aged-friendly neighbourhoods" concept. The officials discussed the abundance of services and facilities that these concepts provide in the context of active lifestyle for all age groups including the young elderly. Therefore, all the professionals viewed these concepts as fostering independence among young elderly and maintaining their autonomy and hence active lifestyle.

One official stated:

> *"As young elderly are among the age group who are prone to crime, the implementation of the safe city program ensures their safety as it resulted in a decrease of snatch crime to 39% in 2010-2011."*

Another one stated:

> *"All the cities in Malaysia have to implement "the Green City Concept" that includes planning for the elderly and ensures that their needs are met. Ipoh city concern is focused towards green city concept; Curitiba in Brazil is our ideal model for a green city"*

Another one stated:

> *"All our plans focus to achieve a nation that is "Negara Maju" and this involves planning for aged-friendly neigbourhoods"*

On the other hand, sustainable development is perceived as the heart of planning that reinforces planning in all new developments.

An official stated:

> *"Initiatives for aged–friendly neighbourhoods are already ensured by adopting sustainable development principles in all our new housing projects"*

This discussion allowed the researcher to discuss some issues and problems observed during the survey questionnaire such as lack/bad conditions of walkways and poor lightings in some areas of the neighbourhood.

One official stated that:

> *"Provision of walkways and other neighbourhood amenities are determined by the real state not the planning authority"*

In this aspect the officials discussed several points that the researcher thought are answers to another question that will be discussed in the following theme.

6.3.4 Organizational Structure and Aged-friendly Neighbourhoods

In the planning context, sustainable development means taking actions, changing policies and practice at all levels to ensure that major issues are given priorities and the

environment's ability to meet present and future needs are maintained (United Nations, 2005).

Within this framework the researcher asked the professionals about the organizational structures that can achieve the objectives of aged-friendly neighbourhoods. The professionals answered that the planning profession involve several players/stakeholders. The role of planners is to engage these different players (Organizations, government agency is, social groups, developers….) in the planning process to create a better sustainable world. As stated above provision of some amenities are the responsibility of the real state.

An official stated:

> *"In Singapore, for example, the planning authority is responsible for the implementation of the concept of pedestrian-friendly neighbourhoods. In Malaysia, we have not yet as local authority reached to that stage, most of our developments are driven by the developers who aim at making more profit, and the role of planning authority is more oriented towards development control. Therefore, we agree with minimum requirements for housing projects. If we force developers to provide walkways, the housing price will go up and people might not afford to buy a house or have a decent shelter"*

The researcher understood that the central theme of the relationship between planners and developers is that planners are concerned with meeting the needs of an ever growing population while improving the tax base of the city; the developers are concerned with making maximum profits. Implementing a project is the glue that holds the relationship between planners and developers together.

Another official stated:

> *"We cannot force developers to provide walkways, because the present bylaws and regulations do not provide for that; as we are moving towards a developed country and the population is aging, we need to formulate more regulations to meet future needs"*

With regard to the organizational structure the professionals stated that:

> *"It is a 'top-down structure'. The decision to develop comes from above and the implementation and development control are their responsibility.*

However, they can always propose and recommend according to certain needs.

The organizational planning system is as follows: the town and country planning system in Malaysia provides the main framework of land use, for example, The Town and Country Planning Act 2976 (Act 172) in Peninsular Malaysia. This aims at securing the most efficient and successful use of land in the public interest. The local authority normally decides on whether to approve proposals to build on land or not. The planners prepare development plans that set out the authority policies and proposals for the land use development in the area. The role of development plans is to direct and bring up to date decisions on whether planning permissions should be approved under the development control system (part IV, TCP Act "Planning Control").

An official stated:

> *"Our role is mainly to control development with the intention to protect and enhance the natural, visual and environmental character of the area. The decision for elderly housing development is usually taken by the Ministry of Women, Family and Community Development and we in the local authority have to make sure that the decisions are made in accordance to the development plan of the area. Furthermore, there must be public discussion and consultation and proper regard to relevant matters. These planning processes ensure a solid basis for balanced, reliable and consistent planning decisions. However, as mentioned above objectives of aged-friendly neighbourhoods are met by implementing the planning concepts of Universal Design and Green Cities. They provide the physical, social and economic needs of the community and through our development control plans achieve sustainability. Although, Universal design strategies were considered central by the Officials for maintain aged-friendly neighbourhoods, they indicated clearly that it must be coupled with some modification to fit the Malaysian context in order to maintain a sense of identity".*

As the planners strive to be a knowledge-based local authority, development control enables them to better understand the physical environment in which they live. Therefore, development control marks a milestone for the local authorities in their quest to achieve consistent and excellent planning decisions for the different age groups.

6.3.5 Opportunities and Barriers to the Advancement of Aged-friendly Neighbourhoods

When the researcher asked the professionals to locate the opportunities and barriers to the advancement of aged-friendly neighbourhoods; the professionals defined a major opportunity: Malaysians have great concern and respect for its elderly population and the Malaysian society is a caring society. Another opportunity was the young elderly population themselves.

An official stated:

> *"The young elderly represent an opportunity because they are still in a good healthy condition so they contribute to the community by participating in the planning decisions to improve neighbourhood communities"*

Another official stated:

> *"The local authority always appreciates and welcomes cooperation and support from the young elderly through sharing their expertise and knowledge to overcome neighbourhood challenges"*

Moreover, the young elderly represent an opportunity because they can make adjustments in the way they maintain an active lifestyle. They possess a sense of control over both their physical and social life. Because they are retired they have more time for physical and social activities and voluntary work. They use their experience to develop a strong community and are quite happy doing civic works. This decreases the feelings of loss in a sense of self-worth they normally have after retirement, Therefore, they inform the local authority of their needs and about the type of facility they expect. They have the chance to influence policies and proposals for future developments.

All the participants also agreed that availability of land is an opportunity.

An official stated:

> *"We have abundant land and when the government recognizes that there is a real necessity for a specific development it will take the necessary actions. I remembered when I first came from US in the early 80s; I proposed the concept of 'green city' to my boss because it was very new in the US. At that time there were more urgent needs, but fortunately it is*

never too late for Malaysia, the right decision comes on the right time and the green city concept is now being extensively implemented in all Malaysian cities"

Another one stated:

"All our new designs and planning represent an opportunity for the advancement of aged-friendly neighbourhoods. We are now incorporating compact housing areas with clusters for couples, 4-6 people and another for extended families. These enable the elderly to have an active life style and age in place"

Regarding the barriers, all the participants agreed that there are no real barriers.

An official stated:

"It is just a matter of government priorities; the government has urgent needs to meet such as raising the standard of living by improving the income of people and providing more job opportunities"

Another official stated:

"We have priorities, such as providing affordable housing and redefining the way they are perceived, designed, developed and financed. Another concern is to reduce car-dependency by providing good infrastructure. Moreover, I think these priorities are opportunities for the young elderly themselves."

Therefore, from their point of view the officials reported that availability of human resources and land are among the opportunities to the advancement of aged-friendly neighbourhoods. They stated that the young elderly are educated and some of them are professionals who are willing to help and share their knowledge in all fields.

6.4 Findings

In general participants are satisfied with their active lifestyle. They described their experience of active lifestyle and focused on its importance in maintaining independence over long periods of time. Almost all of them have a regular routine active lifestyle. They showed awareness of the importance of good health at an older age. They described the importance of active lifestyle in their physical and social aspects of their daily lives. A wide variety of perspectives regarding these aspects was

also found. Among others, the importance of social cohesion and the significant role of physical activity stood out. These are associated with the important commitment of the elderly to stay active and their capacity to perform physical activity. However, young elderly experience some difficulties in maintaining an active lifestyle due to the absence of some neighbourhood facilities.

The transcendental approach represented unique challenges, which is the systematic flow of the different stages, i.e. finding significant statements, delineating units of meaning and eliciting the essence of the specific units of meaning to enable the researcher to extract the whole meaningful experience. For example, in the study significant statements of *"I like to stay healthy", "do something", "being occupied", "meet my friends for breakfast", "benefit my community", and "do voluntary work"*, narrow to the theme of physical activity and social cohesion and on the essence of staying occupied.

Therefore, active lifestyle has a positive effect on the young elderly health and well-being. The essence of the experience is staying occupied and that staying occupied has the potential to be both physically and socially active.

The planning and design professionals reported that provision of parks and open spaces are the most important determinants of aged-friendly neighbourhoods because they promote active lifestyle among the elderly, They have observed that many of the young elderly preferred to come to parks and open spaces for walking/cycling or socializing. They are aware that such facilities have an impact on the young elderly's wellbeing and general health. However, maintenance of these facilities requires emphasis on financial aspects. Moreover, the interviews revealed that priorities prevented them from taking immediate actions to address some issues pertaining to the young elderly active lifestyle.

The central message elicited is that the professionals have to provide neighbourhood facilities that would encourage young elderly to go out to perform physical activity or to socialize, i.e. aged-friendly neighbourhood is the neighbourhood that promotes active lifestyle among its elderly population and this active lifestyle has the potential to include both physical and social activities.

6.5 Summary

The study used phenomenological research as a means of studying the subjective experiences of the young elderly as they are lived and included describing in detail how they perceived and interpreted their world. The phenomenon of young elderly active lifestyle involved a wide spectrum of perspectives. Among others the importance of physical activity and the significant role of social activity stood out. However, maintenance of parks and open spaces was perceived as obstructing outdoor social and physical activities. The perception was that ease of way finding (permeability), accessible facilities and amenities, and safety played a major role in encouraging physical and social activities. However, difficulty in walking was experienced due to poor walkways lighting. Another essential perspective was the perceived importance of the required response by local authorities to the needs of young elderly.

Based on these findings Chapter Eight will include discussion of the analysis cross-referenced with the current literature mentioned earlier in chapter two.

The next chapter describes methods of data analysis; findings from both qualitative data explication and quantitative data analysis will be triangulated to provide a bigger picture of the influence of neighbourhood environmental factors on active lifestyle domains: social cohesion and physical activity to identify determinants of aged-friendly neighbourhoods.

Chapter 7

Quantitative Data Analysis

7.1 Introduction

Based on the survey findings, this chapter describes the data analysis. It starts with a description of the young elderly demographic and socio-economic characteristics to provide a deeper understanding of the background of the neighbourhoods under study. This includes frequency tables presenting percentages of the socio-economic characteristics of the respondents, mean score and standard deviation of active lifestyle. This is followed by an analysis of the mean and standard deviation followed by an analysis of the relationship between neighbourhood environmental factors and active lifestyle to ensure the suitability of the data for further analysis. Further analysis includes factor analysis, testing the hypothesis which includes frequencies, t-test, MANOVA and simple linear regression; the last part of the analysis included answering the research questions. The last section of the chapter is dedicated to discussion of the study findings; it discusses the results of reviewing population aging trends in Malaysia, as well as the findings of both quantitative and qualitative research. It also discusses the triangulation of both subjective and objective findings to give a holistic picture of determinants of aged-friendly neighbourhoods.

7.2 Descriptive Statistics

The researcher used descriptive statistics to explore, summarize and describe the data collected. It was also used to determine whether there was sufficient variability to do further analysis. Cross tabulation and frequency tables were used to display the data.

7.2.1 Sample Characteristics

The first stage in the data analysis is to obtain an insight into the respondents' socio-economic characteristics. The study included TTDI neighbourhood in Kuala Lumpur

and Taman Meru neighbourhood in Ipoh. The questionnaire survey included 260 respondents from TTDI and 125 respondents from Taman Meru, i.e.385 young elderly were included for the study.

a) Length of Stay

The socio-economic characteristics of the residents show that the majority of the respondents (39.2%) have stayed in the neighbourhood for more than 20 years in both neighbourhood. 43.3% have stayed for more than 20 years in TTDI and 32.8% in Taman Meru. 2.3% in TTDI have stayed for 1 year and no respondent stayed for 1 year all stayed for more than 1 year. 23.1% in TTDI and 20.8% in Taman Meru have stayed for 2-10 years. 20.8% in TTDI and 30.4% stayed for 11-20 years. 11.5% in TTDI and 16% in Taman Meru have stayed for more than 30 years. The results indicated that the majority of the respondents have stayed for longer periods and this explained the strong social cohesion in the neighbourhoods, as people tend to have more frequent contacts with each other over longer periods of time. On the other hand, shorter periods of stay, for example In TTDI indicates that the TTDI neighbourhood is liveable and people are moving into the area (Table 7.1).

Table 7.1: Length of Stay

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Length of Stay	%	%
1 year	2.3	0
2-10 years	23.1	20.8
11-20 years	20.8	30.4
21-20 years	42.3	32.8
31+ years	11.5	16

b) House Ownership

The analysis shows prevalence of house ownership, 82.6% own their homes and 17.4% rent the houses in both neighbourhoods; in TTDI 76.5% own their homes and 23.5%

rent the houses, in Taman Meru 95.2% own their homes and 4.8% rent the houses. This explains the strong sense of community in both neighbourhoods, because house ownership plays a crucial role in having a sense of community and strong ties and consequently enhances the facilitation of human needs and reduces group conflict (Table 7.2).

Table 7.2: House Ownership

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
House Ownership	%	%
Owned	76.5	95.2
Rented	23.5	4.8

c) Gender

The analysis show also dominance of male elderly; 57.6% of the respondents are male and 42.4% are female in both neighbourhoods; 56.9% are male and 43.1% are female in TTDI, 69% are male and 31% are female in Taman Meru. This dominance of male respondents could explain the high percentage of active lifestyle as men tend to be more socially and physically active (Table 7.3).

Table 7.3: Gender of Respondents

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Gender	%	%
Male	56.9	69
Female	3.1	31

d) Ethnicity

Malays constituted the majority of residents (70.5%) followed by the Chinese (22%), Indian (6.5%) and others (1%) respectively in both neighbourhoods; 59.2% Malay, 30.8% Chinese, 8.8% Indians and 1.2% others in TTDI; 97.6% Malay, 1.6% Chinese, and 0.8% Indians in Taman Meru. Knowing that Ethnicity influences behavioural

norms and values, prevalence of Malay respondents explains why respondents in both

neighbourhoods have the same active lifestyle (Table 7.4).

Table 7.4: Ethnicity of Respondents

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Ethnicity	%	%
Malay	59.2	97.6
Chinese	30.8	1.6
Indian	8.8	0.8
Others	1.2	0

e) Age of Respondents

The median age of respondents is 60 years; 14.5% of the respondents aged 45-50 years,

18.7% aged 51-55 years, 29.9 aged 56-60 years, 22.3 % aged 61-65 years, 8.1 aged 66-

70 years and 6.5% aged 71-75 years in both neighbourhoods. 13.5% of the respondents

aged 45-50 years, 21.5% aged 51-55 years, 33.5% aged 56-60 years, 19.2 % aged 61-65

years, 7.3 aged 66-70 years and 5% aged 71-75 years in TTDI. 16.8% of the

respondents aged 45-50 years, 12.8% aged 51-55 years, 22.4% aged 56-60 years, 28.8

% aged 61-65 years, 9.6% aged 66-70 years and 9.6% aged 71-75 years in Taman Meru

(Table 7.5).

Table 7.5: Age of Respondents

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Age	%	%
45-50 years	13.5	16.8
51-55 years	21.5	12.8
56-60 years	33.5	22.4
61-65 years	19.2	28.8
66-70 years	7.3	9.6
71-75 years	5.0	9.6

f) Educational Level

The majority had attained an education above high school; 4.7% of the respondents attained a junior education, 26.2% attained a high school education, 24.7% attained a college education, 32.7% obtained a bachelor degree, 11.4% obtained a Master degree and 0.3% obtained a PhD in both neighbourhoods. 2.3% of the respondents attained a junior education, 19.6 % attained a high school education, 31.9% attained a college education, 40.8 % obtained a bachelor degree, and 15.4% obtained a Master degree in TTDI; 9.6% of the respondents attained a junior education, 40% attained a high school education, 30.4% attained a college education, 16% obtained a bachelor degree, 3.2% obtained a Master degree and 0.8% obtained a PhD in Taman Meru. The findings show that the young elderly are more educated than their precedents as mentioned earlier in Chapter Three (Table 7.6).

Table 7.6: Educational Level of Respondents

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Education	**%**	**%**
Junior (grade 8 or less)	2.3	9.6
High School	19.6	40
College	21.9	30.4
Bachelor	40.8	16
Master	15.4	3.2
PhD	0.0	0.8

g) Marital Status

The survey revealed a dominance of married couples- high percentage of married couples especially among the male. 3.1% of the respondents are single, 86.3% are married, 1% is separated, 2.3% are divorced and 7.3% are widowed in both neighbourhoods. 2.7% of the respondents are single, 83.3% are married, 1.5 % is separated, 2.7% are divorced and 9.3% are widowed in TTDI. 4% of the respondents are single, 91.2% are married, none are separated, 1.6% is divorced and 3.2% are widowed in Taman Meru (Table 7.7).

Table 7.7: Marital Status of Respondents

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Marital Status	%	%
Single	2.7	4
Married	83.8	91.2
Separated	1.5	0
Divorced	2.7	1.6
Widowed	9.3	3.2

h) Occupation

The majority of the respondents are retired; 15.3% were unemployed, 43.6% are retired, 27.5% are self-employed, 5.5% are employers, and 8.1% are government employees in both neighbourhoods. 11.9% are unemployed, 42.7% are retired, 33.8% are self-employed, 6.2% are employers, and 5.4% are government employees in TTDI. 22.4% are unemployed, 45.6% are retired, 14.4 are self-employed, 4% are employers, and 13.6% are government employee in Taman Meru (Table 7.8).

Table 7.8: Occupation of Respondents

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Occupation	%	%
Unemployed	11.9	22.4
Retired	42.7	45.6
Self-employed	33.8	14.4
Employer	6.2	4
Government employee	5.4	13.6

i) Income

The median income of the family in both neighbourhoods is RM3000. The monthly income was categorized into RM1000-2000, RM2001-3000, RM3001-4000 and RM4000 and above. 10.9% of the respondents earned RM1000-2000, 9.6% earned RM2001-3000, 25.2% earned RM3001-4000 and 54.3% earned RM4001 and above in both neighbourhoods. 4.6% of the respondents earned RM1000-2000, 6.9% earned RM2001-3000, 20.4% earned RM3001-4000 and 68.1% earned RM4001 and above in

TTDI. 24% of the respondents earned RM1000-2000, 15.2% earned RM2001-3000, 35.2% earned 3001-4000 and 25.6% earned RM4001 and above in Taman Meru. The results showed that the young elderly are wealthier than their precedents as mentioned earlier in Chapter Three (Table 7.9)

Table 7.9: Income of Respondents

Demographic Characteristics	Neighbourhoods	
	Taman Tun Dr Ismail (n=260)	Taman Meru (n=125)
Income	%	%
RM1000-2000	4.6	24
RM2001-3000	6.9	15.2
RM3001-4000	20.4	35.2
4001 and above	68.1	25.6

7.2.2 Describing the Data

Descriptive statistics are used to evaluate the items and determine whether there is enough variability to conduct further analysis. The mean scores show that there are significant differences between the variables suggesting that certain neigbourhood factors have a greater influence on young elderly active lifestyle, (Table 7.10). The measures are further examined using Pearson r correlations to assess the strength and direction between active lifestyle variables and the neighbourhood environmental factors, (Table 7.11).

Table 7.10: The mean (SD) scores, TTDI and Taman Meru neighbourhood

Neighbourhood Environmental factors	TTDI (n=260)		Taman Meru (n=125)	
	Mean	SD	Mean	SD
Social cohesion	16.88	5.01	16.46	5.31
Physical activity	16.72	4.87	16.06	5.21
Social interaction	17.71	4.48	14.89	4.47
Walkability	11.13	3.37	11.74	3.63
Facilitators to walking	17.10	4.87	17.98	4.15
Barriers to walking	18.44	3.83	19.00	3.66
Convenience	18.08	4.21	17.94	3.25
Accessibility	18.70	3.75	17.51	3.60
Permeability	16.85	5.39	15.83	5.66
Maintenance	18.20	4.11	15.27	4.53
Safety	17.89	4.44	16.02	4.91

7.2.3 Correlation

The researcher further examined the correlation between the dependent variable (active lifestyle: social cohesion and physical activity) and the independent variables (social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety) within the two neighbourhoods in the different urban setting (Table7.11). A bivariate correlation was undertaken and it was hypothesized that positive relationships existed between the dependent and independent variables, except for the independent variable "physical barriers to walking" which was hypothesized that the relationship with the dependent variables would be negative, i.e. social cohesion and physical activity will increase with decreased physical barriers to walking. All factors showed moderate-good correlations with active lifestyle except for social interaction with physical activity (-0.029, $p>0.05=$ 0.646) in TTDI neighbourhood.

Table 7.11: Correlation Coefficients within the two Neighbourhoods

Neighbourhood Environmental factors	TTDI (n=260)		Taman Meru (n=125)	
	Social cohesion (*p*-value)	Physical Activity (*p*-value)	Social cohesion (*p*-value)	Physical Activity (*p*-value)
Social interaction	0.152 * (0.014)	-0.029 (0.646)	0.749** (0.000)	0.748** (0.000)
Walkability	0.152 ** (0.014)	0.247 ** (0.000)	0.348 ** (0.000)	0. 309 ** (0.000)
Facilitators to Walking	0.353 ** (0.000)	0.227 ** (0.004)	0.300 ** (0.000)	0.250 ** (0.000)
Barriers to walking	-0.301 ** (0.000)	-0.194 ** (0.002)	-0.226 * (0.011)	-0. 295 ** (0.01)
Convenience	0.388 ** (0.000)	0.233 ** (0.000)	0.175 (0.051)	0.245 ** (0.006)
Accessibility	0.375** (0.000)	0.304 ** (0.000)	0.219* (0.014)	0.318 ** (0.000)
Permeability	0.574 ** (0.000)	0.481 ** (0.000)	0.650** (0.000)	0.547 ** (0.000)
Maintenance	0.165 ** (0.008)	0.238** (0.000)	0.848 ** (0.000)	0.801 ** (0.000)
Safety	0.283 ** (0.000)	0.199** (0.000)	0.956 ** (0.000)	0.836 ** (0.000)

* Correlation is significant at the 0.01level (2-tai led),
** Correlation is significant at the 0.05 level (2-tai led),

7.3 Factor Analysis

The researcher used factor analysis to summarize the structure of the variables set (neighbourhood environmental factors influencing active lifestyle). This enabled the researcher to test the theory about the structure of social cohesion and physical activity as two domains explaining young elderly active lifestyle and the neighbourhood environmental factors as factors influencing it. Since the researcher aimed at constructing a reliable test, factor analysis provided an additional means that enabled the researcher to determine whether the items are tapped into the same construct.

The 385 young elderly responded to the survey regarding their active lifestyle as influenced by neighbourhood environmental factors. The researcher analyzed eleven neighbourhood environmental factors (social cohesion, physical activity, social interaction, walkability, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety to reduce the set of variables to a manageable size. As mentioned earlier in Chapter Four, the correlation matrix appropriate for factor analysis was used to assess the adequacy of the sampling of each variable. Assumptions of normality and linearity have been satisfied and no outlying cases were detected. This enabled the researcher to obtain a measure of the importance of the particular variable to a factor. Furthermore, the results of factor analysis determine what substantive items assessed the construct, i.e. construct validity (Green & Salkind, 2008) . Therefore, the researcher used exploratory factor analysis on the items representing the various constructs in order to validate the scale theoretical structure.

One factor was extracted for each variable with an Eigenvalue greater than one except for convenience two factors were extracted with Eigenvalues greater than one. However, the researcher retained all factors in the analysis as the total variance explained high percentage of the variance in the variables, the five items showed strong

loadings (Costello & Obsorne, 2005, p. 5). Moreover,Mac Cullum, Widaman, Preacher, and Hong (2001), argued that as long as KMO is above 0.6 and high communalities are obtained, the model error is low and all factors can be retained. Furthermore, according to Field (2009), the significance of a factor loadings for a study sample of 300 and above should be greater than 0.298. However, the study considers loadings with greater than 0.4 as recommended by Stevens (2002). This explains about 16% of the variance in the variable.

Also, factor analysis and reliability are complementary procedures in scale definition and construction. Therefore, to indicate a solid factor a final step in the factor analysis involved a reliability test to determine the internal consistency of the items in the factors to ensure that the items comprised a reliable scale. As mentioned earlier in Chapter Four a Cronbach's alpha coefficient value of 0.7 is considered as an acceptable value.

7.3.1 Factor Analysis on Social cohesion

Factor 1 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. An examination of the correlation matrix indicated considerable correlations exceeded 0.3 and therefore, the matrix was suitable for factoring. The Barrett's test of sphericity was significant ($p<0.05=0.000$), and the KMO measure of sampling adequacy was 0.882 which is far greater than 0.6. The Eigenvalue obtained is 3.942 greater than 1 and explaining a total variance of 78.844% of the variance in the variables. The communalities analysis displayed showed that all variables have high communalities above 0.3. The factor loadings ranged from 0.800 to 0.941 more than 0.4. Therefore, the factors were retained. The factors included, consist of the following items:

1. I can maintain close relations with old neighbours and existing social group.

2. I can make new friends in our community.

3. I am willing to contribute to local community work.

4. The neighbourhood is a good place to stay.

5. The neighbourhood design (e.g. open spaces) effectively enhances social relations.

The factor described "social cohesion"; all the five items had some characteristics related to young elderly social activity. The factor scored a high Cronbach's alpha coefficient of 0.932 indicating a high internal consistency, therefore, ensuring that the items comprising factor1 produced a reliable scale.

7.3.2 Factor Analysis on Physical Activity

Factor 2 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. The correlation matrix shows correlations above 0.4, Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value was 0.854 much above the recommended value of 0.6. All items showed loadings above 0.4, therefore, the factor is suitable for factor analysis. The Eigenvalue obtained is 3.736 above 1, explaining 74.725% of the variance. The communalities analysis displayed show that all variables have high communalities above 0.3. Factor 2 included the following items:

1. Poor conditions of sidewalks discourage physical activity.

2. Poor conditions of parks and open spaces discourage physical activity.

3. Lack of neighbourhood programs helps me stay in active.

4. Inadequate public transport discourage me stay active.

5. Proximity of Locations-amenities and facilities are too far.

All the items of the factor described "physical activity" had characteristics related to physical activities. The Cronbach's alpha coefficient is (0.914) revealing a high internal consistency and ensuring that the items produce a reliable scale.

7.3.3 Factor Analysis on Social interaction

Factor 3 comprised 5 items that were subjected to factor analysis to summarize the essential information contained in the variables. The correlation matrix revealed that all correlations coefficients are above 0.4, Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value is 0.873 and exceeds the recommended value of 0.6. All items show loadings above 0.4, therefore, the factorability is supported. The Eigenvalue obtained is 3.716 above 1, explaining 74.317% of the variance. The communalities analysis displayed show that all variables have high communalities above 0.3. Factor 3 included the following items:

1. There is a neighbourhood watch group in my neighbourhood.

2. I know the name of my next door neighbour/across the street.

3. I have a neighbour within a walking distance that I regularly visit.

4. The relationship with my neighbour is based on mutual trust.

5. All.

The factor "social interaction" described all the items which have characteristics related to social relations among the community members. The Cronbach's alpha coefficient is (0.913) revealing a high internal consistency and ensuring that the items produce a reliable scale.

7.3.4 Factor Analysis on Walking

Factor 4 comprised 5 items that were subjected to factor analysis to summarize the essential information contained in the variables. The correlation matrix reveal that all correlations coefficients are above the acceptable level of 0.3 except for item 4, Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value is 0.764 and exceed the recommended value of 0.6. All items show loadings above 0.4, therefore, the factorability is supported. The Eigenvalue obtained is 2.692

above 1, explaining 53.835% of the variance. The communalities analysis displayed show that all variables have high communalities above 0.3. Factor 3 included the following items:

1. I never go outside my home for a walk.

2. I rarely go outside my home for a walk

3. I sometimes go outside my home for a walk.

4. I often go outside my home for a walk.

5. I go outside my home for a walk every day.

The "walkability" factor described all the items which have characteristics related to young elderly frequency of walking. The Cronbach's alpha coefficient was (0.753) revealing an internal consistency within the accepted value of 0.7 and ensuring that the items produce a reliable scale.

7.3.5 Factor Analysis on Facilitators to Walking

Factor 5 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. An examination of the correlation matrix indicates considerable correlations exceeded 0.3 and therefore, the matrix is suitable for factoring. The Barrett's test of sphericity is significant and the KMO measure of sampling adequacy is 0.880 far greater than 0.6. The Eigenvalue obtained is 3.794 greater than 1 and explaining 75.871% of the variance in the variables. The communalities analysis displayed showed that all variables have high communalities above 0.3. The factor loadings range from 0.844 to 0.904 more than 0.4. Therefore, the factors are retained. The factors included, consisted of the following items:

1. More choice interconnected streets.

2. Shorter distances to destinations.

3. Well-connected pedestrian walkways.

4. Safe crossing.

5. No fear of potential victimization on.

The factor "facilitators to walking" described all the five items which have some characteristics related to encouraging physical activity. The factor scored a high Cronbach's alpha coefficient of 0.920 indicating a high internal consistency, therefore, ensuring that the items comprising factor 5 produce a reliable scale.

7.3.6 Factor Analysis on Physical Barriers to Walking

Factor 6 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. The correlation matrix shows correlations above 0.3, except for item 5 the correlation coefficient is 0.254. Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value is 0.820 much above the recommended value of 0.6. All items show loadings above 0.4, therefore, the factor was suitable for factor analysis. The Eigenvalue obtained is 3.229 above 1, explaining 64.587% of the variance. The communalities analysis displayed show that all variables have high communalities above 0.3. Factor 6 included the following items:

1. Lack of walkways.

2. Poor conditions of walkways.

3. Lack of shading paths.

4. Lack of curb cuts.

5. Lack of street benches.

The factor "physical barriers to walking" described all the items which have characteristics related to obstacles discouraging physical activities. The Cronbach's alpha coefficient is (0.857) revealing a high internal consistency and ensuring that the items produce a reliable scale.

7.3.7 Factor Analysis on Convenience

Factor 7 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. The Correlation matrix shows correlations above 0.3. Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value is 0.715 above the recommended value of 0.6. All items showed loadings above 0.4, therefore, the factorability is supported. The Eigenvalue obtained 2.940 is above 1, explaining 80.556% of the variance. The communalities analysis displayed shows that all variables had high communalities above 0.3. The component matrix shows the factor loadings and correlation between the variables. Usually pure factors have 0.3 loadings or greater on one factor only. Convenience (general satisfaction with the neighbourhood) is a complex factor because it had high loadings on more than one variable. Rotation is necessary to make the interpretation of the output easy. Varimax Rotation is used. This rotation reduces the complex variable number and improves the interpretation. However, factor 1 compared 5 items with factor loadings ranging from 0.699 to 0.795; factor 2 comprised 4 items with factor loadings ranging from 0.0.633 to -0.378.

The rotated component matrix show that factor 1 composed 3 items with factor loadings ranging from 0.157 to 0.860 and factor 2 ranged from loadings of 0.930 and 0.197. This unclear structure is obtained from Varimax (orthogonal rotation). Item 1-5 are designed to measure one construct and thus it is expected that the extracted factors have high correlations. Consequently, an oblique Rotation (direct oblimin) is assumed a more appropriate choice. This provided a better interpretable solution than that of the orthogonal rotation. It produced two matrices: the pattern matrix and the structure matrix. The pattern matrix shows more clearly the high and low loadings so this matrix is interpreted. The loadings represented showed the unique relationship between the variables and the factor. The Eigenvalues are the same before and after rotation.

Factor 7 included the items:

1. Neighbourhood provides affordable housing.

2. Neighbourhood design provided adequate services.

3. Neighbourhood design provided street furniture.

4. Neighbourhood design provided efficient public transport services.

5. Neighbourhood design provided mix-used development.

The items examined showed that they represent a conceptually distinctive aspect of active lifestyle that can be labeled "convenience". The Cronbach's alpha coefficient (0.823) indicates a high internal consistency and ensures that the items comprising factor 7 produce a reliable scale.

7.3.8 Factor Analysis on Accessibility

Factor 8 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. The Correlation matrix shows correlations above 0.3. Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value is 0.714 above the recommended value of 0.6. All items show loadings above 0.4, therefore, the factor is suitable for factor analysis. The Eigenvalue obtained is 3.103 above 1, explaining 62.051% of the variance. The communalities analysis displayed shows that all variables had high communalities above 0.3. Factor 8 included the following items:

1. There are many places to go within a walking distance of my home.

2. Neighbourhood design is well connected to basic amenities.

3. Neighbourhood streets are hilly making walking difficult.

4. Neighbourhood design provides walkways on most of the streets.

5. Neighbourhood design provides handrails on walkways.

The factor "accessibility"; described all the items which have characteristics related to ease of navigation within the neighbourhood. The Cronbach's alpha coefficient is (0.843) revealing a high internal consistency and ensuring that the items produce a reliable scale.

7.3.9 Factor Analysis on Permeability

Factor 9 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. The Correlation matrix shows Correlations above 0.3. Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value is 0.897 well above the recommended value of 0.6. All items show loadings above 0.4, therefore, the factor is suitable for factor analysis. The Eigenvalue obtained is 4.159 above 1, explaining 83.189% of the variance. The communalities analysis displayed show that all variables have high communalities above 0.3. Factor 9 included the following items:

1. Neighbourhood design provides route choice

2. Neighbourhood design is well linked to facilities.

1. The residential neighbourhood is not isolated.

2. There are many alternative routes for getting from place to place in the neighbourhood.

3. The residential neighbourhood is within adequate distance to daily needs.

The "permeability" factor described all the items which have characteristics related to ease of way finding within the neighbourhood. The Cronbach's alpha coefficient is (0.949) revealing a high internal consistency and ensuring that the items produce a reliable scale.

7.3.10 Factor Analysis on Maintenance

Factor 10 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. The Correlation matrix shows correlations above 0.3. Bartlett's test of sphericity is satisfactorily significant ($p<0.05=0.000$) and the KMO value is 0.868 well above the recommended value of 0.6. All items show loadings above 0.4, therefore, the factor is suitable for factor analysis. The Eigenvalue obtained is 3.538 above 1, explaining 71.751% of the variance. The communalities analysis displayed show that all variables have high communalities above 0.3. Factor 10 included the following items:

1. The neighbourhood is not noisy.

2. There is no graffiti around in the neighbourhood.

3. There is a watch group in the neighbourhood.

4. Houses in the neighbourhood are well maintained.

5. The neighbourhood is well cared for-no litter lying around.

The "maintenance" factor described all the items which have characteristics related to how well the neighbourhood is cared for. The Cronbach's alpha coefficient was (0.895) revealing a high internal consistency and ensuring that the items produced a reliable scale.

7.3.11 Factor Analysis on Safety

Factor 11 comprised 5 items that were analyzed using factor analysis to summarize the essential information contained in the variables. The correlation matrix showed correlations above 0.3. Bartlett's test of sphericity was satisfactorily significant ($p<0.05=0.000$) and the KMO value was 0.872 well above the recommended value of 0.6. All items showed loadings above 0.4, therefore, the factor was suitable for factor analysis. The Eigenvalue obtained was 3.878 above 1, explaining 77.554% of the

variance. The communalities analysis displayed showed that all variables had high communalities above 0.3. Factor 11 included the items:

1. The neighbourhood is safe to walk around no blind corners.

2. Neighbourhood is safe to walk around good lighting.

3. Neighbourhood is safe to walk around no gaps in the walkways.

4. Neighbourhood is safe to walk around no heavy and speedy traffic.

5. Neighbourhood is safe to walk around no high crime rate.

All the items of the factor "safety" described all the items which have characteristics related to safe navigation within the neighbourhood. The Cronbach's alpha coefficient is (0.927) revealing a high internal consistency and ensuring that the items produce a reliable scale. Table 7.12 summarizes the factor structure of the variables.

Table 7.12: Factor Structure of the Variables

Factor and Variables	Factor Loadings	Alpha Coefficient	% of Variance
Factor 1: Social Cohesion			
1. I can maintain close relations with old neighbours and existing social group.	0.800	0.932	78..844
2. I can make new friends in our community.	0.932		
3. I am willing to contribute to local community work	0.875		
4.The neighbourhood is a good place to stay	0.886		
5. The neighbourhood design effectively enhances social relations	0.941		
Factor 2: Physical Activity			
1. Poor conditions of Sidewalks discourage physical activity.	0.755	0.914	74.725
2. Poor conditions of parks and open spaces discourage physical activity.	0.916		

3. Lack of neighbourhood programs helps me stay in active.	0.853		
4. Inadequate public transport discourage me stay active.	0.856		
5. Proximity of Locations- amenities and facilities are too far.	0.930		
Factor 3 Social interaction			
1. There is a neighbourhood watch group in my neighbourhood.	0.764	0.913	74.317
2. I know the name of my next door neighbour/across the street.	0.918		
3. I have a neighbour within a walking distance that I regularly visit.	0.841		
4. The relationship with my neighbour is based on mutual trust.	0.887		
5. All	0.891		
Factor 4 Walking			
1. I never go outside my home for a walk.	0.895	0.753	53.835
2. I rarely go outside my home for a walk.	0.790		
3. I sometimes go outside my home for a walk.	0.615		
4. I often go outside my home for a walk.	0.524		
5. I go outside my home for a walk every day.	0.784		
Factor 5 Facilitators to Walking			
1. More choice interconnected streets.	0.844	0.929	75.871
2. Shorter distances to destinations.	0.857		
3. Well-connected pedestrian walkways.	0.859		
4. Safe crossing.	0.904		
5. No fear of potential victimization	0.889		

Factor 6 Physical Barriers to Walking			
1. Lack of walkways.	0.560	0.857	64.587
2. Poor conditions of walkways.	0.859		
3. Lack of shading paths.	0.813		
4. Lack of kerb cuts.	0.905		
5. Lack of street benches.	0.835		
Factor 7 Convenience			
1. Neighbourhood provides affordable housing.	0.930	0.823	80.556
2. Neighbourhood design provided adequate services.	0.893		
3. Neighbourhood design provided street furniture.	0.801		
4. Neighbourhood design provided efficient public transport services.	0.865		
5. Neighbourhood design Provides mix-use development	0.860		
Factor 8 Accessibility			
1. There are many places to go within a walking distance of my home.	0.731	0.843	62.051
2. Neighbourhood design is well connected to basic amenities.	0.789		
3. Neighbourhood streets are hilly making walking difficult.	0.751		
4. Neighbourhood design provides walkways on most of the streets.	0.825		
5. Neighbourhood design provides handrails on walkways.	0.837		
Factor 9 Permeability			
1. Neighbourhood design provides route Choice	0.915	0.949	83.189
2. Neighbourhood design is well linked to facilities.	0.929		
3. The residential neighbourhood is not isolated.	0.870		

4. There are many alternative routes for getting from place to place in the neighbourhood.	0.890		
5. The residential neighbourhood is within an adequate distance to daily needs.	0.955		
Factor 10 Maintenance			
1. The neighbourhood is not noisy.	0.818	0.895	71.751
2. There is no graffiti around in the neighborhood.	0.878		
3. There is a watch group in the neighbourhood.	0.748		
4. Houses in the neighbourhood are well maintained.	0.866		
5. The neighbourhood is well cared for-no litter lying around.	0.886		
Factor 11 Safety			
1. The neighbourhood is safe to walk around no blind corners.	0.835	0.927	77.554
2. Neighbourhood is safe to walk around good Lighting.	0.888		
3. Neighbourhood is safe to walk around no gaps in the walkways.	0.877		
4. Neighbourhood is safe to walk around no heavy and speedy traffic	0.883		
5. Neighbourhood is safe to walk around no high crime	0.918		

7.4 Testing the Hypothesis

As mentioned earlier in the first chapter the general hypothesis of the research is that the active lifestyle within the two neighbourhoods is not uniform. The researcher then developed four hypotheses from this general assumption. Several statistical techniques were used to test the different hypotheses depending on the nature and type of the data to be evaluated.

7.4.1 Hypothesis1 explores land use planning (neighbourhood Location):

H_0: There is no significant difference in the active lifestyle among the young elderly in the different urban settings.

H_a: There is a significant difference in the active lifestyle among the young elderly in the different urban settings.

Descriptive Statistics were used to test this hypothesis where means and standard deviations of active lifestyle variables (social cohesion and physical activity) were compared to identify the variability for both neighbourhoods in active lifestyle. Although no Dramatic differences were found, the results suggested that there was some variability for both social cohesion and physical activity in the two different neighbourhoods, thus, the variables are suitable for further data analysis in the study, (Table 7.13).

Table 7.13: Mean (SD) scores on the neighbourhood environmental factors between respondents In TTDI and Taman Meru neighbourhoods

Neighbourhood Environmental factors	TTDI (n=260)		Taman Meru (n=125)	
	Frequency (%)	Mean (SD)	Frequency (%)	Mean (SD)
Social cohesion	94.6	16.88 (5.01)	96.0	16.46 (5.31)
Physical Activity	96.2	16.72 (4.87)	96.8	16.06 (5.21)

An independent group t-test was conducted to examine the young elderly active lifestyle in each of the different neighbourhoods. The researcher made sure that the assumptions of the test were met before undertaking the analysis. The F value for social cohesion = 1.405 and has a probability greater than 0.05, $p>0.05=0.237$, for physical activity, F value= 0.695, $p>0.05=0.405$, thus there are no significant differences in means among the compared groups and the researcher could assume that the population variances are relatively equal. The t-test significance indicates that $p>0.05$ and therefore is not significant and the null hypothesis is accepted and the alternative hypothesis is rejected; for social cohesion t (383) =0.771, $p>0.05=0.441$; for physical

activity t (383) =1.216, p>0.05=0.225.   The young elderly within the two

neighbourhoods do not significantly differ in their active lifestyle as explained by

social cohesion and physical activity. However, the results showed that the young

elderly are more physically active than socially active (Table 4)

Table 7.14: Independent groups t-Test

Active Lifestyle Variables	Levine's Test for Equality of Variances		t-test for Equality of Variances		
	F	Si g.	t	df	Si g.
Social cohesion	1.404	0.237	0.771	383	0.441
Physical Activity	0.695	0.405	1.216	383	0.225

7.4.2 Hypothesis2 explores the neighbourhood environmental factors related to young

elderly active lifestyle:

H_0: There is no significant association between neighbourhood environmental factors

and active lifestyle among the elderly in the different urban setting.

H_a: There is a significant association between neighbourhood environmental factors

and active lifestyle among the elderly in the different urban setting

The researcher used MANOVA to test hypothesis 2; that each neighbourhood

environmental factor has the same means for the two dependent variables: social

cohesion and physical activity. The aim of this hypothesis is to measure the young

elderly attitude towards active lifestyle, their feelings towards social cohesion and their

exposure to physical activity as related to each neighbourhood environmental factors.

a) Social Interaction

It is hypothesized that the young elderly who are both socially and physically active

would have a more positive attitude towards social interaction. Therefore, the

independent variable is social interaction and the dependent variables are the two

variables explaining active lifestyle: social cohesion and physical activity. The Box's M

tests of homogeneity of the variance-covariance matrices show that there exists

homogeneity because the test is significant at an alpha level of 0.001, p<0.001=0.000.

Examination of the univariate F-test for social cohesion and physical activity indicate which dependent variable contributed to the significance of the multi variety effect. To evaluate this effect a simple formula is applied: alpha/number of tests, i.e.0.05/2=0.025, therefore, using this alpha level, the significant univariate main effect for dependent variables should be $p<0.025$. The young elderly social interaction is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, $F_{(18,366)} =7.346$, $p<0.025=0.000$ for social cohesion and $F_{(18,366)} =5.304$, $p<0.025=0.000$ for physical activity.

b) Walking

It is hypothesized that the young elderly who are both socially and physically active would have a more positive attitude towards walking frequency. Therefore, the independent variable is walkability and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices shows that there existed homogeneity because the test is significant at an alpha level of 0.001, $p<0.001=0.000$. Examination of the univariate F-test for social cohesion and physical activity indicates which dependent variable contributed to the significance of the multi variety effect, i.e. the young elderly walkability is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, $F_{(14,370)} =2.694$, $p<0.025=0.001$ for social cohesion; and $F_{(14,370)} =4.252$, $p<0.025=0.000$ for physical activity.

c) Facilitators to Walkability

It is hypothesized that the young elderly who are both socially and physically active would have a more positive attitude towards facilitators to walkability. Therefore, the

independent variable is facilitators to walking and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices show that there exists homogeneity because the test is significant at an alpha level of 0.001, $p < 0.001 = 0.000$. Examination of the univariate F-test for social cohesion and physical activity indicates which dependent variable contributed to the significance of the multivariate effect, i.e. the facilitators to walking is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, $F(16, 368) = 6.001$, $p < 0.025 = 0.000$ for social cohesion and $F(16, 368) = 4.252$, $p < 0.025 = 0.00$ for physical activity 0.

d) Physical Barriers to Walking

It is hypothesized that the young elderly who are both socially and physically active would have a more negative attitude towards physical barriers to walking in their neighbourhoods. Therefore, the independent variable is physical barriers to walking and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices show that there existed homogeneity because the test is significant at an alpha level of 0.001, $p < 0.001 = 0.000$. Examination of the univariate F-test for social cohesion and physical activity indicate which dependent variable contributed to the significance of the multivariate effect, i.e. the young elderly perception of physical barriers to walking is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, $F(17, 367) = 5.608.346$, $p < 0.025 = 0.000$ for social cohesion and $F(17, 367) = 4.720$, $p < 0.025 = 0.000$ for physical activity.

e) Convenience

It is hypothesized that the young elderly who are both socially and physically active would have a more positive attitude towards their convenience (general satisfaction) of their neighbourhood. Therefore, the independent variable is convenience and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices show that there existed homogeneity because the test is significant at an alpha level of 0.001, $p < 0.001 = 0.000$. Examination of the univariate F-test for social cohesion and physical activity indicate which dependent variable contributed to the significance of the multivariate effect, i.e. the young elderly convenience is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, $F_{(16,368)} = 5.347$, $p < 0.025 = 0.000$ for social cohesion and $F_{(16,368)} = 3.800$, $p < 0.025 = 0.000$ for physical activity.

f) Accessibility

It is hypothesized that the young elderly who are both socially and physically active would have a more positive attitude towards the accessibility in their neighbourhood. Therefore, the independent variable is accessibility in the neighbourhoods and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices show that there existed homogeneity because the test is significant at an alpha level of 0.001, $p < 0.001 = 0.000$. Examination of the univariate F-test for social cohesion and physical activity indicate which dependent variable contributed to the significance of the multivariate effect, i.e. the accessibility to facilities is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly

active lifestyle, F (18,366) =4.997, p<0.025=0.000 for social cohesion and F (18,366) =4.562, p<0.025=0.000 for physical activity.

g) Permeability

It is hypothesized that the young elderly who are both socially and physically active would have a more positive attitude towards permeability of their neighbourhood. Therefore, the independent variable is permeability and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices show that there exists homogeneity because the test is significant at an alpha level of 0.001, p<0.001=0.000. Examination of the univariate F-test for social cohesion and physical activity indicate which dependent variable contributed to two variables of the multivariate effect, i.e. the young elderly perception of their neighbourhood permeability is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, F (20,364) =16.475, p<0.025=0.000 for social cohesion and F (20,364) =10.584, p<0.025=0.000 for physical activity.

h) Maintenance

It is hypothesized that the young elderly who is both socially and physically active would have a more positive attitude towards the maintenance of their neighbourhood. Therefore, the independent variable is maintenance and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices show that there exists homogeneity because the test is significant at an alpha level of 0.001, p<0.001=0.000. Examination of the univariate F-test for social cohesion and physical

activity indicate which dependent variable contributed to two variables of the multivariate effect, i.e. maintenance is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, $F (17,367) = 7.893$, $p < 0.025 = 0.000$ for social cohesion and $F (17,367) = 8.365$, $p < 0.025 = 0.000$ for physical activity.

i) Safety

It is hypothesized that the young elderly who are both socially and physically active would have a more positive attitude towards safety of their neighbourhood. Therefore, the independent variable is safety and the dependent variables are the two variables explaining active lifestyle: social cohesion and physical activity. The Box's M tests of homogeneity of the variance-covariance matrices show that there exists homogeneity because the test is significant at an alpha level of 0.001, $p < 0.001 = 0.000$. Examination of the univariate F-test for social cohesion and physical activity indicate which dependent variable contributed to two variables of the multivariate effect, i.e. the young elderly safety is significantly influenced by social cohesion and physical activity as two variables explaining the young elderly active lifestyle, $F (19,365) = 10.428$, $p < 0.025 = 0.000$ for social cohesion and $F (19,365) = 7.869$, $p < 0.025 = 0.000$ for physical activity.

The results indicated a significant association between the neighbourhood environmental factors and active lifestyle variables as explained by social cohesion and physical activity. Therefore, the null hypothesis is rejected and the alternative research hypotheses are accepted. Table5 presents a summary of MANOVA analysis.

Table 7.15: Summary of the MANOVA Analysis

Independent variables	Dependent variables	F	df1(hypothesis df)	df2 (error df)	Si g.
Social interaction	Social cohesion	7.346	18	366	0.000
	Physical Activity	5.304	18	366	0.000
Walking	Social cohesion	2.694	14	370	0.001
	Physical Activity	4.252	14	370	0.000
Facilitators to Walking	Social cohesion	6.001	16	368	0.000
	Physical Activity	4.252	16	368	0.000
Physical Barriers to Walking	Social cohesion	5.608	17	367	0.000
	Physical Activity	4.720	17	367	0.000
Convenience	Social cohesion	5.347	16	368	0.000
	Physical Activity	3.800	16	368	0.000
Accessibility	Social cohesion	4.997	18	366	0.000
	Physical Activity	4.562	18	366	0.000
Permeability	Social cohesion	16.475	20	364	0.000
	Physical Activity	10.584	20	364	0.000
Maintenance	Social cohesion	7.893	17	367	0.000
	Physical Activity	8.365	17	367	0.000
Safety	Social cohesion	10.428	19	365	0.000
	Physical Activity	7.869	19	365	0.000

7.4.3 Hypothesis 3 explores the interaction between the elderly and their contextual environment:

H_0: There is no significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors.

H_1: There is a significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors.

The use of the physical environment is measured by the frequency of walk (walking) and the level of social relations among community members (social interaction) in the different neighbourhoods. Pearson r correlation is used to measure the relationship between these two factors with active lifestyle factors (social cohesion and physical activity) to examine their differences in the two different neighbourhoods. In TTDI there was a medium significant correlation between social interaction and social cohesion (r=0.152*, p<0.05=0.014) but there was no correlation between social interaction and physical activity(r=-0.029, p>0.05=0.0.646). There is also a significant medium relationship between walking and social cohesion (r=0.152*, p<0.05=0.014), and walking and physical activity(r=0.247**, p<0.05=0.000).   The results indicate a higher walking and social interaction in Taman Meru neighbourhood, there is a strong significant correlation between social interaction and social cohesion (r=0.749**, p<0.05=0.000) and also a significant strong correlation between social interaction and physical activity (r=0.748** p>0.05=0.000). There is also a significant positive relationship between walking and social cohesion (r=0.348**, p<0.05=0.000), and walking and physical activity(r=0.304**, p<0.05=0.000). Table 7.16 shows the Correlations between the different variables measuring the use of the physical environment among the young elderly in the different neighbourhoods.

Table 7.16: Correlation Coefficients within the two Neighbourhoods

Neighbourhood Environmental factors	TTDI (n=260)		Taman Meru (n=125)	
	Social cohesion (*p*-value)	Physical activity(*p*-value)	Social cohesion (*p*-value)	Physical activity(*p*-value)
Social interaction	0.152* (0.014)	-0.029 (0.646)	0.749** (0.000)	0.748** (0.000)
Walking	0.152* (0.014)	0.247** (0.000)	0.348** (0.000)	0. 304** (0.000)

From the above analysis the null hypothesis is rejected and the alternative research hypothesis is accepted because it showed there is a significant difference in the use of

the physical environment among the young elderly in areas with different neighbourhood environmental factors.

7.4.4 Hypothesis4 explores the residents' perception of their neighbourhood:

H_0: There is no significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the elderly in the different urban setting.

H_1: There is a significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the elderly in the different urban setting.

How the young elderly perceived the importance of the neighbourhood environmental factors related to their active lifestyle is measured by facilitators to walking as a measure of the facilities provided by the neighbourhood that encourage them to engage in both physical and social activities; and their general satisfaction with their neighbourhood as inducing active lifestyle. To test this hypothesis the researcher used the regression coefficient *B* to show the rate of change in active lifestyle Variables brought about by facilitators to walking and convenience respectively. These coefficient values would communicate the inverse or positive direction and the weighing of the facilitators to walking/convenience Relative to social cohesion and physical activity in explaining the variation of active lifestyle in both neighbourhoods.

Both facilitators to walking and convenience explain15.2% of the variance in active lifestyle as explained by social cohesion , and 7.5% as explained by physical activity, Table 7, which is significant as indicated by the F value of 34.171 $p < 0.05 = 0.000$ for social cohesion and F-value of 15.483, $p < 0.05 = 0.000$ for physical activity.

Table7.17: Model Summary-Hypothesis 4

	R	R Square	Adjusted R Square	St Error of the Estimate
Social cohesion	.390[a]	.152	.147	4.713
Physical Activity	.274[a]	.075	.070	4.776

a. Predictors: (Constant), FWalk, Conven

b. Dependent variables: Scoh and Pactiv

The examination of the t-values indicates that facilitators to walking and convenience contribute to the prediction of young elderly active lifestyle as explained by social cohesion and physical activity.

Table 7.18: Standardized Beta coefficients for excluded variables-Hypothesis4

	Social cohesion			Physical Activity		
Model	Beta	t	Si g.	Beta	t	Si g.
Facilitators to walking	.236	4.556	.000	.156	2.880	.004
Convenience	.227	4.385	.000	.170	3.136	.002

The above analysis shows that both variables contribute to active lifestyle as perceived by the young elderly and that this importance is explained more by social cohesion. Therefore, the null hypothesis is rejected and the alternative research hypothesis that there is a significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the elderly in the different urban settings is accepted.

7.5 Research Questions: Multiple Regression

Multiple regression is used to identify the neighbourhood environmental factors simultaneously associated with elderly active lifestyle variables and estimate the separate effect of each neigbourhood environmental factor on young elderly active lifestyle. To answer the research questions three regression models are used: standard, stepwise and hierarchical.

7.5.1 Research Question 1: What contribution do neighbourhood environmental factors make to the prediction of active lifestyle among the young elderly?

The study hypothesized a multivariate relationship: social cohesion and physical activity depend jointly on neigbourhood environmental factors (as opposed to social interaction, walkability, facilitators to walkability, physical barriers to walkability, convenient, accessibility, permeability, maintenance and safety). To answer the research question 1, standard regression model is used. The model summary for social cohesion and physical activity shows that the nine independent neighbourhood variables explained 54.5%, 42.2% of the variance in young elderly active lifestyle as explained by social cohesion and physical activity domains respectively, Table 7.19, which are significant as indicated by the F-values of 49.835 and 30.426.

Table: 7.19. Model Summary-Q1

	R	R Square	Adjusted R Square	St Error of the Estimate
Social cohesion	0.738[a]	0.545	0.534	3.485
Physical Activity	0.650[a]	0.422	0.408	3.810

Thus, to answer the first question the researcher could say that social interaction, walkability, physical barriers to walkability, convenience, accessibility, permeability, maintenance and safety significantly predict young elderly active lifestyle as explained by social cohesion and physical activity.

7.5.2 Research Question 2: Which neighbourhood environmental factors are the best predictors of young elderly active lifestyle?

To answer the second question a stepwise regression analysis is conducted. In stepwise analysis with backward method of deletion, i.e. the weakest variable is eliminated at each step. Therefore, the regression analysis began with all the independent variables at step one and proceeded to the seventh at which point permeability, safety,

convenience, accessibility, walking, social interaction and facilitators to walking are significantly predictive of social cohesion as the dependent variable explaining the young elderly active lifestyle. The procedure is undertaken for the dependent variable physical activity. From the output it could be noticed that the regression analysis began with all the independent variables at step one and proceeded to the fourth step at which point permeability, maintenance, walking and accessibility were significantly predictive of physical activity as the dependent variable explaining the young elderly active lifestyle.

The model summary table indicate that permeability contributes to 36.1% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(1,383)}=216.508$, $p<0.05=0.000$; safety contributes to 46% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(2,382)}=162.771$, $p<0.05=0.000$; convenience contributes to 49.1% of the variance in active lifestyle as explained by social cohesion, which is significant as indicated by the F-values of $F_{(3,381)}=124.269$, $p<0.05=0.000$; accessibility contributes to 51% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(4,380)}=99.000$, $p<0.05=0.000$; walking contributed to 51.6% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(5,379)}=82.004$, $p<0.05=0.000$; social interaction contributed to 52.6% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(6,378)}=72.073$, $p<0.05=0.000$; and physical barriers to walking contributes to 53.3% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(7,377)}=63.569$, $p<0.05=0.000$.

The model summary table also indicates that permeability contributes to 25.7% of the variance in active lifestyle as explained by physical activity, which is significant as indicated by the F-values of $F_{(1,383)} = 132.258$, $p < 0.05 = 0.000$, maintenance contributed to 35% of the variance in active lifestyle as explained by physical activity, which is significant as indicated by the F-values of $F_{(2,382)} = 102.703$, $p < 0.05 = 0.000$; walking contributes to 38.9% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(3,381)} = 80.991$, $p < 0.05 = 0.000$; and accessibility contributes to 41.6% of the variance in active lifestyle as explained by social cohesion , which is significant as indicated by the F-values of $F_{(4,380)} = 67.744$, $p < 0.05 = 0.000$, (Table 7.20).

Table 7.20: Model Summary-Q2

Model	R	R Square	Adjusted R Square	St Error of the Estimate
Social cohesion				
1 Permeability	.601[a]	.361	.359	4.085
2 Safety	.678[b]	.460	.457	3.760
3 Convenience	.703[c]	.495	.491	3.643
4 Accessibility	.714[d]	.510	.505	3.590
5 Walkability	.723[e]	.522	.516	3.550
6 Social interaction	.730[f]	.534	.526	3.513
7 PBWalking	.736[g]	.541	.533	3.488
Physical Activity				
1 Permeability	.507[a]	.257	.255	4.275
2 Maintenance	.591[b]	.350	.346	4.004
3 Walkability	.624[c]	.389	.385	3.885
4 Accessibility	.645[d]	.416	.410	3.804

The t-values and beta coefficient, show that seven independent variables remained predicting the young elderly active lifestyle as explained by social cohesion : permeability (0.439, $p < 0.05 = 0.000$); Safety (0.192, $p < 0.05 = 0.000$); convenience (0.120, $p < 0.05 = 0.002$); accessibility (0.120, $p < 0.05 = 0.002$); walking (0.110, $p < 0.05 = 0.002$); social interaction (0.141, $p < 0.05 = 0.001$); and physical barriers to

walking (-0.096, $p<0.05=0.000$) , and contribute to active lifestyle as explained by social cohesion (Table 7.21).

Table 7.21: Standardized Beta coefficients for t-values
Social cohesion

Model	Social cohesion		
	Beta	t	Si g.
Permeability	0.439	11.073	0.000
Safety	0.192	4.450	0.000
Convenience	0.120	3.059	0.002
Accessibility	0.120	3.139	0.002
Walking	0.110	3.051	0.002
Social interaction	0.141	3.500	0.001
PBWalk	-0.096	-2.527	0.012

Also the t-values and beta coefficient, show that four variables remained predicting the young elderly active lifestyle as explained by physical activity: walking (0.177, $p<0.05=0.000$), accessibility (0.150, $p<0.05=0.001$), permeability (0.384, $p<0.05=0.000$), and maintenance (0.228, $p<0.05=0.000$), contribute to young elderly active lifestyle as explained by physical activity, table 7.22.

Table 7.22: Standardized Beta coefficients for t-values
Physical Activity

Model	Physical Activity		
	Beta	t	Si g.
Permeability	0.407	0.618	0.000
Maintenance	0.243	5.706	0.000
Walking	0.193	4.860	0.000
Accessibility	0.171	4.182	0.000

Therefore, the researcher concluded that the best predictors of young elderly active lifestyle as explained by social cohesion are permeability, safety, convenience, accessibility, walking, social interaction, physical barriers and maintenance.

7.5.4 Research Question 3: Previous researches have suggested that walking is the salient predictor of young elderly active lifestyle, is this hypothesis correct?

To answer question three a hierarchical regression analysis showed that permeability on its own contributed to 35.9% of the variance in young elderly active lifestyle as

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explained by social cohesion and 25.7% of the variance in young elderly active lifestyle as explained by physical activity. At the second and third step it is noticed from the R square change statistics and the values of significant F change that accessibility and walking make a significant contribution of 50.5% and 51.6% respectively, as explained by social cohesion and 41.6% and 38.9 % respectively as explained by physical activity. Therefore, the researcher concluded that permeability is a salient predictor of active life style, $F(1,383)=216.508$ $p<0.05$ as explained by social cohesion and $F(1,383)=132.258$ $p<0.05$ as explained by physical activity, followed by accessibility, $F(4,380)=99.000$ $p<0.05$ as explained by social cohesion and $F(4,380)=67.744$ $p<0.05$ as explained by physical activity, and then walking $F(5,379)=82.904$ $p<0.05$ as explained by social cohesion and $F(3,381)=80.991$ $p<0.05$ as explained by physical activity. This finding does not support previous research findings that walking is the salient predictor of active lifestyle.

7.6 Discussion

This section discusses the results of reviewing population aging trends in Malaysia, as well as the findings of both quantitative and qualitative research. The main findings were cross-referenced with previous studies targeted on multi -influence levels to provide a better understanding of active lifestyle behaviour as explained by social cohesion and physical activity and as influenced by neighbourhood environmental factors. It also discusses the triangulation of both subjective and objective findings to give a holistic picture of determinants of aged-friendly neighbourhoods.

7.6.1 Population Aging Trends in Malaysia-Implications for the Planning Profession

Malaysia is experiencing a rapid increase in its elderly population. According to 2010 census the number of elderly has risen from 1.4 million in 2000 to 2.1 million in 2010 and is projected to be 3.4 million by 2020. Malaysia is progressing towards becoming a developed and competitive country by 2020, and population aging will be one of the main challenges to planners and policy makers in terms of designing aged-friendly neighbourhoods and providing accessible amenities and services to meet the needs of the elderly. This study reviewed the population aging trends and policy framework available for the elderly in Malaysia. The purpose of the review is to provide an understanding of the population aging trends in Malaysia.

The overall trends of senior citizens in Malaysia show an ever increasing aging population that will grow at a quicker pace over the coming decades. As the Malaysian population has aged it become vitally important to consider the consequences of the older population on public policy. States with more concentration of elderly population will require different policy and planning requirements than states with less concentration of elderly population. Similarly, states with high percentage of elderly have implications for age structure and the social and health benefits provided by the government. The review has identified important gaps in knowledge; the first gap is the lack of data regarding the residential mobility of the elderly at retirement age. The second gap is the linkage between elderly residential mobility and the occurrence of life events (retirement) and health events (declined functional ability). The review also has identified the gaps in the National Policy for the elderly; the first gap is the inadequate coverage of active elderly housing needs. The second gap is the focus on social aspects and provisions for the frail elderly and negligence of the young elderly's' needs. The third gap is the emphasis on health programs to promote healthy aging rather than

neighbourhood planning and design. Moreover, the review has also identified a gap in physical planning literature for healthy aging. Few researches recognized the association between neighbourhood environmental factors and healthy aging. Psychological and biological perspective dominated most research, neighbourhood design to promote active lifestyle remain greatly under researched. Jacobs (1961, pp. 176-177) wrote:

> *"Failing or failed city areas are in trouble not so much of what they have (which can always be regarded as a base to build upon), but because of what they lack).*

The initiatives introduced by the government in addressing the needs of the aging population have been very successful for the frail elderly, but lacked consideration for the young elderly's (lack of retirement villages in Malaysia). A comprehensive planning of aged friendly neighbourhoods is required to address the increasing needs of healthy aging among the elderly. A key factor is the effective management of the programs to implement the plans to improve outcome. Malaysia still has time to plan and prepare for its grey population and has ample chance to learn from other countries experiences in dealing with elderly issues.

7.6.2 The Quantitative Research

The aim of the study is to investigate the neighbourhood environmental factors pertaining to the young elderly active lifestyle as explained by the two domains: social cohesion and active lifestyle to identify determinants of aged-friendly neighbourhoods. Considerable research has proven the relationship between active lifestyle and neighbourhood environmental factors. Based on this theoretical framework the researcher has identified eleven neighbourhood environmental factors shown to promote active lifestyle among the elderly. A questionnaire survey was administered to gather information about the young elderly active lifestyle in TTDI in Kuala Lumpur

and in Taman Meru in Ipoh. The same questions were asked in both neighbourhoods in each residential area. The neighbourhood environmental factors were assessed for their validity and reliability as constructs and items hypothesized to influence active lifestyle at older age. The results of the validity test showed that all the constructs were valid and measured active lifestyle. The reliability test revealed that all the items were reliable and confirmed the reliability values of previous Studies ($\alpha > 0.7$).

The study used exploratory factor analysis to summarise the structure of the neighbourhood environmental factors. Principal component analysis was used for factor extraction. In examining the correlation matrix it is found that it determined the suitability of the factor analytical model as a considerable number of correlations exceeded 0.3. The Bartlett's test of sphericity was significant and the KMO measure of the adequacy of sampling was far above 0.6. The factor extraction determined that all factors are necessary to represent the data. The factor analytic procedure for convenience comprised Varimax rotation to make the structure of the factor more interpretable. The semi-final step in the analysis involved determining the number of factors to interpret and then assigning a name for the factor. From the output the researcher could see that a single factor solution is appropriate in the analysis. The scree plot supported this and confirmed the dominance of one variable represents by five items. Examination of the items showed that these items represented an attitude towards active lifestyle. The final step involved examining the alpha coefficients of internal consistency to ensure that all the items comprising the different factors produced reliable scales. A summary of the table showing the KMO values for construct validity and alpha coefficients for internal consistency is represented in table 7.23. These findings confirm previous studies findings on the validity and reliability of the variables used to measure the influence of neighbouhood environmental factors on active lifestyle in order to identify aged-friendly neighbourhoods.

Table 7.23: KMO and Cronbach's Alpha values of reliability test for TTDI, Taman Meru neighbourhoods and previous studies.

Neighbourhood Environmental factors	TTDI+Taman Meru (n=385) KMO	TTDI +Taman Meru (n=385) Cronbach's Alpha	Previous Studies Cronbach's Alpha (α)
Social cohesion	0.882	0.932	0.82 (Echeverria, Diez-Roux, & Link, 2004)
Physical Activity	0.854	0.914	0.77 (Evenson et al., 2009)
Social interaction	0.873	0.913	0.738 (Foster & Giles-Corti., 2006)
Walking	0.764	0.753	0.78 (Echeverria et al., 2004)
Facilitators to Walking	0.880	0.920	0.83 (Strath et al., 2012)
Barriers to walking	0.820	0.857	-
Convenience	0.715	0.823	0.85 (Strath et al., 2012)
Accessibility	0.714	0.843	0.99 (Cerin, Macfarlane, Hin-Hei Ko, & Chan, 2007)
Permeability	0.897	0.949	0.97 (Cerin et al., 2007)
Maintenance	0.868	0.927	0.670 (Foster & Giles-Corti., 2006)
Safety	0.872	0.927	0.63 (Echeverria et al., 2004; Leslie et al., 2005)

The study also tested the four hypothesis of the research; all the research hypotheses are supported except for the first hypothesis. Cross tabulation and independent group t-test were used to test the first hypothesis. The independent group t-test findings showed that there is no significant difference in the active lifestyle among the young elderly in the different urban setting; although the young elderly lived in neighbourhoods with different neighbourhood characteristics and facilities, the young elderly lifestyle do not differ. This may be explained by the fact that inferences about active lifestyle that are based on ethnicity are inherently confounded since ethnicity is not independent of the residents' attributes. The majority of the respondents in both neighbourhoods are Malay 70.9% in both neighbourhoods, 58.5% are In TTDI and 96.8% are in Taman Meru. This finding supports Diez-Roux (2004), finding, who argued that neighbourhood characteristics and residents' attributes may not be interdependent. She further

emphasized on the importance of not using the residents' socio-economic characteristics in characterizing neighbourhoods. This finding also replicates Leyden (2003), who argued that neighbourhood characteristics are not dependent on residents' attributes. However, ethnicity is not typically found in active lifestyle determinants, but warrant inclusion, since it represents a key aspect of how people norms, behaviour and attitude negotiate the environment. It is also related to participation especially at an older age, not only social and physical participation but also spiritual participation which is considered a vital form of participation that persists into old age.

The correlation results provide essential insights into the neighbourhood environmental factors that are mostly related with young elderly active lifestyle, and highlighted the impact of certain neighbourhood environmental factors on the young elderly active lifestyle. The correlations test reveals some remarkable findings. All the neighbourhood environmental factors correlate with active lifestyle factors (social cohesion and physical activity, except for social interaction with physical activity in TTDI neighbourhood. The no correlation between social interaction and physical activity could be due to the fact that as people age they are more likely to encounter life threatening challenges that require their complete attention; Slovic et al. (2005) argued that elderly may not consider neighbourhood conditions in details; they tend to rely more on affect, values and beliefs and less on physical factors. Therefore, they are more likely to cope with positive and negative neighbourhood conditions than younger generations. This finding does not support Alfonzo et al. (2008) and Dill et al. (2010) who argued that social interaction can influence the desire for physical activity. On the other hand, the finding supports the argument by du Toit et al. (2007) that the relationship between the physical activity and social interaction is not influenced by the physical features of the neighbourhood, but is more associated with the assumption that

people who are socially-oriented, choose the neighbourhood type that fits their social needs, rather than the neighbourhood design inhibiting their need for social interaction. The second hypothesis was tested using MANOVA to examine the impact of each neighbourhood environmental factor on social cohesion and physical activity as two domains explaining active lifestyle to identify determinants of aged-friendly neighbourhoods. It is hypothesized that the young elderly who are both socially and physically active would have a more positive attitude towards social interaction, walkability, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety as the neighbourhood environmental factors influencing active lifestyle. The results of this analysis show two variables' association between all the neighbourhood factors and active lifestyle factors. This finding is consistent with Soltani et al. (2006) findings, who confirmed the evidence that neighbourhood characteristics influence social and physical activity levels. The association between social interaction and active lifestyle factors also support the findings of Alves and Aspinall (2008); Avermaete and Teerds (2007); Dill et al. (2010)   that active lifestyle as explained by physical activity domain provides opportunities for social interaction at an older age. The finding confirmed activity theory by Lemon et al. (1972) discussed earlier in chapter two that identified the importance of physical activity and social cohesion for successful aging which are typical characteristics of aged-friendly neighbourhood. This is further supported by the significant effect of walking on active lifestyle factors, which is consistent with Alves and Aspinall (2008) who argued that social cohesion and physical activity levels among elderly increase with regular walking. Furthermore, the significant effect of facilitators to walking on active lifestyle factors complies with (Ewing & Handy, 2009; Frank et al., 2004), who had found association between certain neighbourhood factors with higher social and physical activity levels. Consequently, barriers to walking are

associated with lower social and physical levels. This finding supports Ewing and Handy (2009), who suggested that lack of certain neighbourhood environmental factors deters active lifestyle among the elderly.

Convenience (general satisfaction with the neighbourhood) was found to associate with active lifestyle factors. This finding supports findings by (Gauvin et al., 2008; Satariano, 2010; Strath et al., 2012; Takano et al., 2002). In fact the young elderly in both neighbourhood have a high level of satisfaction with their neighbourhood, in terms of the affordability of housing, accessibility, connection to public transport, proximity to services and health care, provision of leisure facilities and other public amenities; explains why the majority wish to age in place and do not wish to move elsewhere. This also supports Insch and Florek (2008) who argued that level of satisfaction with neighbourhood facilities influence the elderly decision age in place or to move elsewhere.

Accessibility was also found to associate with active lifestyle factors. This finding replicates findings by (Aspinall et al., 2010; Bowling, 2005; Glanz, 2011). Despite the fact that the young elderly residing in both neighbourhoods are both physically and socially active; they are very auto-dependent. They drive their cars/motorcycles to all destinations, even when they wanted to do some walking they will drive their cars/ motorcycles to the nearest neighbourhood park, where they walk, jog and practice all sorts of physical activities. This may explain why they perceive their neighbourhood as highly accessible.

Permeability is found to associate with active lifestyle factors; this may be explained by the fact that both neighbourhoods have less traffic congestion, shorter block length, directness of routes and high street connectivity. The researcher found it easy to navigate around the neighbourhood during the questionnaire survey. However, the finding replicates findings by du Toit et al. (2007) and Lee and King (2003).

Maintenance is also found to associate with active lifestyle factors. Various evidences support this finding such as findings by Aspinall et al. (2010), Diez-Roux (2004), King et al. (2003), and Takano et al. (2002). The concept of aged-friendly neighbourhood assumes explicitly that specific urban form aspects play a crucial role in promoting active lifestyle among the elderly such as pedestrian-friendly neighbourhoods. Based on this assumption, maintenance of outdoor space, buildings and parks; good conditions of walkways and public places encourage elderly to go out for both social and physical activities. However, in both neighbourhoods maintenance of parks represented a major issue that was discussed with the young elderly. As mentioned above young elderly use the park as the main place for their social and physical activities. They go there to meet peers, walk and jog. They are less aware of the lack/existence and good/poor conditions of walkways. This is consistent with Alves and Aspinall (2008) findings who discussed the elderly preference for attributes of the environment of local parks and found that the elderly preferred a less noisy, light traffic, has many trees and plants, cafe and toilet and well-maintained neighbourhood park.

Safety is also associated with active lifestyle factors. This finding also supports considerable previous research findings, for example, findings by Alley et al. (2007), Handy et al. (2006) and King et al. (2003). The elderly in both neighbourhoods felt relatively safe going around their neighbourhood especially in Tamn-Meru, although complained from poor lighting of the walkways that needs to be improved.

Hypothesis 3 explored the interaction between the elderly and their contextual environment; the result of the test indicated that there was significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors. This is measured by the frequency of walking and the level of social relations among community members (social interaction) in the

different neighbourhoods. Pearson r correlation was used to measure the relationship between these two factors with active lifestyle factors (social cohesion and physical activity) to examine their differences in the two different neighbourhoods. The results indicate a higher walking and social interaction in Taman Meru neighbourhood, than in TTDI. This may be explained by the fact that in Taman Meru the young elderly are totally engaged in their neighbourhood social activities. They visit each other and join committees that take them outside their homes into the street. They organize all the social activities in the neighbourhood and monitor the positive and negative changes in their neighbourhood and are also concerned to maintain a daily physically active routine such as walking. Unlike other age groups, their activity pattern show that they spend most of their time in the neighbourhood gardening, going to activity classes and religion classes, walking, jogging and organizing social events. In TTDI the social relations were limited to the opportunities offered by the community centre/worship facilities for physical, social and spiritual participation, nevertheless, they also enjoyed a strong community environment.

Hypothesis4 explored the residents' perception of their neighbourhood; the results indicated that there was a significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the elderly in Taman Meru more than in TTDI. The analysis show that all the variables contribute to and are important to active lifestyle as perceived by the young elderly and that this importance is explained more by social cohesion. This may be explained by the fact that the social environment which represents an important part of determinants of age-friendly community models is more specifically articulated in Taman Meru. The social environment at both micro and macro levels provide support to the elderly active lifestyle; at the micro level i.e. the family and friends care for and supported the

elderly; at the macro level, i.e. civic participation, voluntary participation and employment provide the greatest support for the elderly.

The study further aimed at determining the effect of neighbourhood environmental factors on the young elderly active lifestyle and knowing the contribution of these factors to the prediction of active lifestyle among the elderly as well as identifying the best and salient predictors of young elderly active lifestyle. Multiple regression analysis was used by applying three regression models: standard regression analysis, stepwise regression analysis and hierarchical regression analysis. The results of the standard regression model show that social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety contributed to the prediction of young elderly active lifestyle as explained by the two domains social cohesion and physical activity. These factors are consistent with the WHO (2007) Active Aging Model under the social determinants and physical environment determinants, although not specifically articulated.

The stepwise regression analysis showed that only seven of the variables (permeability, safety, convenience, accessibility, walking, social interaction and physical barriers to walking) are statistically significant and these variables remained by step seven. The multiple correlations are moderate and show that these independent variables together explained a high proportion of the variation in young elderly active lifestyle as explained by social cohesion domain. On the other hand, the stepwise regression analysis show that only four variables (permeability, maintenance, walking and accessibility) are statistically significant and these variables remained by step four. The multiple correlations are moderate and show that these variables explained considerable variation in young elderly active lifestyle as explained by physical activity. Active lifestyle assumes a personality characteristic in elderly and its correlation with neighbourhood environmental factors made intuitive sense. Similarly, the researcher

could understand that neighbourhoods that are permeable, safe, based on human-scale, pedestrian-friendly, provided access to recreational facilities, had directness of routes, high connectivity and provided many destinations within adequate distance are the ones that their elderly population had an active lifestyle. Clearly, the role of aged-friendly neighbourhood is to assist elderly to be both socially and physically active.

The hierarchical method resulted in three neighbourhood environmental factors entered in order of importance and that were significantly related to young elderly active lifestyle. The results reveal that permeability is the salient predictor of young elderly active lifestyle, followed by accessibility and then walking. These three neighbourhood environmental factors are among the new urbanism design features in a neighbourhood that suggest more socially and physically active residents. This finding supports Rodriquez et al. (2006) who suggested that neighbourhoods with new urbanism design features exhibit high levels of physical activity among its residents; and Hanna et al. (2009), who argued that new urbanism design features encourages social interaction, and hence active lifestyle. In both neighborhoods' improved street connectivity, and connectivity to daily needs, leisure and other activities exhibited high level of social cohesion and higher levels of physical activity. The extent to which these three neighbourhood factors associate with the young elderly active lifestyle is an empirical debate matter, however, the fact remains that new urbanism neighbourhoods promote physical activity and enhance social cohesion over time among its residents.

7.6.3 The Qualitative Research

The main purpose of the qualitative research is to provide through a phenomenological approach an understanding of the subjective experience of the young elderly for an active lifestyle. The aim of collecting and explicating the data is to elicit the young elderly perceptions of active lifestyle and to explore patterns among these perceptions.

Through the phenomenological research the researcher was able to develop an understanding of the meaning of active lifestyle from the young elderly discussion according to their lived experience. The theme of 'being occupied' is the key factor that appeared throughout their active lifestyle experience. The fact that the majority of the young elderly felt that they are both socially and physically active, is deemed important to understanding their perception of active lifestyle. They stated that active lifestyle had been a positive experience precisely because they are still both socially and physically active. This finding is consistent with previous studies on positive feelings related with physical activity by Strath et al. (2012), who argued that the social and physical environments correlate with active lifestyle at an older age.

Therefore, young elderly described their active lifestyle as maintaining both social and physical activities and these are core strategy in the model of age-friendly neighbourhoods (WHO, 2007). They defined sedentary life (staying and home and being dependent) as related to their precedent elderly, who were stereotyped as being physically dependent. They emphasized on their ability to stay independent for longer periods of time by being both physically and socially active "we do not stay with our children, our children stay with us and we look after our grandchildren and do the entire household with great love and enjoy it". When they were asked about their preferable house type after retirement they laughed and said "the grave", although it seemed sad and the researcher was really touched but it indicated a strong wish to age in place and a stronger attachment to where they stay. This finding supports findings by Pretty et al. (2003), and Taylor (2001), who defined place attachment as the positive bond between the person and the environment that develops a strong desire to remain close to that particular urban setting. The findings also argue against disengagement theory that proposed that as people age they tend to withdraw gradually from social interaction, and advocate activity theory that identifies the importance of physical activity and

social cohesion for successful aging which are typical characteristics of aged-friendly neighbourhood. Consequently, the researcher viewed the notion of young elderly active lifestyle as related to issues related to both social cohesion and physical activity. As mentioned earlier in Chapter Four, the themes of active lifestyle are addressed in the context of seven main neighbourhood environmental factors: social interaction, walking, convenience, accessibility, permeability, maintenance and safety. From the young elderly perspective these areas have an influence on their perception and present experience of active lifestyle. Therefore, the findings pertaining to the young elderly active lifestyle are presented in the context of social cohesion and physical activity as related to these seven dimensions.

The participants are socially-oriented people, and all agreed that the physical features that enhanced both their social and physical activity were the park and community centre. These features help them maintain close friendship. Many of them see these features as a source of social support and interaction. This finding is consistent with findings by Alves and Aspinall (2008), who suggested diverse benefits of area's park for residents. The existence of the park facility make them feel that they maintain a stable good health and the community centre is a mutual social support that made them feel they are still cared about and more important through volunteer work, they felt that they can still give help and benefit the society. They could share a history of common experience and achievements to compensate for social isolation after retirement and loneliness in case of death of spouse. These findings support Routasalo et al. (2006) suggestion that support from others help individuals to stay active and that involvement in community programs facilitates physical activity. Moving outside the social circle, walking is found to be the most common physical activity among the young elderly. All the participants walk for at least one hour provided the weather is good. The critical neighbourhood environmental factors that the young elderly identified as promoting

their continued walking attitude are consistent with previous studies by Owen et al. (2004) and Strath et al. (2012), who found an association between neighbourhood environmental factors and physical activity. For example, availability of destinations and having good access to facilities, i.e. proximity to services and shopping-the participants reported having daily needs within a walking distance encourage them to go out, safe neighbourhood-as most of the participants feet safe to walk around their neighbourhoods due to the light traffic and low crime rate, good walking areas and good conditions of sidewalks-as the participants reported the park as a key physical facility supporting their outdoor social and physical activity, and access to the park are key neighbourhood environmental factors supporting the young elderly active lifestyle. On the other hand, some barriers to physical activity were reported by the young elderly, such as poor lighting of walkways and maintenance. Some participants related health problems as limiting their physical activity, such as physical limitations from joint soreness and arthritis. However, all the participants cited the weather in terms of both rain and hot temperature as limiting outdoor social and physical activities. Rainy weather in many cases had caused cancellation of outdoor programs. Therefore, it is important to find alternatives to outdoor activities such as attending indoor programs, walk regardless of the hot weather or when the rain stops and having home exercise equipment are strong commitments to remain as active as possible. However, the young elderly in both neighbourhoods seemed to adapt to their neighbourhood's existing facilities to meet their active lifestyle needs as all the participants choose to age in their place.

7.6.4 Triangulating Quantitative and Qualitative Research

The rationale for triangulation is to choose the centre of data' overlap gathered through interviews and survey questionnaire reinforced by observation to connect and compare

it. In this study the mixed method was used to collect data about key issues essential in pretesting young elderly active lifestyle as explained by two domains social cohesion and physical activity and as influenced by neighbourhood environmental factors to identify aged-friendly neighbourhoods. The triangulation method was used to enable the researcher in comparing and contrasting the findings. The process of explicating qualitative research worked from the detailed (drawing themes) to the more general (eliciting the essence), the process of quantitative research analysis worked from the general to the detailed. The two methods used are complementary to each other; the quantitative method documented the extent to which certain neighbourhood environmental factors influence the young elderly active lifestyle and hence identify determinants of aged-friendly neighbourhoods. The qualitative method was used to gather viewpoints from the lived experience of the young elderly about their active lifestyle as facilitated/hindered by the existence of certain neighbourhood environmental factors. This helped the researcher in validating the study findings and in contributing to convergence in addressed issues. The general finding of the two methods was that active lifestyle was explained by two domains: social cohesion and physical activity and these two domains were influenced by the existence of certain neighbourhood environmental factors. Findings of the phenomenological research reported 9 out of 12 participants (75%) perceived that active lifestyle meant being both socially and physically active. Findings of the quantitative research, using standard regression analysis discussed earlier in the chapter showed that the nine independent neighbourhood variables explained 54.5%, 42.2% of the variance in young elderly active lifestyle as explained by social cohesion and physical activity domains respectively, which were significant as indicated by the F-values of 49.835 and 30.426. Therefore, the researcher had set out a common findings-design showing the percentage of participants in the qualitative research who perceived an association between their

active lifestyle and neighbourhood environmental factors, and used for the quantitative research correlation analysis (Pearson r) to measure the same relationship. This enabled the researcher to support coordination of the data and estimate the association between perceived (subjective) and measured (objective) neighbourhood environmental factors and young elderly active lifestyle, Table 7.24 summarizes the triangulation process.

Table 7.24: Triangulation of Qualitative and Quantitative Research

Neighbourhood Environmental factors	Qualitative Research (phenomenology) %Participants (N=12)	Quantitative Research (questionnaire survey) TTDI +TM (n=385)	
		Social cohesion (*p*-value)	Physical Activity (*p*-value)
Social cohesion	66.7% (n=8) participate in community voluntary work and maintained good social relations with community members	-	0.686^{**} (0.000)
Physical Activity	92% (n=11) of participants perceive themselves as physically active and maintained daily physical activity	0.686^{**} (0.000)	-
Social interaction	67% (n=8) of participants socially interact with community members and have friends within the neighbourhood that they regularly visited/met for walk or meal.	0.349^{**} (0.000)	0.239^{**} (0.000)
Walking	83% of participants (n=10) walk on a regular basis	0.213^{**} (0.000)	0.261^{**} (0.000)
Facilitators to Walking	67% of participants (n=8) perceive easy way finding, traffic and neighbourhood safety as facilitating walking (same items measuring facilitators to walking in quantitative research)	0.330^{**} (0.000)	0.226^{**} (0.000)
Physical Barriers to walking	75% of participants (n=9) perceived bad conditions/lack of walkways deters walking.	0.278** (0.000)	0.230** (0.000)
Convenience	83% of participants (n=10) are generally satisfied with their neighbourhood services	0.325^{**} (0.000)	0.234^{**} (0.000)

Neighbourhood Environmental factors	Qualitative Research (phenomenology) %Participants (N=12)	Quantitative Research (questionnaire survey) TTDI +TM (n=385)	
		Social cohesion (*p*-value)	Physical Activity (*p*-value)
Accessibility	83% of participants (n=10) perceive their neighbourhood as accessible and well connected to basic amenities (same items measuring Barriers to walking in quantitative research).	0.323** (0.000)	0.313** (0.000)
Permeability	83% of participants (n=10) perceive that their neighbourhood design offer many alternative routes and is well connected to facilities (same items measuring Barriers to walking in quantitative research).	0.601** (0.000)	0.507** (0.000)
Maintenance	92% of participants (n=11) perceived that their neighbourhood is well cared for	0.602** (0.000)	0.436** (0.000)
Safety	75% of participants (n=9) perceived that their neighbourhood is safe to walk around	0.523** (0.000)	0.430** (0.000)

7.7 Summary

This chapter presented the various statistical techniques used in analyzing the administered residential questionnaire survey. The analysis proceeded through several stages: description of the socio-economic and demographic characteristics of the respondents and description of data analysis using mean, standard deviation and correlations to examine the suitability of the variables for further analysis. Then, the hypotheses testing which included several techniques; the first hypothesis was tested using descriptive statistics that included frequency tables, means, standard deviation and an independent t-test to explain mean differences and evaluate whether there was a relationship between active lifestyle variables in the two neighbourhoods in the

different urban setting. The results revealed no difference between the means, therefore, the research alternative hypothesis is rejected and the null hypothesis is accepted. The second hypothesis was tested using MANOVA to explore the neighbourhood environmental factors related to young elderly active lifestyle. The results showed that there is a significant association between neighbourhood environmental factors and active lifestyle among the elderly in the different urban setting, thus the null hypothesis is rejected and the research alternative hypothesis is accepted. The third hypothesis exploring the interaction between the elderly and their contextual environment was tested using Pearson r Correlation. The results showed that there is a significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors, therefore, the null hypothesis is rejected and the research alternative hypothesis is accepted. The fourth hypothesis exploring the residents' perception of their neighbourhood was tested using linear regression. The results revealed that there is a significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the elderly in the different urban setting, therefore, the null hypothesis is rejected and the alternative research hypothesis is accepted. Thus, out of the four research hypothesis, one is rejected and the other three are accepted.

The data analysis proceeded through an interconnected and interrelated techniques and provided answers for the research questions, which aimed at identifying the neighbourhood environmental factors that enhance social cohesion and encourage physical as two domains explaining active lifestyle among the young elderly to determine aged-friendly neighbourhoods. The exploration of the first three research questions provided the answer for the fourth Question. The first three questions are answered by implementing the three regression models: standard regression analysis, stepwise regression analysis and hierarchical regression analysis. The results revealed

the neighbourhood environmental factors that are salient predictors of young elderly active lifestyle and hence aged-friendly neighbourhoods. These are permeability, accessibility and walkability; each of these factors assumed an important planning principle in a neighbouhood and their correlation with young elderly active lifestyle made instinctive and insightful sense.

As mentioned earlier in Chapter Two a sizeable literature had identified different neighbourhood environmental factors influences on elderly active lifestyle. Despite this body of knowledge, acquiring a better and more sophisticated understanding the impact of neighbourhood design on active lifestyle of elderly remains a high priority research in planning theory and practice. Furthermore, experts from the different fields agree that the use of qualitative research methods to supplement objective measures would improve environmental research on active lifestyle (Sallis & Owen, 2002). The principle findings show that the young elderly in both neighbourhoods are both more socially active than physically active. This implies that that there is a need to understand in more detail the association between subjective and objective neighbourhood environmental measures. Furthermore, it implies that efforts to curb young elderly active lifestyle should be the responsibility of multi-disciplinary research. Studying young elderly active lifestyle as explained by two domains social cohesion and physical activity and as influenced by certain neighbourhood factors to identify determinants of aged-friendly neighbouhoods has provided an important applicable knowledge. The analysis of both social and physical activities engagement as influenced by the neighbourhood environmental factors has provided insights for designing aged-friendly neighbourhoods. However, aged-friendly neighbourhoods is not about the social and physical factors of a neighbourhood design, but also reflect through its physical and social characteristics an attitude towards a lifestyle and high quality neighbourhoods.

The next chapter draws the study conclusion, recommendations and presents implications for planning practice and future research.

Chapter 8

Conclusion and Recommendations

8.1 Introduction

This chapter presents the summaries and related conclusion about findings of the analysis. It also shows the achievements of the research objectives and answering the research questions in an attempt to evaluate the usefulness of social cohesion and physical activity in explaining young elderly active lifestyle as associated with neighbourhood environmental factors to identify determinants of aged-friendly neighbourhoods. Furthermore, it suggests the research implications of the findings for the planning profession, presents limitations and Draws recommendations for future research directions and for improvement of young elderly active lifestyle.

8.2 Summary of the Findings

This section summarizes the results of hypothesis testing and presents achievement of the research objectives. It also presents the revised research model that shows the filtering process of the regression analysis to identify determinants of aged-friendly neighbourhoods

8.2.1 The Research Hypothesis

Hypothesis1: Based on the (WHO, 2007), model of age-friendly communities and existing lines of discussion in elderly active lifestyle literature, the present study hypothesized that young elderly active lifestyle explained by the two domains: social cohesion and physical activity, and influenced by neighbourhood environmental factors differ in different urban setting. The results of the independent group t-test indicated no significant differences in means among the compared groups and the researcher could assume that the population variances are relatively equal, i.e. there is no difference in

active lifestyle among young elderly residing in different urban setting. Therefore, the first research hypothesis is not confirmed.

Hypothesis2: The study also hypothesized a significant association between neighbourhood environmental factors and active lifestyle among the elderly in the different urban setting. The researcher used MANOVA to test hypothesis2; that each neighbourhood environmental factor had the same means for the two dependent variables: social cohesion and physical activity. The hypothesis aimed at measuring the young elderly attitude towards active lifestyle as related to each neighbourhood factor. The results are consistent with the study expectation, and indicate a significant overall association between neighbourhood environmental factors and young elderly active lifestyle, therefore hypothesis two is confirmed.

Hypothesis3: The study also hypothesized that there is a significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors. Variables explaining use of the physical environment are identified as frequency of walking and level of social interaction among the young elderly within a neighbourhood. Pearson r Correlation is used to examine the relationship between these two variables and neighbourhood environmental factors. The results showed significant association between the two identified neighbourhood environmental factors and the outcome variable active lifestyle, thus hypothesis three is confirmed.

Hypothesis4: The study also hypothesized that there is a significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the young elderly in the different urban setting. The regression coefficient *B* was used to show the rate of change in active lifestyle variables brought about by facilitators to walking and convenience respectively. The results showed that both variables contribute to active lifestyle as perceived by the young elderly and that

this importance is explained more by social cohesion, thus hypothesis four is confirmed. The statistical analysis showed that active lifestyle as explained by social cohesion is more significant than physical activity in explaining the dependent variables variability. A summary of the hypothesis testing results is provided in, Table 8.1.

Table 8.1 Hypothesis Testing Results

Hypothesis	Result
Hypothesis1 There is a significant difference in the active lifestyle among the young elderly in the different urban setting.	Rejected
Hypothesis2 There is a significant association between neighbourhood environmental factors and active lifestyle among the elderly in the different urban setting.	Accepted
Hypothesis3 There is a significant difference in the use of the physical environment among the young elderly in areas with different neighbourhood environmental factors.	Accepted
Hypothesis4 There is a significant difference in the perceived importance of neighbourhood environmental factors pertaining to active lifestyle among the elderly in the different urban setting.	Accepted

8.2.2 Achieving the Research Objectives

The purpose of the study was to examine the relationship between neighbourhood environmental factors and young elderly active lifestyle to identify determinants of aged-friendly neighbourhoods. The key research questions to be answered by the study are:

1. What Contribution do neighbourhood environmental factors make to the prediction of active lifestyle among the young elderly?

2. Which neighbourhood environmental factor is the best predictor of young elderly active lifestyle?

3. Previous researches have suggested that walking is the salient predictor of young elderly active lifestyle, is this hypothesis correct?

4. What are the measures to be taken to ensure aged-friendly neighbourhood that provides active lifestyle among young elderly?

These questions were formulated to achieve the following objectives:

1. To investigate the neighbourhood environmental factors and the outcome active lifestyle variables of physical activity and social cohesion among the young elderly.

2. To identify the potential neighbourhood environmental factors that inhibits the active lifestyle in young elderly.

3. To examine the young elderly individual experience of their neighbourhood design related to active lifestyle.

4. To develop a model that ensures an aged-friendly neighbourhood that promotes active lifestyle among older people.

a) Objective 1: To investigate the neighbourhood environmental factors and the outcome active lifestyle variables of physical activity and social cohesion among the young elderly.

Both neighbourhoods are chosen based on the fact that they are the neighbourhoods with the highest elderly population. Neither neighbourhood provided optimum facilities for all types of activities. Previous research identified that high participation in neighbourhood social activities, neighbourhood parks, public spaces, safe crossing, safety from fall, general satisfaction with neighbourhood facilities, good access to facilities, street connectivity presence/good conditions of walkways and neighbourhood safety are associated with outdoor social and physical activities among the elderly. However, social cohesion and physical activity depend jointly on the presence of

specific neigbourhood environmental factors (as opposed to social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety).

Therefore, to answer research question 1 and hence achieve objective 1, standard regression model was used. The results showed that social interaction, walking, facilitators to walking, physical barriers to walking, convenience, accessibility, permeability, maintenance and safety significantly predict young elderly active lifestyle as explained by social cohesion and physical activity.

b) Objective 2: To identify the potential neighbourhood environmental factors that inhibits the active lifestyle in young elderly.

Because studies investigating neighbourhood environmental factors influences on elderly active lifestyle is at an early stage, it is important to know which factors best predict young elderly active lifestyle. This could provide insights to decision makers to give priorities during the implementation process of aged-friendly neighbourhood developments. Stepwise regression analysis was conducted, the regression analysis results showed that seven neighbourhood environmental factors (permeability, safety, convenience, accessibility, walking, social interaction and facilitators to walking) supported social activities and contributed to predict young elderly active lifestyle as explained by social cohesion. The results also showed four neighbourhood environmental factors (permeability, maintenance, walking and accessibility) supported physical activities and contributed to predict young elderly active lifestyle as explained by physical activity. Therefore, the potential neighbourhood environmental factors that inhibited active lifestyle in young elderly as explained by both social cohesion and physical activity domains were permeability, safety, convenience, accessibility, walking, social interaction and facilitators to walking and maintenance.

c) Objective 3: To examine the young elderly individual experience of their neighbourhood design related to active lifestyle.

In the urban planning, walking is viewed as a vital element of many solutions aiming at decreasing the consequences of social and technological change and related lifestyle choices. Considerable research has focused on walking as walking is the simplest form of physical activity performed by elderly; therefore it represents a major health problem and an important urban planning issue to address. To answer Question three and achieve the third objective, a hierarchical regression analysis was conducted. The results showed that permeability on its own contributed to 35.9% of the variance in young elderly active lifestyle as explained by social cohesion and 25.7% of the variance in young elderly active lifestyle as explained by physical activity. Therefore, the researcher could conclude that permeability is a salient predictor of active life style, by two variables as indicated by the F-value; $F(1,383) = 216.508$ $p<0.05$ as explained by social cohesion and $F(1,383) = 132.258$ $p<0.05$ as explained by physical activity. The result implies that a desire to walk could arise from the availability of accessible facilities, well connected streets and well maintained walkways-all are items measuring permeability. Thus, walking might better be thought of as a result, or an outcome of aged-friendly neighbourhood features rather than an aspect of the physical environment.

d) Objective 4: To develop a model that ensures an aged-friendly neighbourhood that promotes active lifestyle among young elderly.

The regression findings revealed that social cohesion depends on the existence of seven neighbourhoods environmental factors associated with young elderly active lifestyle: permeability, safety, convenience, accessibility, walking, social interaction and physical barriers to walking. On the other hand, in the physical activity domain the

results revealed four unique neighbourhood environmental factors associated with young elderly active lifestyle: permeability, maintenance, walking and accessibility. Therefore, based on stepwise regression analysis, to enhance social cohesion and promote physical activity in the neighbourhood the measures are presented under the recommendations.

8.3 Recommendations

The theoretical and empirical studies presented earlier in chapter two provided evidence that certain neighbourhood environmental factors are associated with increased active lifestyle among the elderly as explained by the two domains social cohesion and physical activity to identify determinants of aged-friendly neighbourhoods. On the other hand the demographic characteristics of respondents presented in Chapter Seven suggested that young elderly are healthier, wealthier and lead independent lives than their precedents, and thus addressing aged-friendly neighbourhood is a challenge. Interviews with officials detailed in Chapter Six identified priorities with regard to aged-friendly neighbourhood planning. Accordingly, the study conducted multiple regression analysis to identify salient predictors of aged-friendly neighbourhoods and identify key determinants of aged-friendly neighbourhoods to help decision makers in the planning process and facilitate implementation. Three key factors were highlighted: permeability, accessibility and walking. This shows that there is a need to improve the neighbourhoods' physical design with regard to these three factors. Based on all these findings, the study Drew recommendations related to aged-friendly neighbourhood to help the young elderly stay active and healthy as they age. Therefore, the recommendations for the improvement of the neighbourhood physical design will focus on permeability, accessibility and walking.

8.3.1 Permeability-Improvement of Street Connectivity and Green Open Spaces

Well-connected streets and open spaces provide the young elderly in the residential neighbourhoods with places to meet and be both socially and physically active. Furthermore, providing attractive green open spaces, safe intersections where pedestrians converge and parks, would promote the liveability of the neighbourhood and encourage the young elderly to go out to socialize and walk as the simplest form of physical activity. Although both study areas have good street network and many green areas, some improvements are recommended. The intersections in TTDI are usually 4-way intersections and in Taman Meru are normally staggered three-way T-junctions. However both lack traffic calming techniques such as raised grounds, different textured paving and kerb cuts to facilitate crossing. The key design principles recommended are as follows:

- Provision of route-choice, to facilitate ways of navigating around the neighbourhood and getting from place to place while ensuring that the neighbourhood design is well linked to facilities.
- Provision of passing scenes along the main roads and in the middle of open spaces such as water falls and fountains.
- Provision of recreational opportunities such as jogging paths and cycling lanes nearby the neighbourhood park and along the streets.

Figure 8.1 a- Intersection at Taman-Meru

Figure 8.1 b- Proposed Intersection

Figure 8.2 a- Lack of Cycling Lanes

Figure 8.2b Proposed cycling lanes

8.3.2 Accessibility-Barrier Free Environment

Accessibility is an important factor that highlights active lifestyle among the young elderly, as it ensures that the neighbourhood is accessible to daily needs and to leisure activities. Since not all young elderly have equal ability to understand, perceive, interact and navigate in the neighbourhood, accessibility helps to decrease the physical barriers for them, while they walk, interact and communicate in their neighbourhood. Neighbourhood accessibility should be planned to encompass the young elderly and other age groups with different abilities to access neighbourhood facilities and services.

This meets the mobility needs of the young elderly and involves improving neighbourhood facilities, public amenities and modes of transportation to ensure the young elderly independence. Accessibility is also promoted through provision of short distances to daily destinations and good access to recreational facilities and parks. In TTDI unlike Taman Meru, most of the daily needs are within walking distance, nevertheless some improvements to walkways conditions, lighting and increasing bus frequency are recommended. In both areas young elderly were found to be auto-dependent due to less frequent public transport. Therefore, key design principles recommended include the following:

- Provision of a range of housing options, mix-land use and efficient public transport to enhance the young elderly active lifestyle in their neighbourhood.

- Provision of rights-of-ways streets to move pedestrians, bicycles and traffic.

- Provision of walkways that are paired with local destinations such as restaurants and shops to encourage the young elderly to socialize and be physically active.
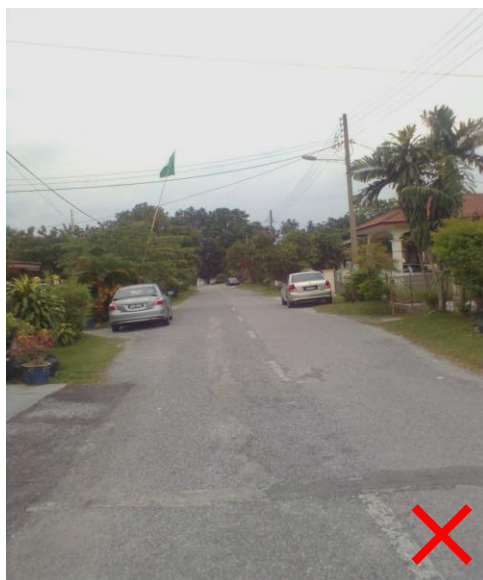
Figure.8.3 a: Taman-Meru lacks walkways, land-use mix and adequate public transport

Figure.8.3 b: Proposed public transport that include bicycle holders
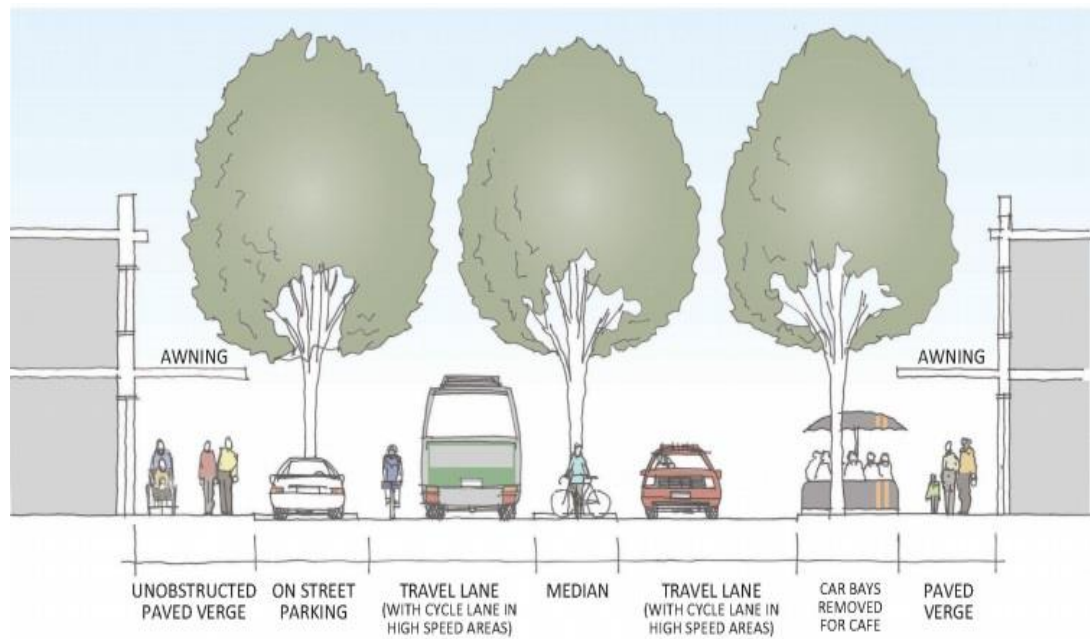
Figure 8.4: Typical street section with walkways, land-use mix and adequate public transport

8.3.3 Walking-Pedestrian-Friendly Streets

As people age they experience a decline in physical activity levels. Walking represent physical activity in its simplest form and is the only physical activity that is maintained at older age. Regular walking is crucial for positive and successful aging. Yet elderly are prone to crime and falls while walking. Within this context, conditions of walkways and inviting pedestrian streets play a major role in encouraging young elderly to go out and lead an active lifestyle. In TTDI walkways are either too narrow or in poor conditions and in Taman Meru, there is a noticeable lack of walkways. For these reasons young elderly don't walk through their neighbourhoods, rather they go to the neighbourhood park where they walk or jog. Plans that guide positive additions/alterations to both neighbourhoods' streets are needed. As mentioned earlier in chapter six the developers do not include walkways when developing residential neighbourhoods. Therefore, a funding mechanism should be developed to ensure adequate budging. However, the recommended key design principles include:

- Provide wide sidewalk ways with frequent street trees, beautiful landscaping and good lighting to promote a liveable residential neighbourhood that encourages walking and social interaction.

- Enhance conditions of walkways to enable young elderly's access to basic amenities and maintain relationships with family and peers across distances.

- Promote attributes that are conducive to walking such as access to recreational facilities, street connectivity and aesthetics cs.

- Reduce physical barriers to walking by providing walkways, shading paths, kerb cuts, textured paving and street benches.

- Provide continuous green pedestrian walkway between the neighbourhood park and local destinations (shops, restaurants,)

- Reduce neighbourhood deterioration through proper maintenance and management to enhance safety level and reduce risk of fall.

- Crime prevention techniques should be implemented such as natural surveillance and good lighting, in addition to traffic calming techniques to ensure young elderly safe crossing.

Figure.8.5 a: Existing walkways are either too narrow or are blocked by vegetation

Figure.8.5b: Proposed pedestrian walkway with attractive landscape, adequate width, textured paving and a clear demarcation between it and the street

These recommended measures and the results of hierarchical regression enabled the researcher to revise the research conceptual model developed earlier in Chapter One. The revised conceptual model showed that the two active lifestyle domains support different outcomes and converge to similar ones. The social factors are not restricted to three factors as in the first conceptual model but extended to seven factors resulted from the backward deletion method of the regression stepwise method in which the weakest variables were eliminated in each step. Maintenance is among the social factors in the first conceptual model but it is eliminated as a factor predicting social cohesion in the regression analysis. Similarly, facilitators to walking, physical barriers to walking and convenience were hypothesized to predict physical activity in the first conceptual model but are eliminated by the regression analysis and maintenance which was not in the first model is included in the second regression model. The factors in the cone represent the filtering process of both stepwise and hierarchical method of regression analysis and the outcome the salient predictors of active lifestyle and hence aged-friendly neighbourhoods. The final outcome is that for a neighbourhood to be aged-friendly it needs to be permeable, accessible and walkable, i.e. permeability, accessibility and walking are key determinants of aged-friendly neighbourhoods and these three factors are in the heart of new urbanism planning principle discussed earlier in Chapter Two, Figure 8.6.
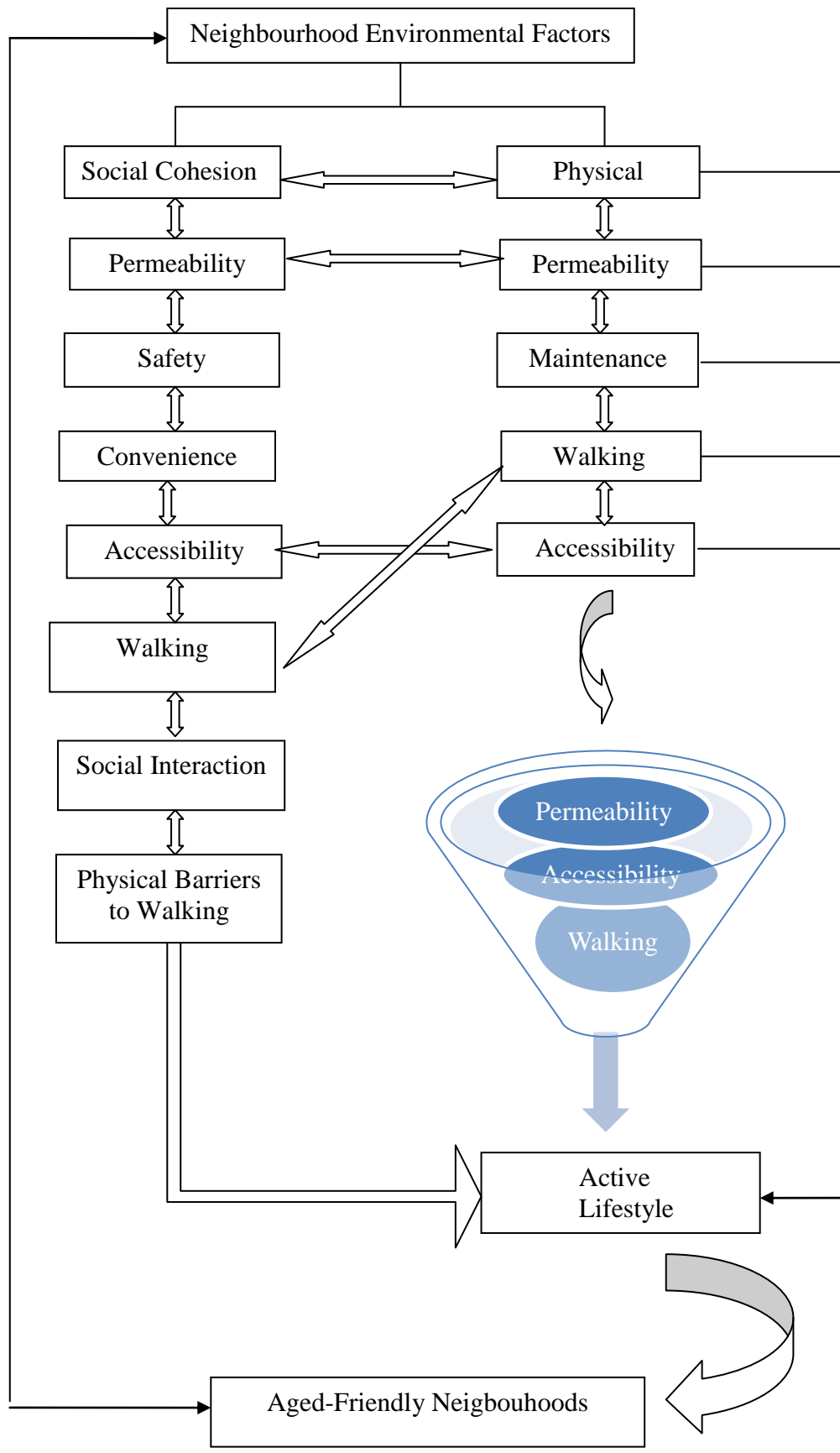
Figure 8.6: Revised Conceptual Model

8.4 Study Limitations

The study had two restrictions that limited the outcome assessment of findings and implications.

8.4.1 Generalization

The study areas are chosen based on the fact that they were the areas with highest elderly population. This selection was intended to enhance consistency of active lifestyle and socio-demographic data used to select the neighbourhoods; hence, the sampling frame was limited to TTDI neighbourhood and Taman Meru neighbourhood. These eliminated neighbourhoods in the vicinity of the study areas might have particular neighbourhood environmental factors that influenced young elderly active lifestyle. Furthermore, the selection method did not consider environmental features which might have an important influence on young elderly behaviour. The saturation of neighbourhood environmental factors that promote active lifestyle within an urban area such as TTDI may make a difference in behaviours influencing active lifestyle. TTDI neighbourhood has substantially more facilities than Taman Meru as a suburban area, thus providing more physical activity and social cohesion options in greater proximity than Taman Meru. Paved walkways and proximity of neighbourhood's park are important factors influencing physical activity and social cohesion. Similarly, in a subarea, going to the neighbourhood's park may significantly require more resources such as transportation cost and time. On the other hand, residents of TTDI are more likely to use more regularly public transport due to more buses crossing their neighbourhoods, and are therefore more exposed to neighbourhood environmental factors than do residents of Taman Meru. This might limit the ability of residents to well perceive their neighbourhood characteristics. Therefore, generalization was narrowed based on the two neighbourhood surveyed.

8.4.2 Ethnic Variation

Reviewing the population aging trends earlier in Chapter Five has shown that the percentage of Chinese senior citizens has increased from 8.8% in 2000 to 12.16% in 2010, representing the highest among the other ethnic groups and indicating that the Chinese population is well into the aging process of the population in Malaysia. According to Diez-Roux (2004), cultural and ethnic factors have an impact on active lifestyle. The researcher was expecting a greater participation from the Chinese residents. Unfortunately, the Chinese did not show interest to participate in the questionnaire survey (approximately 30% of the respondents were Chinese) and the researcher found difficulty to find a Chinese respondent. Only one Chinese participant had agreed to be interviewed and participate in the qualitative research. Although the Indians had shown willingness to participate in both researches, many did not meet the criteria of respondent/participant selection. Therefore, the analysis was limited mostly to the Malay ethnic group who showed great cooperation in both quantitative and qualitative researches. Parameters on the ethnicity variables could have shown interesting patterns because the relationship between ethnicity and participation in both social and physical activities vary across different ethnic groups. It could have been very useful results that neighbourhood with enhanced social cohesion and improved physical activity was the neighbourhood with the diverse ethnicity. This is particularly useful in formulating policies that aim at increasing participation in both social and physical activities that are likely to have different effectiveness in different ethnic groups. However, the study was not able to study cultural and ethnicity factors that might have an impact on active lifestyles among the elderly due to the small percentage of other Ethnic groups who participated in the study.

8.5 Contribution of the Study

As mentioned earlier in Chapter One the planning profession contributed little to elderly active lifestyle research and hence aged-friendly neighbourhoods. Most of the studies were conducted from individuals in the medical field from Institute of Gerontology-University Putra Malaysia. Therefore, the study was designed to contribute to develop a model for aged-friendly neighbourhood from the planning and design perspectives. Potentially the findings from this study make two vital theoretical contributions to the numerous theories on elderly active lifestyle as explained by the two domains social cohesion and physical activity and as influenced by neighbourhood environmental factors. These contributions will be discussed in more details in the following subsections.

8.5.1 Contribution to Knowledge

A comprehensive understanding how neighbourhood environmental factors affect active lifestyle among the young elderly as explained by two domains: social cohesion and physical activity to identify aged-friendly neighbourhoods in Malaysia.

The study aimed at developing a model in young elderly active lifestyle research. Based upon previous relevant studies on elderly active lifestyle, the researcher had developed a conceptual model of elderly active lifestyle influenced by certain neighbourhood factors and tested the casual possible associations of the factors empirically with survey data. The findings generally support the research hypothesis that neighbourhood environmental factors play a significant role in impacting the young elderly to be both socially and physically active and thus enable identifying determinants of aged-friendly neighbourhoods. Understanding young elderly active lifestyle may be used as a conceptual background to study the association between important constructs identified by the study. These findings provided new information that added to the current limited

neighbourhood planning knowledge concerning the influence of neighbourhood environmental factors on young elderly active lifestyle. This is a major contribution of the study to knowledge as until the moment of writing this thesis there is no existing literature of the contribution of the Malaysian planning profession on the field.

8.5.1 Contribution to public policy

Fill the gap in the public policy pertaining to social cohesion and physical activity as the two domains explaining young elderly active lifestyle

Previous research argued that social isolation and in active lifestyles are inevitable and normal parts of aging. Fortunately this assumption is not true; a primary aim of this study is to understand how proper physical environmental planning and design of the neighbourhood are associated with the elderly ability to be physically active and promote the social interaction in their neighbourhood. This particular information is a vital contribution to a physical environmental planning model of neighbourhoods for the young elderly that enabled active aging based on the WHO (2007), model, which includes promoting active and safe outdoor environment and presents possible means to prevent social isolation and maintain active lifestyle for the young elderly. The model developed based on these findings will help policy makers in decisions concerning the active young elderly in neighbourhoods.

8.6 Study Implications

The unique findings of this study are that the neighbourhood environmental factors that support both social and physical activities are more relevant to the total active lifestyle among young elderly. These have essential Implications for planning and designing communities that throughout the lifespan will enhance both mental and physical health.

8.6.1 Implications for Young Elderly

Aged-friendly neighbourhoods are based on benefiting the elderly in terms of well-being, quality of life, enhancement of social cohesion through creating opportunities for social interaction, or promotion of physical activity and its related health benefits. However, there are two issues worth mentioning:

a) Aged-friendly neighbourhoods implicit that elderly point of views regarding their neighbourhoods' development should be taken into considerations in planning, policies and decisions. Elderly must be involved in identifying their needs and discussing key issues. Therefore, their engagement in the decision making process is important. The success of aged-friendly neighbourhoods depends on whether the elderly can be involved in the planning and rolling out initiatives of aged-friendly neighbourhoods.

b) An awareness of the drivers that grow the interest in making aged-friendly neighbourhoods is needed. Governments might be facing economic challenges and consequently, might be seeking cost-cutting; making a neighbourhood to be aged-friendly might be appealing because of the nature of volunteer work and community involvement that are normally associated with similar issues. Therefore, making neighbourhoods to more aged-friendly might be the responsibility of the community itself.

8.6.2. Implications for Future Researches

The wide concept of aged-friendly neighbourhoods presented in this study provides a basis especially for multi-disciplinary research, and a number of directions and issues for future research are highlighted:

1- Although, several issues considered in the study under the neighbourhood environmental factors, social interaction, walking, accessibility, permeability, maintenance and safety, have examined their association with young elderly active

lifestyle to identify determinants of aged-friendly neighbourhoods, the interactions of these neighbourhood environmental factors should be symmetrically studied across different levels of impacts, for example, from individual level to policy level as well as over time to see how needs could change through time. These identified factors should also be considered against the person-environment fit to drive a testable hypothesis.

2- Researchers are also recommended to consider that the concept of aged-friendly neighborhoods distinctively focuses on the neighbourhood requirements to create better places for the elderly to live in. Therefore, future research should aim at effecting change through describing patterns and identifying interactions and relationship. For example, focus on the virtual components that enhance social connections and enable the elderly to be socially connected with family and other community members. In this computer/IT era it could be interesting for future research to examine the role of the internet in promoting aged-friendly neighbourhoods, through online conferences and programs that enable sharing expertise across several communities.

3- Another direction for future research should be investigating determinants of aged-friendly neighbourhoods across different localities. The reflection of aged-friendly neighbourhoods in urban areas might be different as compared in rural areas, for example how the different neighbourhood environmental factors relate to active lifestyle domains in different community scales, will it differ or remain the same across different community scales and different localities.

4- A useful research direction is to explore the role of culture and ethnicity in shaping aged-friendly neighbourhoods with a focus on enhancing social cohesion among neighbours with different ethnic backgrounds. This could be a beneficial area of research especially in a multi -ethnic and multi -cultural country such as Malaysia.

5- Since aged-friendly neighbourhoods are gaining considerable attention, and many cities are trying to implement the concept in planning and designing their

neighbourhoods, evaluation research would be both vital and beneficial for the effectiveness of the concept in enhancing social cohesion and promoting physical activity.

6- Researches play an important role in assisting researchers to understand the concept of aged-friendly neighbourhoods in different localities and various contexts. In Malaysia, few researches have contributed in the field from an urban planning perspective. Therefore, much can be gained from conducting similar research in different cities across the country.

7- Direct objective measurements of neighbourhood environmental factors could be vital in understanding young elderly active lifestyle constraints than social cohesion and social activities engagement which could be measured more effectively using qualitative methods to explore perceptions of social cohesion . Therefore, mixed-methods approach that include both qualitative and quantitative is required to provide a better and more comprehensive understanding the impact of neighbourhood environmental factors on elderly active lifestyle to identify determinants of aged-friendly neighbourhoods.

8- For future research direction, aged- friendly neighbourhoods should be investigated in terms of walkable neighbourhoods that promote safety and pleasant environments to enhance social cohesion and promote physical activity and whether neighbourhoods that combine these environmental physical features succeeded in promoting active lifestyle among the elderly.

9- It could be important to highlight that a single discipline cannot tackle the various complexities of determinants of aged friendly neighbourhoods, hence an interdisciplinary approach is required.

8.6.3 Implications for Policy

The revised research conceptual model shown above sets the stage for the policy that shows the complicated interactions between neighbourhood environmental factors and its impact on elderly active lifestyle to identify aged-friendly neighbourhoods. The concept of aging in place discussed earlier in chapter two provides a good example of how to apply models of aged-friendly neighbourhoods. The core concept of aging in place policy is to encourage people to remain in their neighbourhoods for as long as possible. This concept fits with the elderly attachment to their neighbourhoods (place attachment concept has also been discussed earlier in Chapter Two). Aging in place policy addresses all issues pertaining to neighbourhood environmental factors that impact active lifestyle domains explained by social cohesion and physical activity. For example, accessibility to affordable and suitable transportation options, accessible neighbourhood facilities, maintenance and the safety of the neighbourhood are key components of aging in place. Participation in social programs such as volunteer community work, participation in physical programs such as Tai -Chi group exercise, group and participation in spiritual programs such as religious classes are all aged-friendly domains that should be given priority. The government has many concerns and aged-friendly neighbouhoods could be one of these priorities, provided that factors promoting aged-friendly neighbourhoods are linked to these priorities.

8.7 Summary

The study has achieved its objective by answering the research questions developing a conceptual model for determinants of aged-friendly neighbourhoods in Malaysia, and has drawn some recommendations for the promotion of aged-friendly neighbourhoods. The study is a preliminary and considerable experiment in the Malaysian context to explore the influence of neighbourhood environmental factors on social cohesion and

physical activity as two domains explaining active lifestyle to identify determinants of aged-friendly neighbourhoods.

The study built on the WHO (2007) model, of age-friendly communities based on active aging and applied a mixed-method approach to highlight key issues that need to be addressed in both policy and research. Understanding how neighbourhood environmental factors influence active lifestyle among elderly as explained by the two domains social cohesion and physical activity to identify determinants of aged-friendly neighbourhoods have practical and policy implications. If supportive neighbourhood environmental factors increase social and physical activity levels, this greatly strengthens urban planning initiatives to develop aged-friendly neighbourhoods. The research model addressed design priorities of aged-friendly neighbourhoods design and planning to facilitate decision making process in implementing aged neighbourhoods.

Neighbourhood residential areas represent the heart of the human society, therefore successful efforts to make liveable communities start there. Understanding aged-friendly neighbourhood concept and how it can be implemented are key issues to enhance social cohesion and promote physical activity and hence healthy Aging among elderly. It is worth mentioning that aged-friendly neighbourhoods is a lifestyle and attitude towards healthy aging formed by community participation and awareness programs rather than an application of a physical design. Therefore a balance has to involve in planning and designing aged-friendly neighbourhoods because the physical design cannot tackle all the complexities involved, but it can encourage the type of interest on which social cohesion and physical activity pose as two domains explaining elderly active lifestyle. Enhancing social cohesion and promoting physical activity are critical to determining aged-friendly neighbourhoods. Interventions that promote these two domains could be a way to promote aged-friendly neighbourhoods.

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Appendix 1

Introductory Letter

Name of Student: Hanan Mohamed Hassan Elsawahli

Supervisor   : DR. Faizah Ahmad

Co-supervisor   : DR. Sr Alan Shah Ali

Research Title : Determinants of Aged Friendly Neighbourhoods in Malaysia:

University   : University of Malaya

Faculty   : Faculty of the Built Environment

Subject   : Elderly Active Lifestyle-Social cohesion and Physical Activity

Object   : Residential Areas-Landed Property

Target Group   : Residents

Dear Respondents
I am a PhD student in the University of Malaya. My research is about examining the neighbourhood factors that encourage social cohesion and physical activity among the elderly. This survey is conducted in an attempt to determine the neighbourhood environmental factors that lead to aged friendly neighbourhoods and promote active lifestyle among the older individuals. It is hoped that this research would help policy makers, planners and designers in determining what steps to be taken to improve the elderly active lifestyle and promote healthy aging. The survey is completely confidential and results will only be seen by is, so please do not write your name anywhere in the questionnaire. If you feel you cannot answer some questions please leave the questions blank for us to obtain accurate answers for the analysis and findings.
Your Contribution to the survey is highly appreciated. Thank you in advance.
Yours Faithfully
Hanan Mohamed Hassan Elsawahli

Saya merupakan pelajar PhD dari Universiti Malaya. Kajian ini adalah untuk mengenalpasti faktor-faktor kejiranan yang meenggalakkan tahap socialdan aktiviti fizikal di kalangan warga tua. Kajiseli di kini juga bertujuan untuk memastikan faktor-faktor persekitaran kejiranan yang membawa kepada kejiranan yang mesra warga tua dan menggalakkan gaya hi dup si hat di kalangan mereka. Di harapkan kaji an ini dapat membantu pembuat das ar, perancang bandar dan perekabentuk dalam menentukan langkah-langkah yang perlu di ambil bagi meningkatkan gaya hi dup aktif di kalangan warga tua dan menggalakkan penuaan yang sihat.Segala maklumat di dalam kajiselidik ini adalah sulit dan hanya dapat di lihat oleh penyelidik sahaja.Unttuk soalan yang tidak berjawab, sila tinggalkan kosong untuk kami mendapatkan jawapan yang tepat untuk analisisdan penemuan kelak..

Kerjas amatuan/puan/saudara/saudari dalam kajiseli di kini amatlah di hargai. Segala kerjas ama didahului dengan ucapan terima kasih.

Appendix 2

Research Questionnaire

Soalan Kajiselidik

Section A
Residents' Active Lifestyle
Cara Hi dup Aktif Penduduk
1- Social cohesion
  Tahap Sosial
  Questions 1-2 are rated as follows:
  Soalan 1-2 adalah mengikut skala di bawah

1.Strongly Dis agree	2. Dis agree	3. Neutral	4. Agree	5.Strongly Agree
Sangattidak bersetuju	*Tidak bersetuju*	*Neutral*	*Setuju*	*Sangat setuju*

	1	2	3	4	5
1.I can maintain close relationships with old neighbours and existing social group *Saya boleh mengekalkan hubungan rapat dengan jiran-jiran yang tua dan kumpulan social yang sedia ada*	1	2	3	4	5
2.I can make new friends in our community *Saya boleh mendapatkan kawan baru dalam komuniti dan masyarakat*	1	2	3	4	5
3.I am willing to contribute to local community work *Saya bersedi a untuk melibatkan diri dalam kerja-kerja masyarakat*	1	2	3	4	5
4.The neighbourhood is a good place to stay *Kejiranan adalah tempat yang bagus untuk didi ami*	1	2	3	4	5
5.The neighbourhood design (e.g. open space) effectively enhance social relations *Rekabentuk kejiranan (e.g. kawas an lapang) sangat berkesan untuk meningkatkan hubungan sosial*	1	2	3	4	5

2- Physical Activity
Aktiviti Fizikal

	1	2	3	4	5
1.Poor conditions of Sidewalks discourage physical activities *Keadaan pejalan kaki yang teruk tidak menggalakkan aktiviti fizikal*	1	2	3	4	5
2.Poor conditions of parks and open spaces discourage physical activities *Keadaan taman dan kawas an lapang yang teruk tidak menggalakkan aktiviti fizikal*	1	2	3	4	5
3.Lack of neighbourhood programs helps me stay in active *Kurangnya akti viti keji ranan menjadi kan saya tidak akti f*	1	2	3	4	5
4.Inadequate public transport discourage me stay active *Kekurangan pengangkutan awam tidak menggalakkan saya akti f*	1	2	3	4	5
5.Proximity of Locations-amenities and facilities are too far	1	2	3	4	5

Jarak lokasi -kemudahan terlalu jauh					

Section B

Variables Influencing Active Lifestyle-Neighbourhood Environmental factors

1-Social interaction:
Interaksi Sosial

Questions 1-7 are rated as follows:
Soalan 2-6 adalah berdas arkan skala berikut:

1.Strongly Dis agree	2. Dis agree	3. Neutral	4. Agree	5.Strongly Dis agree
Sangat tidak bersetuju	*Tidak bersetuju*	*Neutral*	*Bersetuju*	*Sangat bersetuju*

1.There is a neighbourhood watch group in the neighbourhood. *Terdapat kumpulan pemerhati keji ranan di kawas an tempat tinggal saya*	1	2	3	4	5
2. I know the name of my next-door neighbor/across the street. *Saya tahu nama jiran sebelah/ di hadapan rumah saya*	1	2	3	4	5
3 I have a neighbour within a walking distance that I regularly visit. *Terdapat jiran yang berdekatan yang sering saya lawati*	1	2	3	4	5
4. The *relationship with my neighhbours is based on mutual trust Hubungan dengan jiran saya adalah berdas arkan si fat saling mempercayai*	1	2	3	4	5
5. All *Semua di atas*	1	2	3	4	5

2- Walking:
Keupayaan Berjalan .

1.I never go outside my home for a walk *Saya tidak pernah keluar rumah untuk berjalan*	1	2	3	4	5
2.I rarely go outside my home for a walk *Saya jarang keluar rumah untuk berjalan*	1	2	3	4	5
3.I sometimes go outside my home for a walk *Saya kadang-kadang keluar rumah untuk berjalan*	1	2	3	4	5
4.I often go outside my home for a walk *Saya selalu keluar rumah untuk berjalan*	1	2	3	4	5
5.I go outside my home for a walk everyday *Setiap hari saya keluar rumah untuk berjalan*	1	2	3	4	5

3- Facilitators to Walking:
Dorongan untuk Berjalan

1. More Choice-interconnected streets *Terdapat banyan pilihan jalan yang berhubung kait*	1	2	3	4	5
2.Shorter distances to destinations *Jalan yang pendek dan singkat untuk ke destinasi*	1	2	3	4	5
3.Well-connected pedestrian walkways *Hubungan laluan pejalan kaki yang baik*	1	2	3	4	5
4. Safe Crossing. *Lintas an yang selamat*	1	2	3	4	5

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5. No fear of potential victimization on *Tidak Takut kepada pengani ayaan*	1	2	3	4	5

4- Physical Barriers to walking:
Halangan untuk Berjalan

1. Lack of walkways *Kekurangan laluan pejalan kaki*	1	2	3	4	5
2. Poor conditions of walkways *Keadaan laluan pejalan kaki yang teruk*	1	2	3	4	5
3. Lack of shading paths *Kekurangan laluan teduhan*	1	2	3	4	5
4. Lack of curb cuts. *Kekurangan penanda bahu jalan*	1	2	3	4	5
5. Lack of street benches *Kekurangan bangku jalan*	1	2	3	4	5

5- Convenience
Keselesaan

1. Neighbourhood provides affordable housing *Rekabentuk keji ranan menyedi akan perumahan yang selesa*	1	2	3	4	5
2. Neighbourhood design provides adequate services *Rekabentuk keji ranan menyedi akan perkhi dmatan yang mencukupi*	1	2	3	4	5
3. Neighbourhood design provides street furniture (e.g.benches) *Rekabentuk keji ranan menyedi akan perabut jalan (bangku, tong)*	1	2	3	4	5
4. Neighbourhood design provides efficient public transport service (it is easy to walk to bus stop /train from my home) *Rekabentuk keji ranan menyedi akan perkhi dmatan pengangkutan awam yang cekap (i a adalah mudah untuk berjalan ke perhenti an bas/kereta api dari rumah saya)*	1	2	3	4	5
5. Neighbourhood design provides mix-use developments *Rekabentuk keji ranan menyedi akan menggunakan perkembangan campuran*	1	2	3	4	5

6- Accessibility:
Akses

1. There are many places to go within easy walking distance of my home. *Ada banyak tempat untuk pergi dalam jarak berjalan kaki dari rumah saya*	1	2	3	4	5
2. Neighbourhood design is well connected to basic amenities *Rekabentuk keji ranan mempunyai hubungan yang bagus kemudahan as*	1	2	3	4	
3. Neighbourhood streets are hilly making walking difficult *Kawas an keji ranan yang berbukit menyukarkan untuk berjalan*	1	2	3	4	
4. Neighbourhood design provides walkways on most of the streets	1	2	3	4	

Rekabentuk keji ranan menyedi akan laluan pejalan kaki di kebanyakkan jalan-jalan					
5. Neighbourhood design provides handrails on walkways *Rekabentuk keji ranan menyedi akan pemegang tangan pada laluan pejalan kaki*	1	2	3	4	

7- Permeability
Kebolehsampaian

1. Neighbourhood design provides route Choice *Rekabentuk kejiranan menyedi akan laluan pilihan*	1	2	3	4	5
2. Neighbourhood design is well linked to facilities *Rekabentuk keji ranan mudah di hubungkan dengan kemudahan*	1	2	3	4	5
3. The residential neighbourhood is not isolated *Keji ranan kediaman tidak terpencil*	1	2	3	4	5
4. There are many alternative routes for getting from place to place in the neighbourhood *Terdapat banyak laluan alternatif untuk sampai dari satu tempat ke tempat laindi kawas an keji ranan*	1	2	3	4	5
5. The residential neighbourhood is within adequate distance to daily needs *Keji ranan kediaman adalah berada dalam jarak yang mencukupi kepada keperluan hari an*	1	2	3	4	5

8- Maintenance
Penyelenggaraan

1. The neighbourhood is not noisy *Kawas an keji ranan tidak bising*	1	2	3	4	5
2. There is no graffiti around in the neighbourhood *Tiada lukis an graffiti di kawas an keji ranan*	1	2	3	4	5
3. There is a watch group in the neighbourhood *Terdapat kumpulan pemerhati di kawas an keji ranan*	1	2	3	4	5
4. Houses in the neighbourhood are well maintained *Kediaman di kawas an keji ranan berada dalam keadaan baik*	1	2	3	4	5
5 The neighbourhood is well cared for-no litter laying around *Penduduk di kawas an keji ranan mengambil berat terhadap pembuangan sampah di merata tempat*	1	2	3	4	5

9- Safety
Keselamatan

1. The neighbourhood is safe to walk around- no blind corners *Kawas an keji ranan selamat untuk berjalan-jalan – tidak terdapat banyak kawas an yang terlindung dari pandangan*	1	2	3	4	5
2 The neighbourhood is safe to walk around- good Lighting *Kawas an keji ranan selamat untuk berjalan-jalan – pencahayaan yang baik*	1	2	3	4	5
3. Neighbourhood is safe to walk around- no gaps in the	1	2	3	4	5

walkways *Kawas an keji ranan selamat untuk berjalan-jalan – tidak terdapat jurang pada laluan pejalan kaki*					
4. Neighbourhood is safe to walk around- no heavy and speedy traffic *Kawas an keji ranan selamat untuk berjalan-jalan – tiada kenderaan yang padat dan laju*	1	2	3	4	5
5. Neighbourhood is safe to walk around- no high crime rate *Kawas an keji ranan selamat untuk berjalan-jalan – tiada kadar jenayah yang tinggi*	1	2	3	4	5

Section C
Demographic Indicators:
   Maklumat Demografi

Please tick (/) where appropriate
Si la tandakan (/) pada yang berkenaan

1- Housing Location
   Lokasi perumahan
       1- Kuala Lumpur (TTDI)   2- Ipoh (Taman Meru)

2- How long have you been staying in this neighbourhood?
   Sudah berapa lamkah anda tinggal di kawas an keji ranan ini ?

1.Less than one year *Kurang dari setahun*	2. 1-10 years *0 tahun*	3. 11-20 years *11-20 tahun*	4. 21-30years *21-30 tahun*	5. 31 years and above *ahun ke atas*

3- House ownership:
   Pemilikan Rumah

       Owned.   Rented.
       Sender   *Maniema*

4- Sex of respondent:
   Jantina
                Male.   Female.
                Lelaki   *Perempuan*

5- What is your Ethnic background?
   Latarbelakang etnik

   Malay   Chinese.   Indi an.   Others.
   Melayu.   *Cana*   *Indi a*   *Lain-lain*

6- What is your age?
   Umur

   45-50 years.   51-55 years.   56-60 years

45-50 tahun	*51-55 tahun*	*0 tahun.*
61-65 years	66- 70 years.	71 years-75 years.
61-65 tahun	*66-70 tahun*	*71- 75 tahun*

7- Health Status
Status Kesihatan

1. V. poor	2. Poor	3. Moderate	4. Good	5. V. good
Sangat teruk	*Teruk*	*Memuaskan*	*Bagus*	*Sangat bagus*

8- Functional status
Satus fungsi

Please rate your ability to perform tasks without assistance.
Si la tandakan kemampuan anda untuk melakukan sesuatu tanpabantuan sesi apa

1. V. difficult	2. Difficult	3. Moderate	4. Easy	5. V. easy
Sangat susah	*Susah*	*Bias a*	*Senang*	*Sangat senang*

9- Mark the highest level of education you have completed.
Tahap pendidi kan tertinggi

Junior (grade 8 or less)	High School.	College.
Junior (gred 8 atau kurang)	*Sekolah menengah*	*Kolej*
Bachelor Degree.	Master.	Ph.D.
Ijazah	*Sarjana*	*Doktot Falsafah*

10- What is your marital status?
Status perkahwinan

1.Single	Married	Separated	5. Divorced	6. Widowed
Bujang	*Berkahwin*	*Berasingan*	*Bercerai*	*Balu*

11- What is your present Occupation?
Pekerjaan

1.Unemployed.	2.Reti red.	3. Self-employed.	4.Empolyer	5. Government. employee
Tidak Becerra	*Pesaro*	*Bekerja sandier*	*Manikin*	*Piker Karajan*

12- What is your total family income per month?
Jemaah pendapatan isi keluarga sebulan

1. RM 1000-2000.	2. RM 2001- 3000.	3. RM 3001-4000.	4. RM 4001 and above. *RM4001 dan ke atas*

13- If you do not own your house what is your monthly rent?
Jika anda tidak mempunyai rumah sendiri, berapakah sewa sebulan?

1. RM500-RM1000	2. RM1001-RM1500	3. RM1501-RM2000	4. RM2001 and above. *RM2001 dan ke atas*

14- Preference of housing Location after retirement
Kawas an kediaman yang menjadi pilihan selepas bersara

Rural *Kampung*	Suburban *Pinggir bandar*	Urban *Bandar*	CBD

15- Preference of housing type after retirement
Jeniskediaman yang menjadi pilihan selepas bersara

1.High-rise *Bangunan tinggi / Apartment*	2. Terrace house *Rumah teres*	3.Semi detached *Separa berkembar*	4. Detached *Berkembar*

16- Present Living arrangement
Susunan hidup sekarang

Alone *Sendiri*	With children *Dengan anak-anak*	With Relatives *Dengan saudara-mara*	With friends *Dengan kawan-kawan*

17- Preference of Living arrangement after retirement
Keadaan hi dup yang menjadi plihan selepas bersara

Alone *Sendiri*	With children *Dengan anak-anak*	With Relatives *Dengan saudara-mara*	With friends *Dengan kawan-kawan*

Section D – Check-List

The Residential housing
Kawasan Kediaman

1- Street Address:
Alamat

………………………………………………………………………………….

2- Type of Housing:
Jenis Kediaman

Single Family detached house. *Rumah tunggal berkembar*	Multi -Family. *Unit kediaman pelbagai*	Town house *Rumah bandar*

3- General Appearance:
Keadaan Kawasan Kediaman

1.V. Poor *Sangat teruk*	2. Poor. *Teruk*	3. Satisfactory *Memuaskan*	4. Good *Bagus*	5. V. Good *Sangat Bagus*

The Residential Street
Jalan Kediaman

1- Type of the Street
Jenis Jalan

1. One lane   2. Two lanes
Satu lorong   Dua lorong

2- Lighting of the Streets
*Lampu Jala*n

V. Poor	Poor	Fair	Good	V. good
Sangat teruk		*Memuaskan*	*Bagus*	*Sangat bagus*

3- Public Benches
Bangku Awam

None	Few	Moderate	Many
Ti ada	*sedikit*	*Sederhana*	*Banyak*

4- Shading Path
Laluan Teduhan

None	Few	Moderate	Many
Ti ada	*sedikit*	*Sederhana*	*Banyak*

5. Kerb cuts
Peninggian tepi bahu jalan/ Penanda bahu jalan

None	Few	Moderate	Many
Ti ada	*sedikit*	*Sederhana*	*Banyak*

6. Number of crossing signs
Tanda melintas

None	Few	Moderate	Many
Ti ada	*sedikit*	*Sederhana*	*Banyak*

7. Types of sidewalks
Jenislaluan pejalan kaki

None	Intermittent	Discontinuous	Continuous
Ti ada	*Secara putus-putus*	*Tidak berterusan*	*Berterusan*

8. Width of sidewalks
Lebar laluan pejalan kaki

Less than 3M	3M	More than 3M
Kurang dari 3 m	*3 m*	*Lebih dari 3 m*

9. Location of sidewalks
   Lokasi laluan pejalan kaki

Next to the kerb	1M from the kerb	More than 1M from the kerb
Bersebelahan dengan penanda bahu jalan	*1 m dari penanda bahu jalan*	*Lebih dari 1 m dari penanda bahu jalan*

10. Conditions of Sidewalks
    Keadaan lauan pejalan kaki

V. poor	Poor	Fair	Good	V. good
Sangat teruk	*Teruk*	*Memuaskan*	*Bagus*	*Sangat bagus*

11. Obstacles
    Halangan

Many	Moderate	Few	None
Banyak	*Sederhana*	*sedikit*	*Ti ada*

Public Amenities
Kemudahan Awam

	Not Existing *Tidak wujud*	Need Improving *Perlukan peningkatan*	Adequate *Mencukupi*	V. good *Sangat bagus*
1- Worship facilities *Kemudahan beribadah*				
2- Educational facilities *Kemudahan pendidi kan*				
3- Health facilities *Kemudahan kesihatan*				
4-Recreational facilities *Kemudaha beri adah*				
5-Police protection *Kawalan polis/ keselamatan*				
6- Street maintenance *Penyelenggaraan jalan*				
7-Sidewalks *Laluan pejalan kaki*				

1- Parks
   Taman

None	Private residents	Public
Ti ada	*Penduduk sendiri*	*Awam*

2- Conditions of Parks
   Keadaan taman

V. poor	Poor	Fair	Good	V. good
Sangat teruk	*Teruk*	*Memuaskan*	*Bagus*	*Sangat bagus*

Appendix 3

Residents' Interview1:

Interviews are selected to meet the following Criteria:

1- Age 60^+ and less than 75 as the phenomenological study focuses in the lived experience of the young elderly.

2- Lived in the area for more than one year as it takes time for certain Variables to develop, such as social cohesion and social interaction. Therefore, a period of one year (Handy, 2008) is thought to be adequate to develop social cohesion and residents who lived for less than one year are excluded from the study.

3- Have not been admitted to a nursing facility before.

4- Have showed knowledge and understanding while answering the survey questionnaire.

Interview Questions

1- What is your daily routine activity?

2- What does active lifestyle mean to you?

3- What are the things you do to stay active?

4- What are the benefits of physical activity in your opinion?

5- What are the facilitators of physical activity in your opinion?

6- What do you think are the Barriers to physical activity in your opinion?

7- What type of physical activity do you participate in?

8- Is there any program in your community that helps you stay active?

Theme 1: Elderly active lifestyle:

This is where the analysis of active lifestyle begins in relation to social cohesion and physical activity. The respondents are asked to answer four related questions:

1- What does active lifestyle mean to you?

2- What are the things you do to stay active?

3- What is your daily routine activity?

4- What are the benefits of staying active in your opinion?

Theme 2: Issues related to active lifestyle of the elderly:

This is where the issues are identified in relation to the following Variables of interest:

Issue 1: Neighbourhood perception (accessibility and permeability); two questions are asked:

1- How easy would you navigate in your area?

2- How would you rate the level of isolation of your neighbourhood?

Issue 2: Neighbourhood Satisfaction (convenience), one Question is asked:

1- Could you please describe the services and amenities provided by the neighbourhood that have provided opportunities for elderly to meet interact and perform physical activities?

Issue 3: Residents' satisfaction, this included sub heading to further elaborate on the concept, three questions are asked:

1- Trust in people (social interaction): How do you maintain close relationship with your neighbours?

2- Concerns about leaving home (safety): How do you view your neighbourhood safety? Do you feel safe to go out at any time?

3- Concerns about neighbourhood conditions (maintenance): Do you possess any fear of falling due to bad walkways conditions?

Theme 3: Barriers and facilitators to active lifestyle:

This involves exploring more the neighbourhood environmental factors that are responsible for promoting elderly active lifestyle. Three questions are asked, the variable of interest for the first two questions is walkability and for the third Question the variable of interest is management:

1- In your opinion what are the facilitators to physical activity in its simplest form 'walking'?

2- In your opinion what are the Barriers to physical activity in its simplest form 'walking'?

3- Is there any program in your neighbourhood that helps you stay active?

Appendix 4-Interviews with Officials

Interview questions with planners, architects, gerontologists, policy makers, developers and decision makers

1- How can the primary needs of the elderly be met by the city?

2- Is there any development strategy to improve the housing physical environment for the young elderly?

3- Are there any initiatives for aged friendly neighbourhoods?

4- What are the organizational structures that can achieve the objectives of aged-friendly neighbourhoods?

5- What are the opportunities and Barriers to the advancement of aged friendly neighbourhoods?

Appendix 5- Study Areas' Land Use Maps

Appendix 6 Tables for Qualitative data Explication

Table 6.1: 1- What does active lifestyle means to you?

Respondent	Units of general meaning	Significant Statements
1	Active lifestyle means do something either to benefit yourself or to benefit the community	Do something, benefit the community
2	Active lifestyle means that I am alive I am doing something.	Doing something
3	Active lifestyle means that I am occupied and busy working or doing something useful.	Being Occupied
4	Active lifestyle means that I do something I like such as painting or carving and also go out meet people and talk.	Do something and meet people
5	Active lifestyle means to me that I am busy doing something either by myself or with people.	Being busy, doing something and with people
6	Active lifestyle means being occupied with things you like and going out seeing other friends.	Being occupied and seeing friends
7	Active lifestyle means that I keep fit and maintain good health and also have a social life not staying alone.	Keep fit, maintain good health and have a social life

Table 6.2: 2- What are the things you do to stay active?

Respondent	Units of general meaning	Significant Statements
1	I go for physical exercise every morning and I work in the Masjid library (volunteering).	Go for physical exercise and volunteer work
2	I care very much to exercise every day, walk/jog and I always like to go to the cafe to meet my friends.	Exercise every day, meet my friends.
3	I walk for one hour everyday if it is not raining and I participate in voluntary work in the community centre.	Walk every day, participate voluntary work
4	I have a knee problem and cannot exercise but I love carving, every day after having breakfast with my friends I spend most of the time carving	Having breakfast with my friends, carving
5	I walk, jog and do physical exercise I am used to heavy exercise as I was a police officer I also like to have breakfast with my friends	Walk, jog and do exercise, have breakfast with my friends
6	I go to the park and walk or jog around the	Go to park, walk/jog,

	garden then gave breakfast with friends and then go to community centre if i have some voluntary work to do	have breakfast with friends do voluntary work
7	I am concerned to exercise every day because it is good for my heart and general health then I like to meet my friends for breakfast and have some talk	Exercise, meet friends

Table 6.3: 3- What is your daily routine activity?

Respondent	Units of general meaning	Significant Statements
1	I wake up early in the morning, and after Subuh prayer I go the park for a walk (provided it is not raining) then I go and have breakfast with my friends after that I start my work at around 8 o'clock in the morning till1 o'clock in the afternoon. I go and have lunch with friends and normally i have classes in the afternoon about general knowledge, skills and religion. After that I go with my friends for tea then go back home.	Go for a walk, have breakfast with friends, start my work, have lunch with friends, have classes, have tea with friends
2	Every day after Subuh prayer I go to the park for a walk and jog, I do not have specific time if I feel well I might stay there for two hours. Then I go to the cafe and have breakfast with my friends. I go to the community centre if there is some voluntary work to do, if not I like to develop my computing skills I sit for hours in front of the PC and always learn new things. I normally have lunch with my wife, after Asr prayer I normally join some developing skills classes then I have tea with friends and then go home. I also like to spend some time reading.	Go to the park for a walk, have breakfast with friends, go to community centre, develop computing skills, have tea with friends, reading
3	I wake up early and go for a walk then I come back home have breakfast with my wife then I go and help my son with business only half day then i have a community centre that I volunteer in if needed. If I am not tired I might go out with my wife for a walk and then to a cafe and have some tea. I always like to have an early nap so I can wake up active.	Go for a walk, work , volunteer work
4	After Subuh prayer I go back home and rest and then go and have breakfast with my friends, and then I go back home and spend most of my time carving. Because of my knee problem I cannot go for a walk or jog	Have breakfast with friends, spend most of my time carving, go to the park for walk

	every day I sometimes go for a walk with my wife. I Drive to the area park then walk there because there are some seats if I get tired I can sit down. Sometimes I help in some house maintenance. I have my children Living with me and I also like to spend some time with my grandchildren. My day is normally busy and I enjoy it.	
5	Every day I go for a jog if not in the morning because of the rain In the evening. I was a police officer and I am used to heavy exercise and thanks God although I am 65 years I still can jog for 1-2 hours. I then have breakfast with friend and participate in voluntary work. I am always concerned to attend all prayers at Masjid because before retirement I had no time to do so. Thanks God for giving the chance to compensate for that. Every day I have something to do either helping family, friends or community voluntary work. Whenever there are classes or seminars I always join because I like to be active.	Go for a jog, have breakfast with friends, participate involuntary work, do something, help family and friends
6	After Subuh prayer I Drive to the area park and have a walk after that I have breakfast with friends i always discuss what i can do for our neighbourhood to be the best neighbourhood in KL. I participate in voluntary work if there is any. I like to read and spend some time during the day reading. I read newspaper, magazines, books even my car is full of books and newspaper. Sometimes if the weather is good I go to the park and sit under the tree and read.	Have a walk, have breakfast with friends, participate involuntary work, reading
7	I usually wake up early go to Masjid for Subuh prayer then go to the park for a walk after that I meet my friends for breakfast and then go back home if there is no voluntary work in the community centre. I like to do some gardening I look after my garden. in the evening I am usually at home with my family	Go to the park for a walk, do voluntary work if any, do some gardening.

Table 6.4: 4- What are the benefits of staying active in your opinion?

Respondent	Units of general meaning	Significant Statements
1	Walking is good for my heart and if I do not go out and meet my friends I will just be sitting watching TV all day.	Health benefit and social engagement.
2	Good for my health and my community	Health and community benefit
3	Keeps in good health and in touch with people	Health a and keeping in touch with people
4	I like to be busy this makes me feel alive. I do not feel lonely.	Feel alive, not feel lonely
5	Lots of benefits to my health, my heart, no high blood pressure or diabetes. Social life is also important especially in our age i like to share history and experiences.	Health and social benefits
6	It is good for my health and my heart, being engaged in the voluntary work also gives me pleasure	Good for my health, gives me pleasure
7	Keeps me healthy both in my body and mind because I am busy doing something	Keeps me healthy, doing something

6.1.2 Theme 2: Issues related to active lifestyle of the elderly:

Issue 1: Neighbourhood perception (accessibility and permeability); two questions are asked:

Table 6.5: 1- How easy do you navigate in your area?

Respondent	Units of general meaning	Significant Statements
1	Quite easy I can go anywhere from my place	Quite easy
2	Very easy, I can go from place to place	Very easy
3	No problem very easy	Very easy
4	Easy way finding no problem	Easy
5	Easy lah I have no problem to find my way	Easy
6	It is my area I know all places very easy	Very easy
7	No problem at all quite easy	Quite easy

Table 6.6: 2- How would you rate the level of isolation of your neighbourhood?

Respondent	Units of general meaning	Significant Statements
1	My neighbourhood is not isolated it is quite accessible	Not isolated, quite accessible
2	Not isolated I can go everywhere within few minutes	Not isolated
3	My neighbourhood is quite accessible, not isolated	Quite accessible not isolated
4	Not isolated all our needs are nearby	Not isolated
5	I have no problem getting anywhere it is not isolated	Not isolated
6	Everything is there, not isolated at all	Not isolated
7	Not isolated at all I can go to meet daily needs within a reasonable distance	Not isolated

Could you please describe the services and amenities provided by the neighbourhood that have provided opportunities for elderly to meet interact and perform physical activities?

Table 6.7: Issue 2: Residents' general satisfaction with their neighbourhood (convenience)

Respondent	Units of general meaning	Significant Statements
1	The area park, the worship facilities and also the shopping centre	Park, worship facility and shopping centre
2	Definitely the park and the worship facility	Park and Masjid d
3	The park	The park
4	The Masjid d, the community centre and the park	Masjid d, community centre and the park
5	For sure the park, the Masjid and the shopping centre	Park, Masjid and shopping centre
6	The Masjid and park	Masjid and park
7	For sure the area park and Masjid	Area park and Masjid

Issue 3: Residents' perception of their neighbourhood as a place that enhances social interaction ensures safety and good maintenance. This included heading that elaborate on the concept, three questions are asked:

Table 6.8: 1- Trust in people (social interaction): How do you maintain close relationship with your neighbours?

Respondent	Units of general meaning	Significant Statements
1	I visit my neighbour when I have time, we sometimes have tea together and yes I do trust my neighbours.	Visit, have tea, trust
2	My neighbour has not retired yet and is very busy with work and family but i maintain good relation , trust and respect each other	Maintain good relation , trust and respect each other
3	My relation with my neighbours might not seem to be strong because i are all quite busy with our Private lives, but i respect each other and are there for each other	Respect and are there for each other
4	We maintain a good relation full of respect and care though no many or regular visits.	Maintain good relation
5	We do not visit each other regularly but we meet every day down the road while walking or in Masjid and we always have a chat	Meet while walking, or in Masjid and have a chat
6	We do not visit because we are almost every day together in the park, Masjid and restaurant, we maintain close relations and trust each other	I maintain close relations and trust each other
7	We have very good relations with our neighbours; we trust each other and help each other if in need. They are also retired couple and we share common interests. I meet each other in restaurants, park and Masjid all time.	Good relations, trust each other and share common interest

Table 6.9: 2- How do you view your neighbourhood safety? Do you feel safe to go out at any time?

Respondent	Units of general meaning	Significant Statements
1	Fairly safe. I do not really feel safe to walk around; there are lot of street snatch.	Fairly safe, street snatch
2	Safe, there are some house breaks and street snatches but the crime rate is Relatively low in the neighbourhood. I usually go for a walk in the park and the park is very safe.	Safe, crime rate low, park is safe.

3	Well everywhere there are opportunity offenders but the area is Relatively safe. The time I go for a walk around 5:00pm the streets are normally safe because you can find many people going for a walk or jogging, so I feel safe	Relatively safe, I feel safe
4	The neighbourhood is fairly safe, yes i hear about street snatching and house break-ins but i have been Living in this area for over 22 years and have not been victims to any type of cri me. As I told you before I rarely go for a walk but I possess no fear of crime when I do.	Fairly safe, no fear of cri me
5	The area is very safe, I was a police officer I always have no fear of potential victimization although I am 65 years old but still can defend myself and others.	Very safe, no fear of potential victimization
6	Fairly safe no safety concerns while walking except of fall.	Fairly safe
7	Safe lah crime rate is low, no serious problems. Yes I can walk around safely	Safe, can walk around safely.

Table 6.10: 3- Concerns about neighbourhood conditions (maintenance): Do you possess any fear of falling due to bad walkways conditions?

Respondent	Units of general meaning	Significant Statements
1	Actually i do not really have walkways, besides I usually walk in the park	Do not have walkways; walk in the park
2	Well the area is fairly quite you can walk in the middle of the street no heavy or speedy traffic; However I go to park for a walk more fresh air and beautiful scene.	Go to the park for a walk
3	The walkways are either too narrow, or not well maintained or full of plant pots. Anyhow I usually take my car to the park to walk there.	Walk there (In the park)
4	No because if ever I decide to walk I always have my stick with me and I never walk alone always with my wife so if I stumble I have someone to give a hand. But normally the walkways are full of plant pots.	Walkways full of plant pots
5	The walkways are in a good condition but are narrow and I walk or jog early in the morning no traffic so I just walk in the street	Good conditions but are narrow
6	Fairly safe no safety concerns while walking except of fall.	Fairly safe

| 7 | Some of the walkways are in poor conditions and some are too narrow I normally go to the park for a walk | Walkways are in poor conditions/too narrow |

6.1.3 Theme 3: Barriers and facilitators to active lifestyle:

Table 6.11: 1- In your opinion what are the facilitators and Barriers to physical activity in its simplest form 'walking'?

Respondent	Units of general meaning	Significant Statements
1	Facilitators could be it is easy to get from place to place, the park and public transport. Barriers are lack of shading path and absence of street benches sometimes i are tired and want to have a rest but no place to sit	easy to get from place to place; lack of shading path
2	Facilitators: park, easy way finding can go around easily; Barriers: walkway condition or walkway is too narrow, lack of street benches	Easy way finding; walkway condition; lack of street benches
3	Facilitators: park, i always go for a walk in the park and restaurants i can stop and have some rest. Barriers: walkways are either too narrow, or not well maintained or full of plant pots.	Go for a walk in the park and restaurants; walkways are narrow
4	Facilitators: I think the park encourages people to go for a walk also the area is quite and no heavy traffic. Barriers could be not many interesting things to see while walking	Park, area is quite; not many interesting things to see.
5	I have every facility in the neighbourhood that encourage us to walk but please maintain for example the bridge in the park has been broken for a long period and have not been yet maintained.	Have every facility; please maintain
6	we have all the facilities but need some maintenance and improvement, I think it is important to have some benches to sit when i get it red some railings along the walkways and shadings are also i important	Have all the facilities; need some maintenance and i improvement; some benches and shading
7	Facilitators I think is that I can find my way easily also no heavy traffic, but the problem no shades even in the park if it rains i have to rush to our car and go back.	Can find my way easily; no shades.

Table 6.12: 2- Is there any program in your neighbourhood that helps you stay active?

Respondent	Units of general meaning	Significant Statements
1	Yes sure we have the Tai -chi group, also the lessons i attend in the Masjid every day; we meet friends and help involuntary work	Have Tai -chi group, meet friends and help involuntary work
2	Yes we have the community centre and several associations of retirees from different professions and always have diverse program	Have community centre; have diverse program
3	Yes the community centre and associations; but no specific program I join because I work part time	Community centre and association.
4	Yes we have many programs in the community centre, associations and the Masjid d	Community centre, associations and the Masjid d
5	Yes actually our community centre is very active there are many programs for both social and physical activities; and voluntary work	Community centre; voluntary work
6	Yes I am a member of the community centre and we have many programs that cover all activities	Community centre
7	Yes we have the Tai -chi group, skill development and voluntary work	Tai -chi group; voluntary work

6.2 Theme 1: Elderly Active life style, Taman Meru, Ipoh

Table 6.13: 1- What does active lifestyle means to you?

Respondent	Units of general meaning	Significant Statements
1	It means that I am busy doing something, for example I like to be independent and always go for my daily needs by myself and I cycle to everywhere, this keeps me active	Busy doing something; cycle
2	It means being busy, I like gardening and spend most of my time gardening I also like to go out and meet people talk and help them	Being busy, spend time gardening, go out, meet people
3	It means that I stay active; I do the gardening and also participate in community work	Stay active, gardening; community work.
4	It means that I keep myself busy doing something useful, I do gardening and all the house maintenance, I walk every day and participate in community work	Busy doing something; gardening and participate in community work

| 5 | It means that I perform physical activity every day; go out see friends | Perform physical activity, see friends |

Table 6.14: 2- What are the things you do to stay active?

Respondent	Units of general meaning	Significant Statements
1	I cycle every day; although I have my son and daughter staying with me I always perform all tasks by myself.	Cycle; perform all tasks by myself
2	I do gardening and go for a walk, I sometimes swim; participate involuntary community work	Gardening; participate in community voluntary work
3	I to take care of the garden and I also participate in all community work	Gardening; community work
4	I walk every day; cycle I do the gardening and all house maintenance; I am also a member of a retiree association and cycling club; do voluntary work	Walk; gardening, house maintenance, voluntary work
5	I go to the park and walk or do light exercise I also participate in doing community voluntary work.	Walk, participate involuntary work

Table 6.15: 3- What is your daily routine activity?

Respondent	Units of general meaning	Significant Statements
1	After Subuh prayer I have some rest then I cycle to restaurant and have breakfast then I do all the housework by myself; go shopping; in the evening I also cycle for at least half an hour.	Pray, cycle, do housework
2	Early morning I go for prayer, I go back home I rest for a while and then I start gardening after which I have breakfast with my family, if it is not raining I swim for one hour my swimming pool is not big but enough for us to stay active, and then I go to work although it is voluntary but it takes the whole day	Pray; gardening; swimming; community work
3	I pray Subuh in Masjid I meet my friends there then I go for a walk in the park; I normally have breakfast with my family and then do some gardening. I go to community centre if i have work to do.	Pray, walk, gardening, community voluntary work
4	After Subuh prayer I always go to the park for a walk; jog and I cycle three times a day I am a member of the cycling club and retired police officers association, after having breakfast I always do community	Pray, walk, jog, cycle and do community work

	work i always make sure that our neighbourhood needs are met. If the weather is not good I always do some physical activity at home I have some keep fit at home	
5	After Subuh prayer I go with my friends to the park for a walk only for half an hour I am seventy now I cannot walk for more than that; i have breakfast together then I go to community centre if there is voluntary work but I arrange for all the programs and activities in both the Masjid and the community centre not only for the elderly but also for all age groups	Pray. Walk have breakfast with friends, do voluntary work

Table 6.16: 4- What are the benefits of staying active in your opinion?

Respondent	Units of general meaning	Significant Statements
1	I stay healthy; I enjoy cycling and going out talking to friends and people	Enjoy cycling; talking to friends and people
2	It gives me a feeling that I am doing something good and that I am alive	Doing something good; I am alive
3	I enjoy being busy doing something that I like and helping my community	Being busy doing something
4	It is good for my body and for my brain as it keeps me busy with useful work.	Good for my body and brain
5	It is good for my heart and the voluntary work gives me feelings that I still can give and benefit my people	Good for my heart, benefit my people

6.2.1 Theme 2: Issues related to active lifestyle of the elderly:

Issue 1: Neighbourhood perception (accessibility and permeability); two questions are

asked:

Table 6.17: 1- How easy do you navigate in your area?

Respondent	Units of general meaning	Significant Statements
1	Quite easy but there are some hilly areas that make cycling hard	Quite easy, some hilly areas
2	Well it is ok no problem easy to go around	Easy to go around
3	Our neighbourhood is not big so very easy	Very easy

4	There are some cul-de-sacs but i have lived for more than 20 years i know the area, easy	Some cul-de-sacs- know the area
5	Well very easy I have lived here for 20 years	Very easy; lived for 20 years

Table 6.18: 2- How would you rate the level of isolation of your neighbourhood?

Respondent	Units of general meaning	Significant Statements
1	I cycle to get my daily needs i do not have shops or groceries nearby; Fairly isolated	Fairly isolated
2	Well I Drive to get my daily needs and even when I go to the park for walking, by the car I do not see it isolated.	Not isolated
3	I do not have shops or groceries but by car everything is near; not isolated	Not isolated
4	I are actually very auto-dependent that is why I can say it is not isolated	Not isolated
5	Although daily needs are within a distance by car not walking still I can say not isolated	Not isolated

Table 6.19: Issue 2: Residents' general satisfaction with their neighbourhood (convenience)

Could you please describe the services and amenities provided by the neighbourhood that have provided opportunities for elderly to meet interact and perform physical activities?

Respondent	Units of general meaning	Significant Statements
1	I think the worship facility and the community centre make it easy for people to meet and arrange for activities.	Worship facility and community centre
2	The park, Masjid and community centre Drives us out to walk /socialize	Park, Masjid and community centre
3	I go to the park to perform any type of physical activity and also to meet friends	Park
4	The park and Masjid build up the community physical and social activities	Park and Masjid d
5	I think having the park and community centre help the people stay both physically and socially active	Park, community centre

Issue 3: Residents' perception of their neighbourhood as a place that enhances social interaction ensures safety and good maintenance. This included heading that elaborate on the concept, three questions are asked:

Table 6.20: 1- Trust in people (social interaction): How do you maintain close relationship with your neighbours?

Respondent	Units of general meaning	Significant Statements
1	I maintain close relations with my neighbours, we visit each other and are always together in private and social events	Close relations
2	I have very good relations i might not visit regularly but we are together every day either in the park/Masjid or community centre	Very good relations
3	Our relationship is very strong we have known each other for many years and have shared all good and bad events we support each other all the time	Relationship is strong; support each other all the time
4	Very strong relations we share everything; if somebody's daughter or son are getting married we arrange a meeting to see what can we do and how can we help and it becomes every body's responsibility to help	Strong relations, share everything
5	I are quite a strong community and i build up very good relations with each other, almost all the people in the neighbourhood know each other and i as men might not visit regularly but i meet outside every day. we share our worries and always help each other	Quite a strong relation , know each other, help each other

Table 6.21: 2- How do you view your neighbourhood safety? Do you feel safe to go out at any time?

Respondent	Units of general meaning	Significant Statements
1	Quite safe I can go out at any time and have no worries about potential victimization	Quite safe
2	The neighbourhood is very safe I can go out at any time and I do not worry about cri me	Very safe
3	I used to have a problem of house break-ins but i managed to get very much under control with the help of community members and the police. Now the	Very safe

	neighbourhood is very safe.	
4	The neighbourhood is very safe i hear about one house break-in in a month no serious crime. I can go out any time and possess no fear of cri me.	Very safe
5	I watch out all the time for each other so no fear of crime the neighbourhood is quite safe	Quite safe

Table 6.22: 3- Concerns about neighbourhood conditions (maintenance): Do you possess any fear of falling due to bad walkways conditions?

Respondent	Units of general meaning	Significant Statements
1	Wellbeing a suburban area we lack some facilities like walkways/bicycle lanes, but the park needs some maintenance; Yes sometimes especially when it is raining I am always afraid d of falling	Lack of walkways; I am always afraid d to fall when it is raining.
2	I do not walk around in the neighbourhood; I go to the park to walk. Lack of walkways is a problem. I go everywhere by car or motorcycle.	Lack of walkways; go by car or motorcycle
3	No walkways, falling while walking is a real concern that why I go to the park for walking or jogging	Falling while walking is a real concern
4	The neighbourhood has no walkways so it is not really safe to walk around although no heavy traffic still absence of walkways make me walk in the middle of the street which is not safe.	No walkways; not safe
5	Well I only walk for a very short distance to the Masjid it is just next door I Feel it is ok and safe	Walk for a short distance, safe.

6.2.2 Theme 3: Barriers and facilitators to active lifestyle:

Table 6.23: 1- In your opinion what are the facilitators and Barriers to physical activity in its simplest form 'walking'?

Respondent	Units of general meaning	Significant Statements
1	I think if we have walkways in good conditions i will be encouraged to walk; poor Lighting and lack of shading path could be Barriers	Facilitators : walkways in good conditions; Barriers: poor Lighting and lack of shading path
2	The park facilitates walking but lack of maintenance and services are real Barriers	Facilitators: park; barriers: lack of services and

		maintenance
3	No heavy traffic and safety facilitates walking but lack of walkways, benches and shading are Barriers	Facilitators: no heavy traffic and safety; Barriers: lack of walkways and shading
4	Park, safety and light traffic are facilitators but poor Lighting is a real problem; I normally like to walk early in the morning but the Lighting is very poor I cannot see the road well.	Facilitators: park, safety and light traffic; Barriers: poor Lighting
5	The park facilitates walking but needs some maintenance and additional services also the area is safe; poor Lighting and absence of walkways especially in the main road is a problem.	Facilitators: park, area is safe; Barriers: maintenance and services; poor Lighting and absence of walkways

Table 6.24: 2- Is there any program in your neighbourhood that helps you stay active?

Respondent	Units of general meaning	Significant Statements
1	Yes the community centre is always arranging programs both physical and social also attend religious classes	Community centre arranging programs
2	Yes there are always different programs to join both physical and social; this weekend we had racing competition for the different age groups. I also have classes every day in the evening at the Masjid and everybody can join	Physical and social programs; classes at Masjid d
3	Yes the community centre arranges for different events and arranges sports competitions. There are also lots of programs in the Masjid d	Community centre and Masjid arrange programs;
4	Yes because I am a member of the cycling club, Retired police officers association and the community centre. I always have social and sports events that keep us active	Social and sports events
5	Yes sure community centre sports and social events and voluntary work	Community centre sports and social events

4- Clustering units of relevant meaning to form themes

Table 6.25: Determining themes from the clusters of meaning

Evidence from Significant Statements	Themes
Active lifestyle means do something Active lifestyle means that I am occupied and doing something Active lifestyle means to me that I am busy doing something Active lifestyle means that I keep fit and maintain good health It means that I stay active It means that I perform physical activity every day; go out see friends	Active Lifestyle
Benefit the community Doing something either by myself or with people. Have a social life not staying alone. Participate in voluntary work in the community centre. Go to community centre if i have some voluntary work to do I have a community centre that I volunteer in if needed Have shared all good and bad events we support each other I are quite a strong community and i build up very good relations with each other	Social cohesion
I go for physical exercise Exercise every day, walk/jog I walk for one hour everyday I walk, jog and do physical exercise I am concerned to exercise everyday I cycle every day	Physical Activity
I visit my neighbour I maintain good relation , trust and respect each other I respect each other and are there for each other We trust each other and help each other if in need.	Social interaction
I walk for one hour everyday I go to the park and walk	Walking
Easy to get from place to place Easy way finding Park and restaurants Walkways in good conditions No heavy traffic and safety	Facilitators to Walking
Lack of shading path Not many interesting things to see. Walkways are narrow Walkway condition and lack of street benches Maintenance and services Poor Lighting and absence of walkways	Barriers to Walking
Park, Worship facility Shopping centre Community centre	Convenience
I have no problem to find my way I can go everywhere within few minutes I can go to meet daily needs within a reasonable distance There are some hilly areas that make cycling hard No problem easy to go around	Accessibility

Easy to get from place to place	Permeability
I can go anywhere from my place	
Easy way finding	
My neighbourhood is not isolated	
I have no problem getting anywhere	
Falling while walking is a real concern	Maintenance
Lack of walkways; I am always afraid d to fall when it is raining	
Some walkways are in poor conditions	
Area is quite	
Fairly safe, street snatch	Safety
Safe, crime rate low, park is safe	
Very safe, no fear of potential victimization	
Quite safe I can go out at any time	
The neighbourhood is quite safe	