

Urban Form and Subjective Well-Being in the Reykjavík Capital Region: The Impact of the Built, and Social Environment on Individual Life satisfaction, Domain satisfaction, and Social Well-Being

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Urban Form and Subjective Well-Being in the Reykjavík Capital Region: The Impact of the Built, and Social Environment on Individual Life satisfaction, Domain satisfaction, and Social Well-Being

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Abstract

Previous studies have reported on the effects of dense urban areas on individuals' subjective well-being in various contextual situations. However, the impact of the urban form on individual life satisfaction, domain satisfaction, and social well-being has rarely been studied in a context-based case using multi-faceted analysis. This study utilizes a mixed-methods approach to analyze the impact of the urban form on respondents' subjective and social well-being. A survey of 706 residents living in the Reykjavík metropolitan area measured residents' subjective well-being. GIS-based urban form measures were calculated within a 1Km buffer around their home. Qualitative analysis of fourteen interviews evaluated respondents' social well-being in their residential areas. Bivariate correlations and hierarchical regression analyses assessed the physical contextual variables. Participants' expressed that greenspace access, neighborhood accessibility, and proximity to the city center, as essential factors for their well-being, contrary to the results of the bivariate correlations. Hierarchical regression results indicate that population density within a 1 Km radius negatively affects respondents' domain satisfaction and social well-being. Furthermore, interviews indicated that place attachment, proximity to cultural and entertainment services, and open space access matter for respondents' social well-being. Finally, proximity to daily services was beneficial for respondents' subjective well-being, while the need for privacy and feelings of isolation were negatively associated with well-being due to population density. Findings suggest that planners and designers need to consider both social and residential characteristics when designing for communities in urban and suburban areas.

Keywords: Urban form, subjective well-being, life satisfaction, domain satisfaction, social well-being, greenspace access, population density, mixed-methods approach, SoftGIS, Reykjavík Metropolitan region.

Útdráttur

Fyrri rannsóknir hafa greint frá áhrifum þéttbýlis á huglæga vellíðan einstaklinga við mismunandi aðstæður í ýmsu samhengi. Hins vegar hafa áhrif borgarforms á lífsánægju einstaklinga, huglæg lífsgæði og félagslega vellíðan sjaldan verið rannsökuð í samhengisrannsókn með margþættri greiningu. Í þessari rannsókn er notuð blönduð aðferðafræði til að greina áhrif borgarformsins á huglæga og félagslega vellíðan svarenda. Könnun sem var gerð á 706 íbúum höfuðborgarsvæðisins mældi huglæga vellíðan íbúa. Borgarformið var mælt með GIS-kerfinu og reiknað út innan 1 km radíusar í kringum heimili þeirra. Félagssleg vellíðan í íbúðahverfum svarenda var metin með eigindlegri greiningu á 14 viðtölum. Stigveldis aðhvarfsgreining mat efnislegu samhengisbreyturnar. Niðurstöður aðhvarfsgreiningar benda til þess að íbúabéttleiki innan 1 km radíusar hafi neikvæð áhrif á huglæg lífsgæði og félagslega vellíðan svarenda. Ennfremur bentu viðtöl til þess að staðartengsl, nálægð við menningar- og afþreyingarþjónustu og aðgengi að opnu rými skipti máli fyrir félagslega vellíðan svarenda. Þátttakendur lýstu því yfir að aðgengi að grænum svæðum, aðgengi hverfisins og nálægð við miðborgina væru mikilvægir þættir fyrir vellíðan þeirra, þvert á niðurstöður könnunarinnar. Að lokum var nálægð við daglega þjónustu gagnleg fyrir huglæga vellíðan svarenda, á meðan þörfin fyrir næði og einangrunartilfinning voru neikvætt tengd við vellíðan vegna íbúabéttleika. Niðurstöður benda til þess að borgarskipuleggjendur og hönnuðir þurfi að huga að bæði félagslegum þáttum og þeim tengdum íbúðarhverfinu þegar þeir hanna fyrir samfélög í þéttbýli og úthverfum.

Lykilorð: Borgarmynstur, huglæg vellíðan, lífsánægja, huglæg lífsgæði, félagsleg vellíðan, aðgengi að grænum svæðum, íbúabéttleiki, blönduð aðferðafræði, SoftGIS, Höfuðborgarsvæðið.

Dedication

To my loving family and beautiful friends who have always believed in me and my drive to accomplish my dreams and goals which I set out to do, thank you. Your support and encouragement are the reason I completed this research.

Preface

The thesis was written at the University of Iceland between the period of January 2019 and May 2020. It serves as a 60 ECTS thesis for the completion of a Magisters Scientiarum in Environment and Natural Resources. The research behind this thesis was completed in the Reykjavík Capital Region between 2017 to 2019. The project utilizes an extensive quantitative data set collected in 2017 using the SoftGIS method from the Sustainable Reykjavík Capital Region (SuReCaRe) Project with 706 responses and expanded on with qualitative interviews conducted in 2019 and 2020. The SuReCaRe project was commissioned by and funded by Skipulagstofnun Rannsóknar- og þróunarsjóður, Vegagerðin and the University of Iceland Research Fund.

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Abbreviations

PPGIS:	Public Participation Geographical Information System
GIS:	Geographical Information System
UN:	United Nations
UK:	United Kingdom
SDG:	Sustainable Development Goals
OECD:	Organization of Economic Co-Operation and Development
SPSS:	Statistical Package for the Social Services
SuReCaRe:	Sustainable Reykjavík Capital Region
SSH:	Samtók Sveitarfélaga á Hófuðborgarsvæðinu
ISK:	Icelandic Krona
PT:	Public Transportation
NDVI:	Normalized Difference Vegetation Index
EEA:	European Environmental Agency
GMES:	Global Monitoring for Environment and Security
NIR:	Near-infrared Spectroscopy
PM:	Particulate Matter

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1 Introduction

1.1 Background

Growing globalization and economic development have facilitated easier travel access and led to an increase in urbanization with impacts on both the environment and society (Du et al., 2018; Sussman et al., 2019; Yao et al., 2019). It is estimated that about 50% of the world population resides in cities or urban areas (Ritchie et al., 2018). As cities continue to grow and expand in size globally, there are environmental challenges faced such as reduced vegetation cover (De La Barrera et al., 2017; Sussman et al., 2019; Yao et al., 2019) to accommodate the growing population needs in housing and other areas. Another noticeable environmental impact of growing cities is an increase in air pollution, particularly fine particulate matter (PM), which is very harmful to an individual's health (Du et al., 2018; Rajé et al., 2018; Wang et al., 2019b). Noise pollution in major urban traffic hubs such as highways and airports is another undesired environmental impact of cities (Abbaspour et al., 2015; Mohareb et al., 2019; Silva et al., 2012; Yuan et al., 2019). Some of the societal implications of growing urban areas include urban crime (Cullen et al., 1999; Gaigné et al., 2015; Li et al., 2012; Soh, 2012), socio-spatial and economic inequality (Lelo et al., 2019; Modai-Snir et al., 2018; Olsen et al., 2019) and housing insecurity (Gulyani et al., 2018; Kennett et al., 2010; Park et al., 2019; Soyinka et al., 2018). There is a need for sustainable development in urban areas that consider both the residents' social aspect and environmental concern when planning for the future.

The term urban sustainability appeared in the 20th century. It has been defined as having urban areas that are built to meet the needs of the people with considerations for the economic, social, and environmental impacts and should not compromise the quality of life for future generations (Hamilton et al., 2002). The United Nations (UN) in developing the sustainable development goals, highlighted health, and well-being as their third goal as it is crucial in sustainable development ("Health - United Nations Sustainable Development,"). Well-being is the state in which an individual can be categorized as being happy, healthy, and comfortable in their life ("wellbeing," n.d.). The eleventh sustainable development goal focuses on Sustainable cities and communities, and among the areas highlighted include provision of affordable housing, access to sustainable transport systems, provision of open and green spaces, and improved municipal air quality (UN SDGs, 2019). The scope, access, and availability of the elements that will enhance human development, in this case, urban areas, whether actual or self-reported, have a relative effect on an individual's happiness, life satisfaction, and quality of life. It is not only the satisfaction with the housing structure that is vital to individuals' life satisfaction but also the neighborhood design and environment. The place of residence, including; population size, neighborhood attractions, and resource access and distance to amenities such as malls, gyms, parks, and health care, can promote positive or negative well-being (Asadullah et al., 2018; Brown et al., 2016). An individual's perception on how the built environment characteristics such as density help or inhibit their social relationships in their residential area can also affect their well-being either negatively or positively (Hamdan et al., 2014; Maass et al., 2016; Mouratidis, 2018a).

Objective well-being is mainly concerned with the quality of life. It uses social indicators to measure people's well-being, while subjective well-being involves an individual's evaluation of their life. (Alatartseva et al., 2015). All the aspects measured by the objective approach of well-being are typically tangible, material indicators with a societal focus which can be assessed by quantitative methods.

On the other hand, subjective well-being focuses on an individual's perception and assesses qualitative, intangible indicators such as happiness and emotions. It is essential and useful to get an individual's self-reported levels of happiness and satisfaction with their life, especially for urban planners and policymakers when charting out welfare decisions. Self-reports representing the subjective experience of individuals have an advantage in research as there is no need for inference or interpretation when assessing subjective experience (Eid et al., 2008). Getting information on domain-specific satisfaction, such as neighborhood, is beneficial for public service delivery and long-term planning (Kytta et al., 2011, 2013, 2016). An individual's quality of life and well-being can be explored in different ways, and for this study, the focus will be on subjective well-being.

1.1.1 Subjective well-being

The field of subjective well-being has gained vast advancement in the past decades due to the extensive empirical works of Diener (Diener et al., 1997, 2003, 2009, 2011) and the positive psychology movement by Seligman (Seligman, 2002, 2005, 2014). Subjective well-being is an individual's internal assessment and involves their perception of life choices and life experiences.

There are two main perspectives on studying subjective well-being, and they are eudaimonic and hedonic. The eudaimonic approach deals with an individual's meaning of life, prime psychological functioning, and self-realization in a way that they can meet and achieve their goals (Ryan et al., 2001). An individual's need to be in close contact with nature might be fostered by their psychological need to relate to nature while also driven by an intrinsic value of promoting mental health (Cleary et al., 2017). On the other hand, the hedonic approach involves human sensations such as happiness and can be divided into three sub-categories. The three categories are the presence of a positive effect, the absence of negative impact, and life satisfaction (Diener, 1984). The first two categories are referred to as affective well-being and deal with an individual's mood, emotions, and feelings, and this is usually short term. The last category is referred to as cognitive well-being and involves an individual's assessment of their satisfaction with the circumstances and conditions on all aspects of their life, and the outlook is usually global and long term (Diener, 1984).

An excellent example of affective well-being would be an individual eating out at their favorite restaurant, their favorite meal, which brings them instant pleasure. In urban studies, increased commute time might elicit negative emotions (Morris et al., 2015), while a visit to a park may bring momentary happiness (Benita et al., 2019). A good example of cognitive well-being would be an individual's choice for cycling daily to work, which has immense health benefits such as strength, flexibility, and being fit while also providing monetary savings as seen in various urban studies (de Kruijf et al., 2019; Kaplan et al., 2019; Lindsay et al., 2011; Rojas-Rueda et al., 2011). However, an individual's preference to cycle to work might not always be motivated by long-term goals. It can be due to other factors such as favorable weather conditions or a lack of other transport means due to financial difficulties, which then elicits negative feelings on the activity when it becomes a chore and tiring on

longer commutes (Nie et al., 2018). In such a case, health benefits might be secondary and even non-existent due to demanding work and little time to rest between workdays.

Additionally, domain satisfaction focus on an individual's evaluation of some specific aspect of their life, such as neighborhood, housing, or employment. There is a strong relationship between life satisfaction and domain satisfaction, and domain satisfaction is sometimes merged with the life satisfaction component (Eid et al., 2008). This study will delve more profound into cognitive wellbeing by utilizing respondents' life satisfaction and domain satisfaction as separate entities to measure respondents' subjective well-being.

1.1.2 Life satisfaction

Life satisfaction represents an individuals' broad assessment of their life as a whole, and the evaluations are cognitively based (Beutell, 2006; Eid et al., 2008). It is often reported from 0 to 10, with 10 representing the highest possible level of satisfaction. Life satisfaction is different from happiness, whereby happiness represents an individuals' current emotional state in terms of happiness. In contrast, life satisfaction is a global evaluation, and it is not grounded at any specific point of time or in any particular domain. There have also been several studies devoted to understanding the determinants of life satisfaction (Prasoon et al., 2016; Proctor et al., 2009). Many factors may contribute to an individuals' life satisfaction from some aspects of their life, including health, income, age, education level, occupation, romantic relationships, relationships with family and friends, personal development, health and wellness, and others.

1.1.3 Domain satisfaction

On the other hand, domain satisfaction stands for an individuals' evaluation of their satisfaction with specific aspects of their life, such as job satisfaction, health satisfaction, and marital satisfaction, among others (Eid et al., 2008). Just like life satisfaction, an individual's domain satisfaction is measured through self-reports on a 10-point Likert scale representing their level of satisfaction. Empirical studies from various researchers have put the assumption that an individual's overall satisfaction with their life depends on their comfort in many concrete areas of their life referred to as domains of life (Cummins, 2005; Headey et al., 1992; Meadow et al., 1992). Moreover, a person's perception of their career success, achievements, health, safety, community, economic situation, family life, personal fulfillment (education and leisure) may influence their well-being.

1.1.4 Social well-being

The term social well-being is defined as an individual's evaluation of their function and circumstances in society (Keyes, 1998). Social well-being is vital for an individuals' health and overall well-being as recognized by the world health organization (WHO) (Breslow, 1972). The concept is based on the premise that an individual's interaction with others and to their society can have an impact on their well-being. Social support may refer to the number of people that an individual can rely on in times of need and trust wholeheartedly. An individual's social support may also include the degree with which an individual feels they matter in society and to others and feel needed for the functioning of other individuals and society. An individual's perceived social support from their social network of friends and family and positive quality of relationships with other people and society may influence

their psychological (Canty-Mitchell et al., 2000; Rook, 1984; Turner, 1981) and emotional well-being (Abbey et al., 1985; Lee et al., 1987).

1.1.5 Sustainable urban development

Urban planning needs to factor in the design of the city and neighborhood structuring to contribute positively to the well-being of society. With urban sustainability, there has arisen the need for discovering what makes happy cities or livable cities to enhance human well-being (Ballas et al., 2011; Brereton et al., 2008; Cloutier et al., 2014). Moreover, with climate change and global warming being a recently emerging topic, urban development needs to factor in on how best to reduce GHG emissions for sustainable futures (Turkoglu, 2015).

Urban form

The term urban form refers to the physical patterns, configuration of settlements, layouts, density, and structures that make up an urban center (Williams, 2014). The urban form is important as an area of study as cities are always transforming and increasing in size and number (Angel et al., 2011). The urban form is collectively changing, and it is critical to both individuals' daily lives in the present and understanding of past cultures. Urban form develops either by planning or organically as individuals settle in the urban center. Two approaches have been proposed in urban planning to accommodate the growing population in urban areas, with arguments in favor and against each. They are densification of the metropolitan regions to make cities more compact (Burgess, 2002), and the orderly expansion of cities leading to sprawl and dispersion (Glaeser et al., 2004; Nechyba et al., 2004). A new concept that has emerged in the last decades in encouraging sustainable urban planning is the creation of cities with high residential densities and short distances to daily service, with mixed land uses, known as the compact city. Compact cities are designed with efficient transportation network and increased street connectivity to encourage cycling and walking (Barros et al., 2017; Sharifi, 2019; Zuniga-Teran et al., 2017), which can have an impact on the overall reduction of the populations' carbon footprint and promoting physical (Ambrey, 2016a) and mental well-being (Ambrey, 2016b). City and neighborhood densification reduces commuting time thus lowering vehicular emissions (Angel et al., 2018; Clark, 2013; Hankey et al., 2010; Makido et al., 2012) from more extended travels, and lowers residential and commercial emissions due to clustering populations per capita basis (Fercovic et al., 2016; Gudipudi et al., 2016). But there have been debates on whether densification is the best option for future urban development and the implications it has on individual well-being due to perceived overcrowding (Arnberger, 2012) and traffic congestion in large cities (Tsekeris et al., 2013), limited access to green space (Ambrey et al., 2013), pollution (Cárdenas Rodríguez et al., 2016), and unaffordable housing (Burton, 2000). It is always not positive living in the city center as individuals face an interchange of housing size and cost (Brown et al., 2016). Houses found near the city center tend to be more expensive (D'Acci, 2019) with varied floor and outdoor space than those in the outskirts of the town. The reason for the difference in the home size can be attributed to the construction of more high-rise buildings and apartment complexes in the main urban areas, to cater to the larger population sizes in the city center (Ahmad et al., 2017; Gan et al., 2019; Guan, 2019) as well as an energy-efficient means to design, whereby land prices have a great impact in determining the size as planners seek the highest return on investments by providing smaller apartments to more people.

On the other hand, orderly expansion aims to create new urban centers and neighborhoods in the periphery of urban areas known as suburban areas. They are categorized by lower densities, more housing options, vast open and green space, communal feel, perceived safety, and more privacy and security for residents to enhance their well-being (De Jong et al., 2012; Lovejoy et al., 2010; Morris, 2019; Rogers et al., 2009). However, having neighborhoods in the periphery of urban areas has significant criticism due to the residential distance to public facilities, which increases commuting time, thus contributing to more GHG emissions from travel (Clark, 2013; Travisi et al., 2010). Suburban living might offer some peace and tranquility for individuals, which may improve their mental well-being. There may be large green areas that are a perfect nature getaway for individuals looking for an escape from their daily routines (De Jong et al., 2012). Individuals living in the outskirts of the city might choose their location based on the prospect of increased perceived safety and security in such neighborhoods, especially for families with children or older individuals (Lovejoy et al., 2010). Individuals living in the suburbs may benefit from reduced housing costs, and their homes might have gardens, and this may improve their life satisfaction (Harris, 2015). The offside of living in the suburbs is mainly the commute time as some people who live outside the city might need to travel back and forth, due to work or other commitments (Delclòs-Alió et al., 2017). Heavy drivers who spend most of their leisure time driving may have a higher carbon footprint than those who drive shorter distances for necessity only, which is an inconvenience when promoting urban sustainability (Ottelin et al., 2017). Specific urban environments have been shown to increase an individual's happiness and levels of life satisfaction (Appleton et al., 2008; Joshanloo et al., 2016; Sander, 2011).

The compact city may be held as the desirable option between the two in terms of sustainability in urban growth as it might relieve some pressure of global warming by reduced distances to daily services. In terms of promoting well-being, there is a need for more studies to explore how the built environment affects individuals' welfare. There is a necessity to examine which of the two macro options is best suited to ensure the promotion of individual well-being. The urban form plays a vital role in promoting a sustainable urban environment, and it is, therefore, essential to carry out studies on how different urban forms affect individuals' well-being. There is a gap in knowledge on a comparison on how individuals' life satisfaction, domain satisfaction, and social well-being is affected in densely populated neighborhoods as compared to those that reside in communities on the periphery of urban areas.

1.2 This study

This study aims to understand the relationship between subjective well-being and urban form in the Reykjavík metropolitan region. This thesis examines the relationships between the built and social environment variables related to life satisfaction, domain satisfaction, and social well-being using both quantitative and qualitative analyses. The relationship of the urban form-built environment and respondents' life satisfaction, domain satisfaction, and social well-being is investigated through quantitative methods. At the same time, the qualitative analysis will probe into the relationship of the respondents' social environment as it relates to their social well-being in the compact and suburban areas, while also expounding on the quantitative results. Using a multi-faceted analysis can develop a better understanding of the individual's well-being living in various parts of the urban region - from the city center to the suburban areas.

This study explores several research questions to provide a more in-depth insight into the life satisfaction, domain satisfaction, and social well-being of urban residents in different built and social environments. The capital region of Reykjavik is the focus of this study to assess these results. The study utilizes a dataset from a recent survey using the SoftGIS method to understand the well-being of residents across different types of urban forms. This study will be the first of its kind in Iceland, and it will increase knowledge into the greater research community. It is the first such study in Iceland, examining individual life satisfaction and urban form within the city of Reykjavik. It furthermore contributes to the growing conversation of urban form and well-being.

1.2.1 Research problem and research question

There is extensive literature on sustainable urban form, with case studies across the world discussing well-being and the urban form. There remain unanswered questions regarding the well-being of individuals across different urban forms. Moreover, the indirect effects of the built and social environment on an individual's well-being have not been the subject of much research. Furthermore, there is a gap in knowledge in the questions explored above in Iceland, specifically aimed at the built and social environment and well-being impact. While some studies directly analyze the impact of urban form on an individual's life satisfaction, no research has been done in Iceland with the use of mixed methods according to the author's knowledge.

This study explores two aspects of Reykjavik residents' lives: built environment characteristics, and social environment. Examining the relationships between these aspects, life satisfaction, domain satisfaction, and social well-being with respondents' geographic location will shed some light on the questions above. This approach will develop an increased knowledge of how the built and social environment influences life satisfaction, domain satisfaction, and social well-being on an individual basis. Moreover, this study will also expand on urban green areas research by incorporating respondents' preferences for the perceived local environmental quality. For this reason, this study focuses on the broad research inquiry of how the built and social environment influences individual subjective well-being and social well-being, with more specific focal sub-questions as listed below.

The research questions would be.

1. What is the relationship between respondents' life satisfaction, domain satisfaction, and social well-being with the urban form characteristics in the Reykjavík region?
2. How do the urban form characteristics affect interviewees' subjective well-being and social well-being in different areas in the Reykjavík metropolitan region?
3. To what extent and in what ways does urban form affect respondents' and interviewees' subjective well-being and social well-being in various parts in the Reykjavík metropolitan region?

The focus of the first research question will be on the physical and environmental urban form characteristics. Quantitative data analysis will assess the relationship between population density, street connectivity, distance from the city center (which entails proximity), and the access to open and green spaces in the Reykjavik capital region, with residents' life satisfaction, domain satisfaction, and social well-being. Moreover, respondents' dwelling characteristics, socio-demographic characteristics, and personal preferences will be analyzed as they relate to their life satisfaction, domain satisfaction, and

social well-being. They will also serve as control variables in the regression analyses. Specifically, the focus on respondents' dwelling characteristics includes the participants' apartment size, bedroom number, tenure, residential type, number of inhabitants, and length in a residential apartment. The socio-demographic variables to be analyzed in this context include respondents' gender, level of education, occupational, income per capita, spoken language, and household type. The variables description will be explained more in-depth in the design and methods section later.

The focus of the second research question will be on the relationship between the respondents' physical and social environment in different areas in the city and the participants' subjective well-being and social well-being. The second research question will be explored using qualitative analysis. This question aims at understanding how the social environment and the city's compactness features such as density, reduced distance, accessibility, and greenspace availability, contribute to participants' social and subjective well-being within various neighborhoods.

The third and final research question will integrate the first two research questions in exploring how the themes emerging from the qualitative interviews with respondents can be used in expounding on the experimental outcomes. The third research question will also help establish if there is a convergence or divergence of the initial quantitative results with the qualitative findings.

1.2.2 Geographical Scope

This study will focus on a single case study. It will cover the capital area of Iceland, which is the Reykjavík metropolitan region, including the capital city and the surrounding six municipalities, by utilizing a dataset from a city-wide survey and qualitative interviews.

As of January 1st, 2018, the greater Reykjavík region, which makes up the capital city and six municipalities, had a joint population of 222,484 residents, which is more than half the population of the whole country - 348,450 (Iceland, 2018). The capital city itself had a population of 124, 847 residents with a population density of at least 451.5 people living per square kilometre. According to the organization of economic co-operation and development-OECD (2017), the people in Iceland have high life satisfaction, with a 7.5 average grade (on a 0-10 scale), as compared to the OECD average of 6.5. However, income per capita in a household in Iceland is lower than the average in OECD levels because many Icelanders spend a notable proportion of their disposable income on housing costs (24%) (OECD, 2017). The relative OECD average for other countries spending on housing costs is 21%, which makes housing affordability in Iceland a clear area of comparative weakness. This thesis, housing income per capita will be a control variable for the urban environment and respondents' life satisfaction, domain satisfaction, and social well-being in the regression analyses.

1.2.3 Theoretical scope

There are a few theories that have been developed to explain and understand subjective well-being, happiness, and satisfaction as related to this study. The first theory is the multiple discrepancies theory (MDT) (Michalos, 1985), and it will be used to show how individuals' satisfaction with life is because of their perceived satisfaction with specific life domains such as housing, occupation, education, social networks, and recreation activities. The

second theory is the need hierarchical theory (Maslow, 1943) and, it also helps to explain how individuals' achievement of their needs of shelter, security, and companionship may contribute to their overall perceived life satisfaction. A third perspective that draws from multiple disciplines, combines human needs and the policy options which are in place to enhance these opportunities in explaining subjective well-being (Costanza et al., 2007). This third perspective sets up the need for favorable policies that strengthen the achievement of individuals' needs in society, such as access to recreational facilities and nature for their mental well-being and security and safety. The study draws from two theories in environmental psychology in connecting health and well-being to individuals' subjective well-being, and they are the attention restoration theory and the stress reduction theory.

Finally, when it comes to social well-being and the social aspect, the study draws from the works of (Gehl, 2011) on how the quality of outdoor areas and public spaces might promote or constrict social contacts and ties.

Multiple discrepancies theory

The basic concept of MDT is that there are gaps between discrepancies and individuals' happiness and satisfaction (Michalos, 1985). MDT theory posits the net individual life satisfaction is a function of perceived differences between what one has and wants (individual desire discrepancies), deserves and needs, the best one has had in the past (past reflections discrepancies), relevant others have (social comparison discrepancies), expected to have 3 years ago, and what one expects to have after 5 years (future aspirations) (Michalos, 1985). MDT also asserts that individuals' actions in their environment are motivated by the pursuit and maintenance of net satisfaction, which in turn is affected by individual socio-economic characteristics (Michalos, 1985). An individual's satisfaction with their life through being content with their situational features and the other life domains affect their happiness and helps to determine their net overall life satisfaction. An individual's measure of their aspirations in life, social comparisons amongst peers, and perceptions of what they need in life affects their well-being. When an individual is pleased with their personal relationships, income, job, and housing, then they are more inclined to report an overall higher life satisfaction.

Need hierarchy theory

The hierarchy of needs theory (Maslow, 1943) is formulated on the basis that human beings have needs that must be fulfilled to reach happiness and satisfaction. In the need hierarchical theory, there are five tiers of needs in a pyramid depiction. The five hierarchical levels from bottom to top are: psychological needs, safety needs, belongingness, and love needs, esteem needs, and the top is self-actualization (Maslow, 1954). The bottom two tiers are basic needs, and some of the attributes are food, water, shelter, property, health, employment, and social stability (Maslow, 1954). The next two tiers are psychological needs, and characteristics such as family, achievement, family, and sense of connection are all included in the individual psychological needs (Maslow, 1954). The top tier is self-fulfillment needs, and it involves an individual achieving their full potential, including creative activities (Maslow, 1954). Individuals are motivated to meet needs that drive their behavior. However, needs cannot be measured, but one implication of this theory is that individuals are prone to report lower satisfaction levels when their needs still are unmet. When individuals perceive their needs met in areas such as housing, safety, and companionship they are likely to be more pleased with their life.

A more fully developed model on how individuals' subjective well-being is influenced by an interaction of their needs and the available opportunities is presented by (Costanza et al., 2007). In his model, the measure of one's quality of life is a result of an interaction of human needs and the subjective perception of their fulfillment as mediated by the opportunities available to meet their needs (Costanza et al., 2007). Human needs included are, subsistence needs that denote natural built and social capital, reproduction needs, security needs, leisure needs, identity needs, participation needs, and affection needs. In natural capital, aspects such as vital ecological services, which include clean air, are a critical necessity for human well-being.

Furthermore, two theories have been developed to explain the importance of close contact with nature on individuals' mental health through restoration and relaxation. The psychophysiological stress reduction theory (SRT) focuses on how stress is reduced with individuals' contact with the natural environment (Ulrich et al., 1991). On the other hand, the attention restoration theory (ART) focuses on how contact with the natural environment can allow recovery through eliciting involuntary attention (Ohly et al., 2016). For this study, these two theories help to explore and assess the importance of accessibility to the natural environment for an individual's positive perception of their health and well-being.

1.2.4 Methodological scope

It is crucial for any research work done that the researcher employs the best methodological fit to answer the research question. Methods in this study is as understood and defined by (Greene, 2006). The methods include the data collection strategies (survey and interviews), the techniques of research (case study), and the philosophical issues (positivism/post-positivism, interpretivism/constructivism, and pragmatism). Positivism posits an objective social reality and that to study phenomena, there needs to be empirical evidence, and this ensures data validity (Bryman, 2016; Creswell et al., 2014). On the other hand, interpretivism/constructivism is the opposing theoretical school of thought that proposes on subjective interpretation of social reality and that the researcher cannot be separated from the study phenomena (Berger et al., 1967; Bryman, 2016; EG, 1985). Pragmatism bridges the gap between the two schools of thought by emphasizing the research problem and giving the researcher the freedom to choose the best methods, techniques, and procedures to answer the research questions (Creswell et al., 2014; Doyle et al., 2009; Rossman et al., 1985). These three research paradigms dictate how research should be done in terms of methodology, whether quantitative, qualitative, or mixed-methods research. As outlined in the introduction, this study will address the research questions through quantitative and qualitative approaches in a mixed-methods research design approach.

Table 1 Summary of the three research methods

Quantitative methods	Qualitative methods	Mixed methods
Paradigm/philosophical schools		
•Positivist •Postpositivist	•Interpretivist •Constructivism	•Pragmatism
Research design/Techniques		

•Nonexperimental, descriptive design	• Case study	•Transformative, embedded, or multiphase
Data Collection		
• Survey	• Interviews	
Data Analysis		
<ul style="list-style-type: none"> • Descriptive statistics • Factor analysis • Correlation analysis • Regression analysis 	<ul style="list-style-type: none"> •Qualitative content analysis 	

This study will employ a mixed-method approach to answer the separate qualitative, quantitative, and mixed-methods synthesis research questions. The first research question will be analyzed through factor analysis, bivariate correlation, and multiple hierarchical regression analyses by utilizing urban form measures, and respondents survey data. The second research question will be answered through the interpretation and presentation of results from the coding frame created through the systematic analysis of the interview data in qualitative content analysis. The third research question will be answered through the synthesis and interpretation of both the qualitative and quantitative analyses results in the discussion section.

The mixed-method approach is preferred in this study, as it enables data triangulation (Jick, 1979). The triangulation achieved in mixed methods helps in ensuring validity by enhancing corroboration between quantitative and qualitative data (Rossman et al., 1985). The results from the qualitative analysis can also be a step forward in building new theories that can be tested in future quantitative analyses (Rossman et al., 1985). In this study, there are different data collection and analysis methods that will provide a more complete picture of the study phenomena. This section will introduce two primary tools utilized in the quantitative and qualitative data collection, while a comprehensive methodology section can be found in chapter three.

Quantitative research

Geographic information system (GIS) is a useful tool in the capture, analysis, and presentation of spatial and geographic data in quantitative research (Parker, 1988). When dealing with geographical attributes in research such as green coverage and water bodies, as well as social aspects, GIS is the recommended tool for many studies (Brown et al., 2015; Nordbø et al., 2018). The visualization of data through maps impacts our understanding of data by revealing patterns and relationships which are useful in decision making. GIS utilizes spatial data, which is location-specific coupled with spatial attributes- features such as hospitals or schools- which makes GIS a practical problem-solving tool in spatial analysis. In urban planning, GIS is vital in analyzing geospatial data to determine the density of certain features, mapping locations to assess relationships, and examining data to find the proximity of elements with other functions (Chakraborty et al., 2018; Fu et al., 2019; Kristy, 2018; Pedro et al., 2019).

Connecting public participation methods and GIS (PPGIS) is a new approach that has been used in community and neighborhood planning in recent decades to map local knowledge that includes both the social and cultural landscape (Brown et al., 2014). PPGIS aims at becoming a facilitator tool which also mediates between stakeholders, and through this approach, it seeks to empower and build the capacity of the local community (Kahila-Tani et al., 2019; Rall et al., 2019). This study uses the SoftGIS approach, which involves the selection of an Internet-based survey to study localized everyday human experiences and behavior (Rantanen et al., 2009). The knowledge that is captured analyzed and presented by the SoftGIS approach is produced by the residents in a specific area. SoftGIS approach is more communicative and participatory as respondents can map their local experiential knowledge in their built environment (Rantanen et al., 2009).

Qualitative research

Interviews are the most widely employed tools in qualitative research and will serve as the primary qualitative data collection method used in this study. Interviews may be a crucial part of many qualitative studies in answering the research questions, and they are essential in gathering more information that might not be available in surveys (Gill et al., 2008). In qualitative research, pilot interviews, which are not structured, act as a vital tool in supplying the first research ideas as they are open-ended, and researchers can see specific themes appearing that might be relevant to the study (Gill et al., 2008). Semi-structured interviews give the researcher the freedom to explore more in-depth the area of interest by availing them the opportunity of asking follow up questions, thus generating responses with an emphasis on the interviewees' own perspective (Bryman, 2016). There is more flexibility during the interview process to ask new questions and allow the researcher to adjust the questions accordingly as new themes appear during the interview process. Face to face interviews with respondents is an excellent method of capturing the respondent's feelings and emotions, and this can be achieved by nuances when responding to questions. In mixed methods research, interviews can be a useful tool in supplying added value to the study through the verification of survey findings and the interpretation of statistical relationships (Sieber, 1973).

2 Literature review

This chapter looks at previous studies that have analyzed the impact of different urban forms in determining individuals' life satisfaction. The first section of the review focuses on studies that examine how the built environment affects people's perception of their life satisfaction in various urban areas based on population density, distance to the city center, proximity and availability of green and open spaces, and the perceived residential environmental quality as it relates to interpreting the first research question. The second section then reviews the literature on how an individual's housing environment affects their life satisfaction. The third section then looks at the literature that focuses on the effect of socio-demographic characteristics on individuals' life satisfaction. The second and third sections also create the context to comprehend the first research question. Finally, the review ends with how the urban form measures affect an individual's social capital and how this impacts their life satisfaction by creating a context for understanding the second research question.

2.1 Built environment and subjective well-being

The built environment encompasses residents housing facilities, transport services, ecosystem services, and the necessary amenities that support an individual's well-being (Handy et al., 2002). From this definition, the built environment involves the human-made utility of resources whereby consolidation and centralization of resources create densification while expansion and decentralization of resources create sprawl. Density and centrality are therefore linked together as dense urban areas create an optimization of resources through the reduction of distances to services by ensuring residential and commercial areas are in a similar central position in the city. Recent years have seen a rise in the number of studies on the impact of urban form on the overall individual's well-being and specifically life satisfaction, such as compact, walkable cities (Talen et al., 2014).

2.1.1 Density

Subjective well-being studies focusing on both an individual's quality of life and life satisfaction have mostly concluded that density plays a crucial role in individuals' wellbeing. Perceived neighborhood density can negatively affect mental well-being and lower an individual's life satisfaction (Guite et al., 2006). The study by Guite was assessing four housing areas in randomly selected districts in the Greenwich area in London, England, and the perceived over-crowding in the home, as well as neighbor noise, was a contributing factor in lowered life satisfaction in the denser areas. Individuals living in less dense neighborhoods tend to have better psychological well-being, which raises their subjective well-being (Cramer et al., 2004; Fassio et al., 2013). Fassio, Chiara, and Norma (2013) examine the impact on the quality of life and health on population density in the Piedmont region in Italy. Their results found that people who reside in low-density areas show higher levels of psychological health, relational, and environmental quality of life.

Recent research on urban form and well-being conducted in Norway suggested that higher density near a person's home had a strong negative correlation with life satisfaction (McCarthy et al., 2018), and this can be due to, for example, social inequality or an increase

in noise pollution and traffic. Cao (2016), reported that population density is correlated negatively to life satisfaction in urban areas, in his analysis on how neighborhood design affects life satisfaction in the Minneapolis-St Paul area in the United States of America (USA), using survey data from 2011. A novel finding from his research was that cul-de-sac density, typically in suburban neighborhoods, has a more substantial impact on the negative association than net population density in the metropolitan regions (Cao, 2016), and this he attributed to street connectivity. However, it is essential to note that the study area has an urban form structure developed in the 1970s with limited transit access in the neighborhood, which reflects on his results. Similarly, Cao's research was in line with an earlier regional study from the same country that showed a strong correlation between county density and lower levels of life satisfaction in the USA region (Lawless et al., 2011).

Moreover, findings from another study in Finland found that respondents' living in less dense car-oriented zones reported slightly higher happiness levels than in other zones (Ala-Mantila et al., 2018). Furthermore, their results showed that the density of the immediate surroundings does not affect subjective well-being and that density from in-fill construction work only causes short term fluctuations and discontent (Ala-Mantila et al., 2018). One study in Oslo, Norway (Cramer et al., 2004) found low density as beneficial to the social well-being of individuals, which is due to an increased number of friends and a reduction in negative life events such as crimes prevalent in more dense areas. However, contradictory results were seen in different research in Oslo by (Mouratidis, 2018a) as the results showed that higher densities improve an individual's overall social well-being, which can be attributed to increased contact reducing feelings of isolation. These results by Mouratidis were in support of an earlier study done in Helsinki, Finland, whereby results from this study concluded that higher urban density supports social sustainability and improved well-being (Kytta et al., 2016). According to Kytta, the positive well-being outcome in the urban density was attributed to easier service accessibility that contributed to higher perceived environmental quality.

Different personality traits might be a determining factor in how individuals interact in highly dense areas, which might change their life satisfaction depending on location choice (Jokela et al., 2015). Jokela and co-authors in their study of variations between geographical characteristics, personality traits, and individual's life in the London metropolitan area found that higher openness to experience was positively associated with life satisfaction in highly dense districts. Moreover, higher agreeableness and conscientiousness were all observed to be stronger predictors of life satisfaction in neighborhoods with lower levels of satisfaction. At the same time, extraversion and emotional stability did not have any influence on life satisfaction in different neighborhood areas. The results from Jokela were in contrast to an earlier study in urban Australia, which reported that higher degrees of agreeableness, extraversion, emotional stability, and conscientiousness were all associated with higher levels of life satisfaction (Ambrey et al., 2013). There are other characteristics of the urban form, which are linked to the density that may be positive for well-being.

2.1.2 Centrality

Centrality is often correlated to density as higher densities might typically occur near the city center due to the opportunities available. The location of individuals residences in proximity to the city center is said to play a significant role in their life satisfaction (Brereton et al., 2008; Ma et al., 2018; Mouratidis, 2018a). The studies that have analyzed city

centrality with an individual's well-being have differing views. Proximity to the city center is beneficial as it reduces the travel time to individuals' place of work, school, and other personal endeavors and may also increase social contacts with others. As one study in Oslo suggests, individuals who live closer to the city center have been found to have more intimate relationships and social networks, and this contributes positively to their social well-being (Mouratidis, 2018a). As Gehl writes about the positive influence of good public spaces and walkable streets on social interaction, and this could result in higher social well-being among people living in city centers, and Mouratidis' findings seem to support this. However, living close to the city center may also be detrimental to the well-being of individuals due to some negative externalities such as congestion, pollution, and noise. Brown (2016), in his cross-sectional study of life satisfaction in OECD metropolitan areas, using the linear modeling approach, did find some empirical evidence suggesting that individuals who reside closer to the city center have lower life satisfaction than those further away from the core. The reason for the reduced levels of life satisfaction of individuals living in the city center is due to the congestion externalities coupled with the isolation factor (Brown et al., 2016). However, it is important to note that the study by Brown (2016) also included Japan, which might face higher levels of congestion in the city center than a country like Sweden and other European cities whereby the negative aspects of density are not so acute (there are both dense and have a lot of green space) which may be linked to the work of Jan Gehl and thus positive influence of density on social life can be seen (Mouratidis, 2018a)

Different personality traits might be a determining factor in how individuals interact in highly dense areas that might change their life satisfaction and location choice (Jokela et al., 2015). Jokela and co-authors in their study of variations between geographical characteristics, personality traits, and individual's life in the London metropolitan area, found that only two of the five personality traits were associated with how individuals report their life satisfaction in different neighborhoods. Both agreeableness and higher openness to experience had a stronger predictive capacity on individuals' life satisfaction than the rest, in communities that had lower levels of life satisfaction. Similarly, in earlier research done in Ireland, (Brereton et al., 2008), from a survey of 1500 participants, found that people living in areas outside Dublin city center have higher life satisfaction. Additionally, (Ma et al., 2018), using the 2013 residential satisfaction survey data in urban Beijing, found a significant negative association of an individuals' proximity to the Chinese city centre and their life satisfaction.

2.1.3 Accessibility

Higher density areas might be characterized by better and increased street connectivity, which makes it easier for pedestrian travel (Pikora et al., 2006). Neighborhoods that have good pedestrian facilities are beneficial to urban residents as they may promote physical well-being when the urbanities engage in activities such as cycling and walking (Pikora et al., 2006). Travel satisfaction does positively affect an individual's emotional well-being and, thus, indirectly, their life satisfaction. Neighborhood design with narrow streets and proximity to destinations provides residents with alternate mobility such as cycling or walking to work, and this might reduce car use (Handy et al., 2005), which helps lower greenhouse gas emission and aids in urban sustainability. However, daily commuting in urban areas can bring about feelings of discomfort due to traffic jams during rush hours, which reduces commuter's happiness levels. Daily commuting for some urban dwellers, primarily because of the length and duration of commute, has been observed to reduce their

happiness levels, and this reduces their subjective well-being (Adam et al., 2018). Different research in the UK from a sample of working adults found that greater participation in active travel improves health and physical well-being (Humphreys et al., 2013). Similarly, McCarthy (2018) found a positive relationship between daily active travel and individuals' life satisfaction, which could be attributed to goal attainment (e.g., working, shopping, exercising) and socializing with friends.

2.1.4 Green and open spaces

The quality, quantity, access, and proximity of green and open spaces fulfill an individual's ecological service needs while also promoting their overall health and well-being; mentally, physically, emotionally, psychologically, and socially (Davern et al., 2017; Lee et al., 2011). There is a significant and positive correlation between access to green areas in urban areas and individual life satisfaction (Ambrey et al., 2013; Aoshima et al., 2018; McCarthy et al., 2018; Węziak-Białowolska, 2016). Urban parks, forests, ponds, and gardens are all part of urban green open space, and they provide a variety of ecosystem services such as cooling, storm protection, cleaner air quality, and storm protection (Davern et al., 2017). Urban green areas such as parks and gardens are a welcome distraction from the hustle and bustle of city life, and individuals derive pleasure from such places, which can improve their emotional well-being. Another indirect benefit service from the presence of urban green spaces can be social contact, especially by those who frequent parks often, which might result in social cohesion as found by (Peters et al., 2010). The proximity aspect of green areas can affect life satisfaction, and some studies have shown that an individual's life satisfaction declines the further the individual's residence is from urban green areas (Bertram et al., 2015; McCarthy et al., 2018). Some authors have argued that urban green spaces, such as parks and gardens, are essential for mental well-being and improving health (White et al., 2013; Wood et al., 2017), mainly through attention restoration and stress reduction. One such study conducted in the Netherlands using a dataset from the Dutch National Survey of General Practice (DNSGP-2) of 2000-2002 and, the 2001 National Land Cover Classification database (LGN4), showed that people who live close to green spaces had elevated levels of life satisfaction by reducing their stress levels (van den Berg et al., 2010) and act as a buffering tool for stressful life events; moreover, this study found no link between green spaces and physical activity promoting individual health, which echoes similar findings from (Brown et al., 2016). Green spaces such as forested areas occurring in urban areas can play a vital role in providing clean air and pollution reduction (Yuan et al., 2018). Access to green fields and provision of open spaces might be crucial for improving residential satisfaction (Cao et al., 2016) and neighborhood contentment (Abass et al., 2018; Krekel et al., 2016) although Węziak-Białowolska (2016) found no influence of provision of open spaces with individual life satisfaction.

2.1.5 Perceived residential environmental quality

An individual's residential environment can show how local factors affect their well-being, and it ties in with Constanza's model for the fulfillment of individuals' needs such as safety, public service access, and ecological service's needs. There are many aspects to residential environmental quality, but they can be grouped into four categories according to their reference area: architectural, socio-relational, functional, and contextual features (Bonaiuto, 2006). The structural features encompass density, design, road accessibility, and green areas. The socio-relational elements comprise residential security, sociability, privacy, isolation,

and civic inclusion. The functional features include the residential services available such as transport, recreational, commercial, and welfare. The contextual features encompass environmental health, upkeep and care, and the pace of life in a neighborhood. Individuals' who are satisfied with their residential environment and their needs are met, such as access to service, accessibility, public and community spaces, social support, and safety are more likely to report higher levels of life satisfaction (Abass et al., 2018; Cao et al., 2016; Lovejoy et al., 2010). In terms of ecological service access, an individual's perception of greenery and air quality can play a role in their mental and emotional well-being, as studies have shown (Bertram et al., 2015; Yuan et al., 2018). Individuals living in areas that they perceive to be clean with little to no pollution might show higher life satisfaction levels (Y. Liu et al., 2017; Vemuri et al., 2009) while perceived air pollution is associated with life dissatisfaction (MacKerron et al., 2009; Rehdanz et al., 2008; Węziak-Białowska, 2016). It has been suggested that individuals living at further distances from transport terminals such as airports and highways have higher life satisfaction (Brereton et al., 2008) than those nearby, and this is due to noise pollution. A perceived, pleasant natural environment is positively correlated to higher life satisfaction. Subjective health conditions can be enhanced, as shown by (Yuan et al., 2018), whereby residential green coverage improves air quality. Perceived environmental quality, including proximity and scope of open and green spaces, can be a determining factor in an individual's sense of community, as evidenced by (Francis et al., 2012; Kytta et al., 2016). When individuals feel their vital ecological needs are met, such as having a good residential quality, they are likely to report higher levels of life satisfaction.

2.2 Dwelling Characteristics

An individual's housing environment can affect their well-being. As urban areas have a variety of housing options, some studies have shown that life satisfaction reduces with living in rental and affordable housing (Ballas et al., 2011; Brereton et al., 2008; Dang et al., 2017; Ma et al., 2018), while controlling for individual socio-demographic variables in multi-level modeling approach. Life satisfaction has also been seen to increase with homeownership (Y. Liu et al., 2017; Ma et al., 2018; Vemuri et al., 2009), even while controlling for explanatory variables. The size of the home is also a contributing factor to life satisfaction, whereby individuals in bigger homes have increased life satisfaction (Brown et al., 2016; Ibem et al., 2013; Ma et al., 2018). There has also been some suggestive evidence that length of duration at current residence increases neighborhood satisfaction in the suburbs, and individual's life satisfaction (Abass et al., 2018) and this can be due to familiarity and social ties. People who have been in the same home for more than five years might be more satisfied than those who have been in urban neighborhoods for less than a year (Ballas et al., 2011; Ma et al., 2018) and this can be attributed mostly to the social support created from acquired neighborhoods and local community networks. Housing density, which includes the number of people currently living home, also, can affect life satisfaction either directly or indirectly. According to Guite and co-authors (2006), in their analysis of the built environment and mental well-being of individuals residing in London, United Kingdom (UK), using the SF36 scale for measurement, found that respondents who felt crowded in their home had a lowered mental well-being.

2.3 Socio-demographic characteristics

Individuals' socio-demographic and economic characteristics have also been shown to affect their subjective well-being, and they include age, gender, income, marital status, education level, employment status, and safety. Results from various studies have shown that unemployed individuals have reduced life satisfaction (Ardahan, 2014; Ballas et al., 2011; Brereton et al., 2008; Pierewan et al., 2014). Higher-income levels in households have a positive relationship with life satisfaction (Appleton et al., 2008; Ardahan, 2014; Ma et al., 2018; Vemuri et al., 2009). There is a u-shaped curve between age and life satisfaction levels based on findings by Appleton (2018) and (Ma et al., 2018), whereby the younger and older people have higher levels of life satisfaction as compared to the middle-aged. Females might be more satisfied with their lives than males (Appleton et al., 2008).

Individuals who are in marital commitments have been observed to have a higher life satisfaction than those who single (Appleton et al., 2008; Ballas et al., 2011; Ma et al., 2018) due to having companionship, which raises their well-being. Single parents, divorced, and widowed individuals can have lowered life satisfaction, and this is mostly due to the lack of companionship (Appleton et al., 2008). Individuals who have at least some high school education might have better life opportunities, and this may lead to them having higher life satisfaction than those with low education levels. Life satisfaction might increase with increased educational level, and this can be attributed to the ease of career options for educated individuals (Brereton et al., 2008; Ma et al., 2018). Individuals living in neighborhoods that they perceive to be safe for has high levels of crime have a higher level of life satisfaction (Ardahan, 2014; Lovejoy et al., 2010; Ma et al., 2018; Węziak-Białowolska, 2016).

2.4 Social environment and social well-being

Social capital refers to the network of personal and close relationships that define an individual that arises from their close contact with others in society. Social capital is vital in enabling individuals to function in society and fulfilling their need for companionship and social support, and this may affect their social well-being. The compact urban form through consolidation, therefore, creating more dense neighborhoods can be a catalyst in allowing residents to develop and maintain more extensive networks, and this can affect their social well-being.

2.4.1 Personal relationships

Due to the density feature of compact cities, there is increased contact between individuals in close living quarters to each other, especially in apartment complexes, and this may foster social networks that improve an individual's social well-being. Individuals living in urban areas socialize more often with friends and family, and this improves their subjective and social well-being (Aguado et al., 2018; Mouratidis, 2018a; Pierewan et al., 2014). Urban residents may receive stronger social support and have increased opportunities and frequency to make new acquaintances (Y. Liu et al., 2017). The support that urban residents gain from the personal and close relationships formed due to density and centrality increases their life satisfaction. Having satisfied neighborhood relations amongst urban dwellers

increases their life satisfaction (Ardahan, 2014). Guite (2006), in his analysis of the impact of the physical and urban environment on mental well-being in London, UK found that respondents who were dissatisfied with community facilities had lower vitality, which lowered their mental well-being. Also, he found an association between lower mental well-being and respondents who have reduced social participation, which indirectly lowers their satisfaction. Vemuri and co-authors (2009), in his analysis of the urban natural environment and social capital on life satisfaction and neighborhood satisfaction using 2003 survey data of households in the Baltimore region of Maryland, found that respondents who are more satisfied with their social capital at the neighborhood scale are more likely to report higher levels of life satisfaction. This is in line with Constanza's model that shows that the subjective perception of the fulfillment of individuals is mediated by the opportunities available to meet their needs, such as social capital, and this influences their subjective well-being. Furthermore, the increasing densities in urban areas may create social isolation among disadvantaged groups such as the elderly especially in areas that may lack open spaces and plazas to assemble and experience social support (Mehl, 1992; Rubinstein et al., 1994; Thompson et al., 1990) (Cacioppo et al., 2003). Social isolation negatively affects an individual's social well-being and can be detrimental to the overall health of a person.

2.4.2 Community-mindedness

Social networks formed through living in compact cities create a feeling of community in neighborhoods which ties in with Maslow's need for belongingness and love that might affect an individual's well-being. Individuals may seek a sense of connection by searching for communal support in their pursuit of fulfilling their psychological needs. Green and open spaces in urban areas can foster a sense of community (Kim et al., 2004). Community-minded individuals can be seen to have a higher life satisfaction (McCarthy et al., 2018). Being trusting to others who live in proximity can increase an individual's life satisfaction (Ardahan, 2014), while not having trust with the people living in the neighborhood can result in individual dissatisfaction with a city (Węziak-Białowolska, 2016) as social support is associated with higher life satisfaction for residents (Y. Liu et al., 2017; Mouratidis, 2018b). Residents who have a weaker sense of community are observed to prefer to relocate, and this shows that community attachment is correlated to residential satisfaction and subjective well-being (Wang et al., 2019a). Individuals residing in neighborhoods with a concentration of their ethnic group have a higher life satisfaction (Knies et al., 2016). Studies have also shown that social capital experienced on a neighborhood level has a significantly higher impact on an individual's life satisfaction than self-reported health (Maass et al., 2016; Vemuri et al., 2009).

To conclude, previous studies have highlighted the varying impacts of compact urban form on individuals' physical, mental, and social well-being, which affects their subjective well-being and social well-being. A novel finding from the review of the studies exploring the correlation between urban density and life satisfaction is the impact of population density. Most studies that have researched this topic has been in cities with a large population, and this study is therefore essential as Reykjavík has a relatively smaller population as compared to the other cities that have been the subject of previous research. It will be interesting to see whether the relative size of the town to population size affects individuals' life satisfaction, domain satisfaction, and social well-being. Reykjavík capital region is not as densely populated as some of the cities in the previous studies, and therefore this study is worthwhile to see the relationship between urban form and subjective well-being in smaller sized cities.

Another important observation from the review of previous studies is the autonomy of quantitative analysis with only one study using mixed methods, which makes this study ideal to fill this gap of adding to studies that analyze urban form and subjective well-being by using a mixed theoretical model in a specific contextual setting.

3 Methodology and Research Design

This chapter is divided into four sections, namely, methods, materials, research process, and finally, analysis. The methods section will explain the theory of methods chosen for this study as well as explain the reasons it was picked. Additionally, the methods section will introduce the first stage of the research, which is data preparation, and it involves selecting the best-fit measurement tool for data collection both for subjective well-being and residential urban form measures. The materials section will explain the two data collection tools used in this study and involves a detailed description of the survey instrument and interview process. The research process section will explain the variables use and computing. Finally, the analysis section will explain the quantitative and quantitative data analysis methods chosen for this study and includes an explanation of the systematic evaluation of the quantitative and qualitative data.

3.1 Quantitative research

Quantitative research conceives an objective social reality with an emphasis on numerical data collection to enable an empirical investigation of study phenomena (Brannen, 2017; Bryman, 2016; Creswell et al., 2014). It is a useful tool when investigating causal relationships and association between variables and can produce replicable results in different settings through the utilization of structured research instruments (Brannen, 2017; Bryman, 2016; Creswell et al., 2014). The use of prescribed procedures ensures the validity and reliability of the research method (Bryman, 2016; Creswell et al., 2014). Replication of results provides a platform for the researcher to analyze and compare their results with other similar studies. Quantitative research allows for greater objectivity and supports the generalization of findings (Brannen, 2017; Bryman, 2016; Creswell et al., 2014). It usually involves a large sample of participants who are representative of the whole population, and there is better accuracy of the results obtained from numerical data (Doyle et al., 2009). There are two types of conducting quantitative research, and they are descriptive study and experimental study (Bryman, 2016; Cohen, 2001; Creswell et al., 2014). The difference between the two quantitative studies dictates the data collection analysis and interpretation of results. The descriptive research involves the collection of data once at the beginning of the study to establish the relationship between variables, while experimental design consists of the collection of data before and after to establish a causal relationship (Bryman, 2016). There are a variety of data collection methods utilized in quantitative research. They include surveys and questionnaires, experiments, controlled observations, document reviews, and probability sampling. There are also a variety of data analysis methods used in quantitative research. They include descriptive and inferential statistics, factor analysis, correlation analysis, and regression analysis. One drawback that might be associated with quantitative research is the lack of contextual detail from the data and results obtained, and this can be prevalent when investigating human behavior, which might require a more elaborate account into the individual perceptions (Bryman, 2016). This study is a descriptive design whereby quantitative data was collected through an internet-based survey at the beginning of the study. At the same time, the analysis was performed through correlation and regression. Due to the research scope, there are many variables measured and, therefore, to ensure the results reflect the true nature of the relationship; socio-demographic variables will be the control variables. For example, respondents who have higher household income or higher education

level might show higher levels of life satisfaction, and this might be completely unrelated to their location or density composition. Control variables will be introduced to mitigate this concern, with the examination of all variables within the data sets.

3.2 Qualitative research

Qualitative research has non-numerical data with concern on words and understanding of social reality through an examination of the interpretation of the world by participants (Bryman, 2016; Creswell et al., 2014; Taylor et al., 2015). Qualitative research is used when a researcher is interested in studying the socially constructed nature of reality and immerses themselves into the study phenomena to get a more detailed description and interpretation of their research subject (Bryman, 2016; Creswell et al., 2014; Taylor et al., 2015). It might be a preferred method of research when there is limited information on the study phenomena, and qualitative research can provide a basis for future studies. Qualitative research typically deals with a small sample size with intensive data collection methods such as an interview or focus groups to understand the subject's perspective (Bryman, 2016; Doyle et al., 2009)). It enables a more in-depth and comprehensive investigation and provides multiple contexts for understanding the study phenomena. Qualitative research is necessary when producing new theories through inductive reasoning when there is limited research in the study area (Bryman, 2016; Taylor et al., 2015). Qualitative research can also be a helpful tool in building upon quantitative analysis through an understanding of the 'why' in the quantitative results. It is also beneficial in providing a holistic view of the phenomena under investigation (Taylor et al., 2015). There are a variety of data collection methods utilized in qualitative research. They include action research, narrative research, case study, ethnography, and ground theory, focus groups, interviews, and participant observations. There are also a variety of data analysis methods used in qualitative research. They include thematic analysis, content analysis, narrative analysis, and constant comparative. One of the main limitations of using qualitative research techniques in the study of phenomena is the divergent conclusions that may arise from similar data depending on the researcher's perspective, therefore, making it hard to replicate the study (Dowling, 2005). In this study, the qualitative data collection method utilized is interviewing, as outlined in the methodological scope in chapter one. Moreover, this study uses qualitative content analysis in the analysis of the interview data.

3.3 Mixed methods research

The mixed-methods approach has been defined as a combination of both quantitative and qualitative research methods in a singular study (Creswell et al., 2014; Johnson et al., 2007). It is useful when a researcher is aiming for more complete and synergetic usage of data with both close-ended and open-ended data utilization. It can be particularly helpful in offsetting the weaknesses of both quantitative and qualitative methods in a singular research study, whereby quantitative research provides empirical validity, whereby qualitative research provides a contextual background (Doyle et al., 2009). Mixed-methods research is suitable when comparing quantitative and qualitative data to find contradictions and providing more comprehensive results (Doyle et al., 2009; Johnson et al., 2004). It can be used to validate the findings of both quantitative and qualitative data by analyzing and assessing effects

(Doyle et al., 2009; Madey, 1982). Mixed-methods research can also be used in an explanatory sequential design whereby qualitative data is used to explore quantitative data and builds directly on the quantitative data results phase (Creswell et al., 2014). Another use of mixed-methods research is through exploratory sequential design in the development of survey instruments that begin with a qualitative exploration through interviews (Doyle et al., 2009). Furthermore, the use of both quantitative and qualitative data can be useful in augmenting each other in an embedded design with both data collection and analysis; thus, the qualitative data expands the outcome study.

Due to the nature of this study and the research questions posed, the mixed-methods approach was deemed the best fit to offer wholesome results. The first research question is better addressed using statistical analyses, and this is achieved by quantitative methods. The second and third research questions are more exploratory in nature and are best answered through a qualitative approach. A mixed-methods approach is beneficial to this study as it ensures a complete and wholesome answer to the research questions by converging quantitative and qualitative data and comparing the two databases in a convergent design.

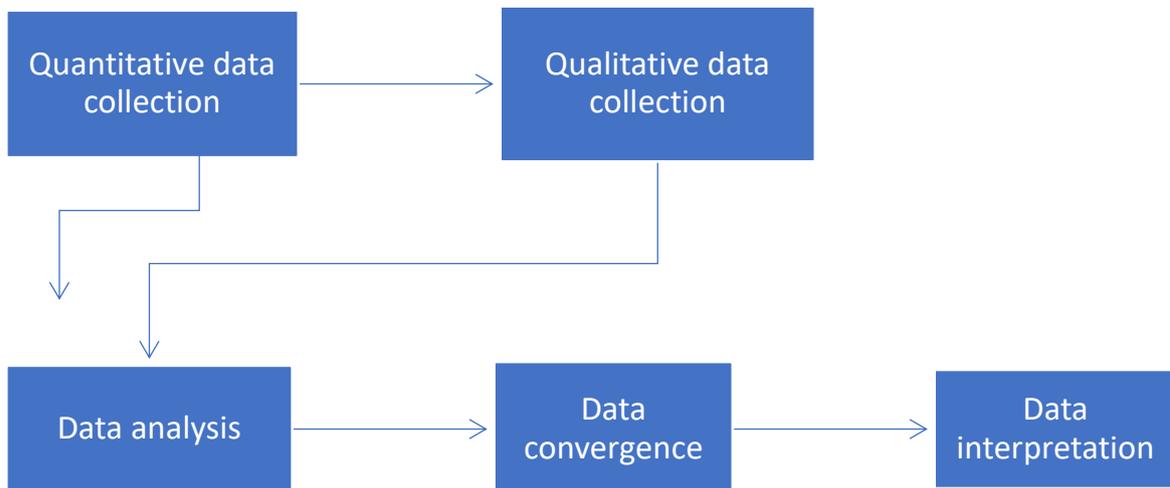


Figure 1 Graphical representation of the mixed methods as used in this study

3.4 Case study research

The benefit of using a case study method for answering the research questions is the flexibility provided in choosing data collection methods. Case studies have been utilized in many urban studies as they offer a unique point of view of different urban areas ranging in size and focus (Abbaspour et al., 2015; D'Acci, 2019; Li et al., 2019; H. Liu et al., 2017; Yuan et al., 2019). Case studies are essential as they provide an opportunity for the researcher to obtain an in-depth holistic view of the research problem and will facilitate describing, understanding, and explaining a research problem or situation (Baxter et al., 2010; Tellis, 1997a, 1997b).

3.5 Data collection

The first step before data collection was done was to decide which scale was the best fit to measure respondent's subjective well-being.

Measuring subjective well-being

Empirical validity in quantitative research requires that the data collected can be tested for accuracy and may be comparable in other settings. It is, therefore, paramount to have a tool for measurement. The Satisfaction with Life Scale (SWLS) (Diener et al., 1985), and the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988), are two of the most widely utilized scales in the measurement of the affective and cognitive components of an individual's subjective well-being with translations in various languages and settings. Ed Diener and co-authors developed the SWLS, and it assesses an individual's overall level of self-reported life satisfaction with a five-point scale. It is useful for evaluating individuals' life satisfaction across all ages and educational levels. The five-item range ensures consistency and reliability in life satisfaction measurement (Pavot et al., 1993). Another satisfaction measurement tool is the Temporal Satisfaction with Life Scale (TSWLS) (Pavot, 1998), which is an adaptation of the SWLS with an expanded format that measures the past, present, and future state of life satisfaction. There have also been adaptations of tools to measure life satisfaction of specific age groups such as the Multidimensional Students' Life Satisfaction Scale (MSLSS) (Huebner, 1994) and the Life Satisfaction Scale (LSS) (Neugarten et al., 1961) in assessing the life satisfaction of older adults.

This study utilizes an edited version of the SWLS. For this research, the modified version contained a 10-point Likert scale with the general question of "how satisfied are you with your life as a whole these days?"

3.5.1 Quantitative data collection

Internet-based survey

An Internet-based survey was the only quantitative data collection tool used to capture the respondents' information and urban form measures. The survey was part of a larger project called 'the quest for sustainable Reykjavík Capital region lifestyles, attitudes, transport habits, well-being, and climate impact of young adults' (SuReCaRe; (Árnadóttir et al., 2019; Czepkiewicz et al., 2019). The questionnaire was developed by a team from the faculty of Civil and Environmental Engineering at the University of Iceland. The first round of invitations for the survey was sent to residents in September 2017, followed by the second round of requests sent in October 2017, and the data was downloaded in November the same year. The post office delivered the invitation letters to the target group. The target group for the study consisted of registered residents in the Reykjavík region, which is the capital city of Iceland. The municipalities in the Reykjavík region are Kópavogur, Seltjarnanes, Hafnarfjörður, Kjósarhreppur, Mosfellsbær, and Garðabær. The targeted age group was between 25-40, and it was chosen to minimize the effect that any life course variables might bring since the individual's in this age group are usually educated and employed and can access information and communication technologies.

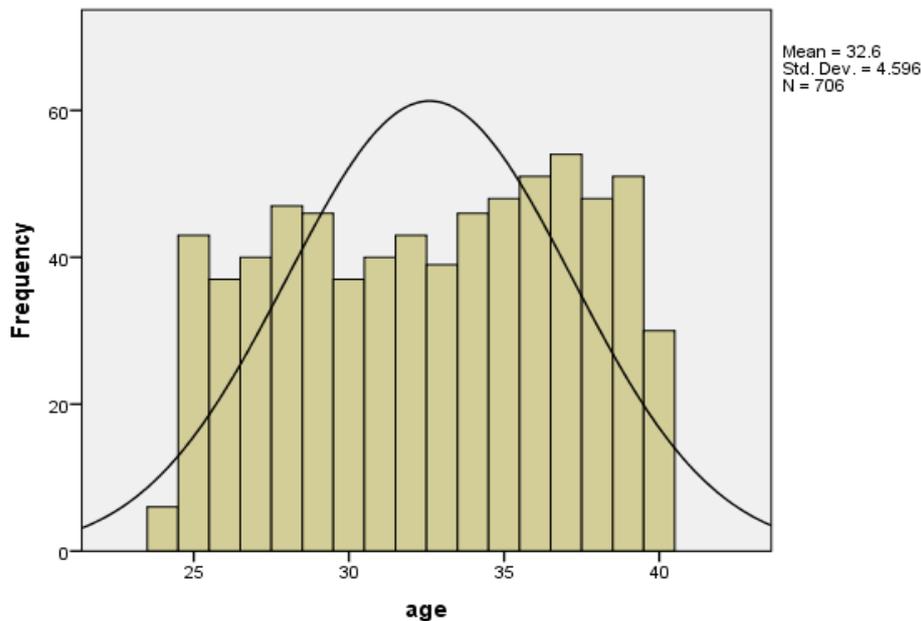


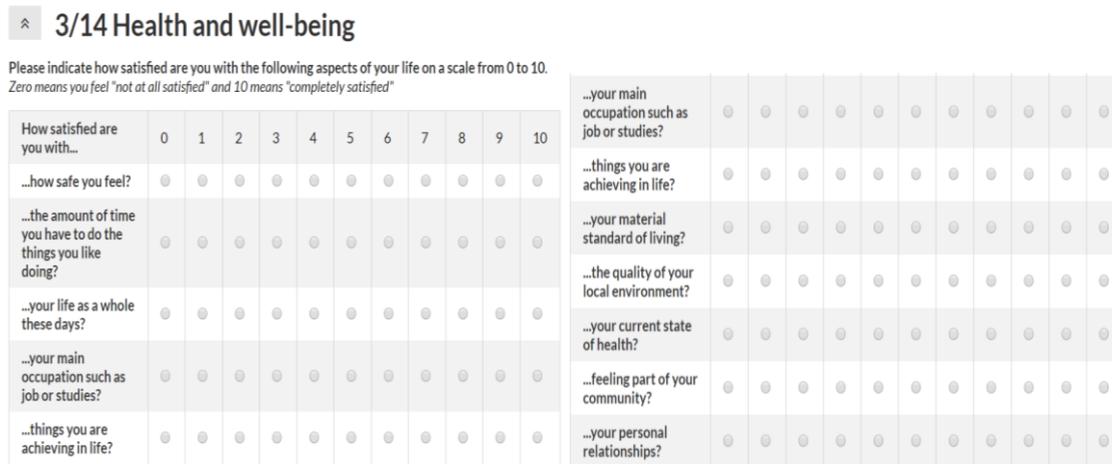
Figure 2 Distribution of respondents age

The data set was collected in three language versions-Icelandic, English and Polish, which is representative of the major languages spoken in the Reykjavík capital region. Distribution of respondents' socio-demographic variables amongst respondents. There were 6000 group members selected randomly from the Registers Iceland (Þjóðskrá Íslands) by utilizing the spatially stratified method, which ensured representation of inhabitants from each municipal area. Both the sampling and data collection were approved by the Icelandic Data Protection Authority (Persónuvernd)-Notification number S8306. The survey was available online, and each sample member was provided with a unique personal number ranging from 10,000-20,000, which they needed to enter when accessing the questionnaire. From the original 6000 letters sent, 816 letters were returned unopened after the first invitation, and hence it is assumed that 5184 requests were delivered. There was a 15% response rate as 780 of the 5184 individuals returned the survey having answered at least one question. 708 individuals answered all questions asked, and this allowed for multivariate analyses.

The Survey had fourteen pages in total with the first page focusing on the background information of respondents. The second page of the questionnaire discussed health and well-being. The remaining pages focused on respondents answering questions regarding their household type, length of residency, the reason for location choice, overall car use, environmental behaviors', purchasing of clothes and electronics, and their attitudes. There was also a section for respondents to map out their areas of work and dwelling in addition to mapping their daily, local, and international travels. For this study, the variables used were mainly the demographics, health, and well-being, dwelling characteristics, and personal preferences.

Well-being was measured on a 10-point Likert scale with zero being "not at all satisfied" and ten being "completely satisfied." There were ten questions in total, focusing on respondents' well-being in the survey. Nine of the ten items were domain-based, and they concentrated on respondents satisfaction with aspects such as safety, feeling part of your community, personal relationships, achievements in life, local environmental quality, the

current state of health, time spent doing enjoyable activities, occupation, and material standard of living. One question was the general assessment of individuals' life satisfaction.



	Other	9	1.1		
Education	Basic education	52	7.4		
	Secondary education	105	14.9	Lower tertiary	209 26.9
	Vocational education	52	7.4		
	Undergraduate level	219	31.0	Medium tertiary	219 28.0
	Graduate-level	222	31.4		
	Postgraduate level	31	4.4	Higher tertiary	253 32.3
Hours worked	Less than 30	75	10.6		
	30 to 35	57	8.1		
	35 to 40	131	18.6		
	40 to 45	268	38.0		
	more than 45	174	24.6		

(Continued)

Most of the participants in the study were couples and lived with a child/children with 49.9% (n = 352), whereas 20.5% were couples living together, 8.6% of household type was a single person living on her or his own; 7.9% household type was a single person living with parents. Approximately 24.6% of the household size was 4, whereas 23.7% of household size was 3; 23.4% of the household size was 2; 14.4% of the household size was 5. Most of the participants had an income of more than 900,000 ISK (40.1%, n = 283), whereas 22.4% earned between 600,000 to 900,000 ISK, 13.7% earned between 450,000 to 600,000 ISK and 9.6% of the participants earned between 300,000 to 450,000 ISK, as shown in Table 3 below.

Table 3 Distribution of sociodemographic variables amongst respondents (continued)

Variable	Categories	Number	%	Groupings	Number	%
Household type	A single person living On his or her own	61	8.6			
	A single person living in a shared apartment	37	5.2	Single living alone/ in shared spaces	154	22.5
	A single person living with parents	56	7.9			
	Couple living together	145	20.5	Couple	145	21.2
	Couple with child/ children	352	49.9	Families with child/ children	386	56.4
	A single parent with child/children	34	4.8			
Household Size	1	69	9.8			
	2	165	23.4			
	3	167	23.7			
	4	174	24.6			
	5	102	14.4			
	6	14	2.0			
	7	5	.7			
	8	2	.3			
	10	1	.1			
	More than 10	1	.1			
	< 150,000 ISK	7	1.0			

Income	150,000 - 300,000 ISK	36	5.1	<150,000 - 450,000	111	17.1
	300,000 - 450,000 ISK	68	9.6			
	450,000 - 600,000 ISK	97	13.7	450,000 - 900,000	255	39.3
	600,000 - 900,000 ISK	158	22.4			
	> 900,000 ISK	283	40.1	> 900,000	283	43.6
Language skill	One	32	4.5			
	Two	240	34.0			
	Three	354	50.1			
	Four or more	80	11.3			
Language code	English	88	12.5			
	Icelandic	590	83.6			
	Polish	28	4.0			

Many of the participants responded that they were satisfied with feeling safe (mean-7.85), which was the highest and personal relationships (mean-7.61). Moreover, from this study, respondents' satisfaction with the amount of leisure time was the lowest amongst the satisfaction with life domains (mean-6.06), as shown in figure 4 below.

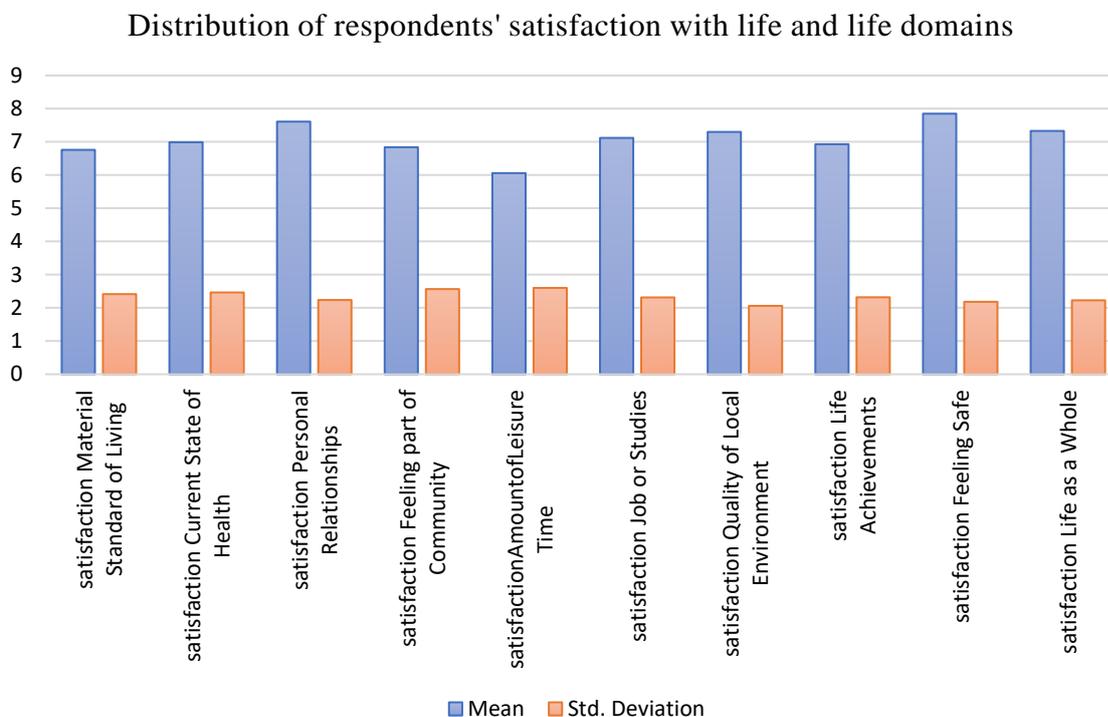


Figure 4 Life Satisfaction and satisfaction with life domains variables

Participants had the highest personal preferences for; I appreciate tranquility and calmness in a residential area (mean = 4.11) and having shops and services within walking distance of my home is important to me (mean = 3.77). Also, I appreciate good travel connections by car (mean = 3.76), and I can be comfortable living near my neighbors (mean = 3.73). Also, I want to live close to vast nature and recreational areas (mean = 3.71), and I don't mind getting around using public transportation (mean = 3.54). On the other hand, they had the lowest personal attitudes on suburban life is boring (mean = 2.47), and the neighborhood park is enough nature for me (mean = 2.52), as shown in figure 5 below.

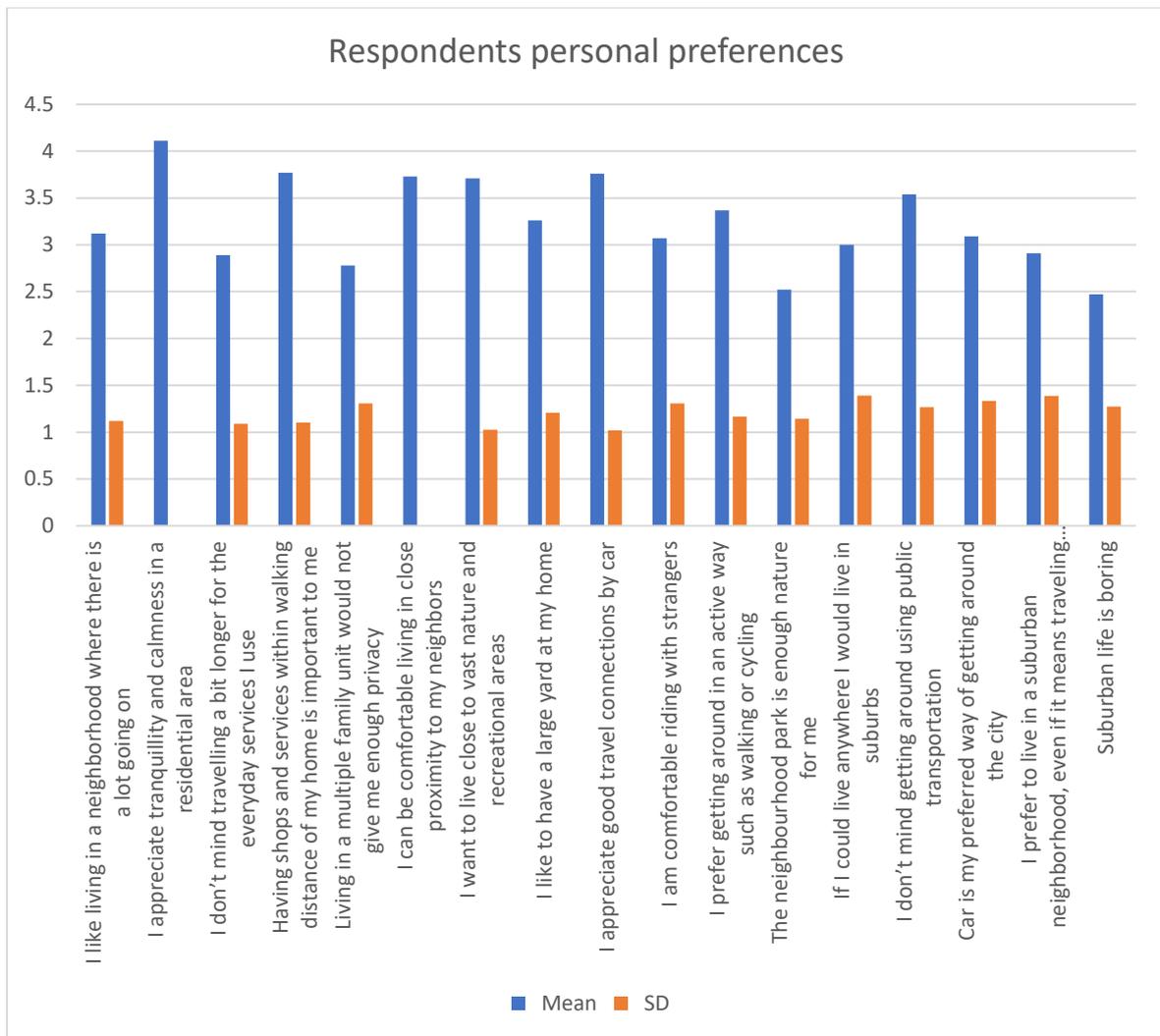


Figure 5 Distribution of respondents personal preferences

3.5.2 Qualitative data collection

Qualitative interviews

The qualitative data was collected in the 2018-2020 period. The selection of respondents to be interviewed, who had already completed the survey, was determined through a criterion sampling approach to obtain a richer understanding of the study phenomena from predetermined cases (Patton, 1990). Thirty individuals were selected of the 189 survey participants to conduct at least 24 interviews, each lasting 30-60 minutes. The participants were randomly selected and then refined to cover the main variables under study. There were 22 Icelandic speakers, six English speakers, and two Polish speakers to cover the population diversity. The first round on in-depth face to face interviews with the chosen survey respondents was at the end of 2018, with seven respondents being interviewed for pilot interviews. Another 15 respondents were interviewed during the second round at the beginning of 2019, with interviews lasting 45-90 minutes. Moreover, five more respondents were interviewed at the beginning of 2020. More than 20 participants were interviewed. Amongst the respondents interviewed, were a few Polish speakers, English speakers, and Icelandic speakers. The respondents were also well distributed amongst the residential areas in the Reykjavík capital region. Half of the respondents lived in residential areas inside or

very close to the city center. In contrast, the other half resided in the other districts surrounding the city center, which were Kópavogur, Mosfellsbær, and Hafnarfjörður. The interviews were done at the University of Iceland department offices or at the request of the interviewee; they were done in the respondent's home. At the beginning of each interview, the respondents were reminded of the research topic and that their contributions would be beneficial to the academic field. The respondents also were asked if they could give their consent to have their discussions quoted anonymously in future academic works related to the study, and they all agreed. The respondents also had the option of retracting their statements from the interview at any given moment before the data analysis and publication of the research findings. All the conversations were audio-recorded with the authorization of the interviewees. After the interview process, the interviews were transcribed and translated to English for the next stage of analysis. Audio-recording and transcribing interviews have many advantages, such as allowing for a more thorough examination of what is said, permitting repeated examinations, and opening up the data to public scrutiny by other researchers, which helps eliminate the fear of researcher bias (Heritage, 2013).

The interview format was divided into three sections with open-ended questions. The first section focused on questions about the respondent's residence that shed more light on the answered questions in the survey. Some of the questions asked included an insight into the respondent's perception of satisfaction with their home according to size and its surroundings. The questions also inquired on the respondents, choice of residential location, social well-being in the area as well as access to green space and public facilities. Lastly, the first section questions in the interview focused on their travel mode choice and public transportation perceptions as well as their leisure time activity. The second section of the interview section focused on the respondent's domestic and international travel patterns. The questions were geared on gaining information on the frequency and motivation of the respondent to travel. The final section of the interview focused on the question of the respondent's environmental attitudes.

This study selected 14 respondents from the pool of 27 initial respondents to be the focus in answering the research questions. The selection criteria for the 14 respondents is based on a stratified purposive sampling technique (Krippendorff, 2004; Patton, 1990), where only individuals of interest are selected. The individuals selected were from the researcher's own judgment with a guiding principle that they were a representative sample from the whole population, and this enabled the researcher to save time. The researcher was aiming at achieving a maximum variation sample (Patton, 1990) by selecting participants with diverse characteristics who covered all the necessary variables under study to be able to answer the research question.

3.6 Research process

3.6.1 Variable use and computing

There are several sets of variables under comparison in this study to discover how they correlate when answering the research questions. The first set of variables is the urban form measures, and the variables in this group include density, perceived residential environmental quality, proximity to the city center, vegetation cover, and green and open spaces. The second set of variables is the dwelling characteristics variables and consists of,

the household size (total number of people, including the respondent, living in the household), inhabitant number, ownership of a private yard, type of residence (apartment, detached or semi-detached house), length in residential apartment, length in the residential region, and homeownership. The third set of variables is the socio-demographic variables, and they include gender, occupation, level of education, hours worked, household type, income, and language code. The final set of variables is the respondent's attitude and preference. The variables included in the personal attitudes are a preference of living in an active neighborhood, preference of living in a calm neighborhood, being okay with longer travel for service access, the importance of having shops and services within walking distance. They also include lack of privacy from living in a multifamily unit, being comfortable living near neighbors, desire to live close to vast nature and recreational areas, desire to have a large yard, appreciation of good travel connections by car, being comfortable riding with strangers, and preference of getting around in an active way such as cycling or walking. There was also, contentment with the neighborhood park fulfilling nature needs, preference of suburban living, nor being mindful of using public transportation, preference of traveling by car inside the city, preference of suburban living with longer travel tradeoffs, and finding suburban life boring.

3.6.2 Data preparation

GIS-based urban form measures

It is best to define a spatial unit that best represents a respondent's local environment, to assess the relationship between the built environment and respondents' subjective well-being in the residential areas. Spatial units are defined because the local built environment features such as green and open spaces and vegetation cover can be presumed to influence an individual's engagement with physical activity in the area.

Green spaces

It is a vital precondition when comparing the presence and quantitative importance of land use categories, to have a consistent and comparable database. The GMES Urban Atlas data set fills the knowledge gap on land-use with green and open spaces in different European city-regions since 2006. The proportion of green spaces within 1km street network buffer was computed as the proportion of land use categories within the geographical units. These are the areas with vegetation cover that are accessible to the public and in the urban environment setting include pastureland, forested areas, wetlands, natural grasslands, and moors. For this study, the classes for land use were derived out of the Urban Atlas commissioned by the GMES land-use survey which the European Environmental Agency (EEA, 2016), provides for the Reykjavík metropolitan area and covers Large Urban Zones (LUZ) in Europe. The data set has been employed in other urban studies across various countries in Europe (Dempsey et al., 2018; Kabisch et al., 2016; Tomao et al., 2017). The dataset's spatial resolution equates to a 1:10000 topographic map. The map does not encapsulate minor and loosely distributed green areas, for instance, privately-owned yards and greenspace. The proportion of green spaces within 1km street network buffer was studied. The measure represents a circular buffer around the respondents' residential address. To calculate the proportion of the area covered with green spaces, land use or land use are overlaid with the statistical buffer zones of 1 km around residential locations.

Vegetation cover measured by Normalized Difference Vegetation Index (NDVI)

The Normalized Difference Vegetation Index (NDVI) was employed to quantify green vegetation in the study area. The NDVI was calculated at a distance of 1 km buffer zone in the area of the grid cells as captured on 30th July 2016 (Czepkiewicz et al., 2018). Vegetation indices are because photosynthesizing plants absorb and reflect light back differently than those that are dead or areas with no vegetation. The NDVI captures vegetated regions showing signs of productivity by utilizing the deviation in the ways that photosynthesizing plants take up light and reflect it back in the red and near-infrared spectrum. There has been the usage of the same measures in urban studies on the impact of greenness in a neighborhood on individuals' well-being through physical activity and stress mitigation (Almanza et al., 2012; Fan et al., 2011). The measure is beneficial as it allows for the representation of all vegetated land, dispersed individual vegetation that can be viewed from above and plants as well as green spaces, irrespective of the difference in their sizes or categorization in land use or topographic maps (Czepkiewicz et al., 2018). Some of the green spaces captured through the NDVI include street trees, personal gardens, small bushes, and other vegetation types that are applicable for human health and aesthetics though frequently not featured on maps.

Open spaces

Open spaces were calculated as the proportion of land use classes inside the geographical units. These were all the areas that are not-built-up and encompass natural features that are accessible to the general public. The open spaces include green urban areas, pastures, leisure, and sports facilities, forested land, natural grasslands, moorland, wetlands, water, ocean water, beaches, dunes, bare rocks, and glaciers. The proportion of open spaces within 1km simple buffer was studied.

Street connectivity

Street connectivity in an area is determined by the number of alternative routes and intersections within a street network. It is defined as "the directness and availability of alternative routes from one point to another within a street network" (Handy et al., 2002). Street connectivity can serve to establish the connectivity and walkability of an area (i.e., the tendency of physical urban environments to aid pedestrian traffic and other active modes of transport). The calculation of street connectivity is usually in administrative units. Still, the areas related to a residential location and how it is connected can also serve as a measure for street connectivity. In this study, it was calculated as the ratio between the area covered by 500m simple buffer and area covered by 500m street network buffer (Czepkiewicz et al., 2018).

Distance to the City center

Researchers in this study calculated the distance to the city center as the least amount of possible-driving route between the point selected to represent the center and each grid cell. The central location chosen in this study based on the expertise information from Harpa Stefansdóttir, was situated at the corner of Bankastræti, Skólavörðustígur, and Laugavegur (Czepkiewicz et al., 2018). The Route algorithm was the primary determinant of the driving distances as captured in the Network Analyst toolset in ArcGIS 10.5. The roads layer (samgöngur) determined the street network, and it was obtained through an i50v topographic map (Czepkiewicz et al., 2018). The calculation of the variable occurred in two forms, in

meters and kilometers. There were six categories of the grouped distances according to 3 km bands such as 0-3, 3-6, 6-9, 9-12, 12 -15, and 15+ (Czepkiewicz et al., 2018). The measure can be viewed as a rough representation of how central residential locations are situated in an urban area. It is believed to be representative of the area on an urban-suburban continuum and can serve as a representation for job and service access in mono-centric cities.

Density

Population density is one of the widely used scales to measure density in urban areas. Population density may be a determining factor in the frequency of social contacts or the availability of public services and amenities. The measures calculated in street network buffers may be explained as the number of people that a person can be in contact with within a 10-15-minute walk from a household. The measurement of using simple barriers is the more traditional way of measuring population density, which does not consider the features of the street network. The measures were based on population data provided by Samtök sveitarfélaga á höfuðborgarsvæðinu (SSH) in 100 m grid. 1km buffers were used as spatial units, both simple (Euclidean) and street network based. Population data were assigned to each buffer by summarizing statistics of the grid cell centroids that were within or intersected with each buffer. The statistics included the number of residents within buffers and population density per hectare.

3.7 Data Analysis

Quantitative data analysis

In quantitative research, there are a variety of analyses that can be used in data presentation and interpretation. Descriptive statistics are a way of presenting data in an organized manner in charts, graphs, and tables that allows the researcher to see patterns between and amongst variables in the study (Cohen, 2001; King et al., 2019). Descriptive statistics offer simple summaries of data, which is usually visual and simple to understand. The distribution of values is recognized through measures of central tendency such as mean, median, and mode, and standards of dispersion such as the range and deviation, which can be an effective way to provide insight into the relationships between variables (Bacon-Shone, 2013; Ibe, 2014). Descriptive statistics is usually the first step for the analysis of data and helps determine the next steps when a study has multiple variables under evaluation. A detailed summary of the quantitative data, as presented through descriptive statistics, can be found in the materials sub-section 3.2.

Depending on the type and number of variables in assessment, univariate, bivariate, and multivariate analyses are the most widely used techniques in analyzing quantitative data (Cohen, 2001; King et al., 2019) and determining the relationships between the variables. Regression analysis is a widely used tool in examining the relationship between variables. When using regression analysis, both the dependent and independent variables are known, and the study helps one understand how the dependent (outcome) variable changes after inserting any of the predictor (independent) variables to the equation. For example, one could measure the relationship between urban green areas and life satisfaction and determine whether the predicting variable (green coverage) does have a strong relationship with the outcome variable (life satisfaction). Simple linear regression has only one independent variable, while multiple linear regression has several independent variables measured against

a dependent variable to determine the level of impact (Cohen, 2001; Montgomery et al., 2012). Thus, the example mentioned above would be a simple linear regression analysis, while multiple linear regression would involve other built environment and socio-demographic variables as the predictors. This study will utilize multiple linear regression analyses, while Pearson's Chi-square test was the primary method used to test associations.

Another measure of determining the best choice for the analysis method in quantitative data analysis is through identifying the data types and measurements. There are four data measurement scales nominal, ordinal, interval/ratio, and dichotomous in statistics (Bacon-Shone, 2013; Bryman, 2016; Cohen, 2001). Table 3 presents the variables in this study and their attributes and analysis method applied. Nominal scales, also called categorical, have no quantitative values, and some examples include occupation, education, and type of accommodation. Ordinal scales are measures of non-numeric concepts classified by rank, such as satisfaction. They can be on a Likert scale (1-5, very satisfied to very unsatisfied), but the difference between the values, e.g., 1-2 or 2-3, cannot be quantified. Interval/ratio scales are numeric scales whereby both the order and differences between the values are known, such as distance in kilometers. They can have the ability to calculate ratios such as age or income. Dichotomous scales are variables containing data with only two categories, such as gender. The dependent variable, life satisfaction is ordinal and measured on a continuous scale of 0-10; therefore, it is possible to use linear regression (Weisberg, 2005) to discover the relationship of the dependent variable with the independent variables, which are nominal, categorical and interval.

Factor analysis is another way of examining variable relationships, and it enables a researcher to reduce an extensive data set of variables into a few interpretable underlying factors (Harman, 1960). Factor analysis allows the researcher to see the overall variance in the observed variables that a factor explains by looking at the eigenvalue. Factor analysis enables the researcher to seek the underlying latent (unobservable) variables that are reflected in the manifest (observed) variables.

For this study, data analysis was conducted using SPSS version 25, and the results presented through descriptive statistics, factor analysis, and hierarchical multiple regression analyses. Descriptive statistics were conducted to determine the distribution of the variables where frequencies, percentages, mean, and the standard deviation was used. Factor analysis was conducted to reduce the observed variables in the study where principal component analysis with varimax was used, and Bartlett's test assessed the variance. Bivariate correlation analysis was employed to check the continuous factors associated with life satisfaction, domain satisfaction, and social well-being. Finally, hierarchical multiple regression analyses assess further the association between life satisfaction and the built environment and housing characteristics in the study with other variables controlled for during the analysis.

This study conducted a hierarchical multiple regression analysis, each beginning with intercept-only socio-demographic variables, to determine to what degree the urban form variable, population density, predicts individual life satisfaction, domain satisfaction, and social well-being, after the effect of socio-demographic and dwelling variables was controlled for. The hierarchical multiple regression approach is adopted due to the high number of variables to determine any possible associations (Cohen, 2001). Some of the socio-demographic and dwelling characteristics variables (e.g., level of education or private yard) can be hypothesized to impact life satisfaction and social well-being in degrees and ways that are independent of population density. The Variance Inflation Factors (VIF)

collinearity statistics were performed to assess the absence of multicollinearity assumptions that underpin multiple regressions. In all the three regressions, the values were below 3.

Six socio-demographic variables served as control variables in this study (gender, income, level of education, occupation, type of household, and language code). Moreover, there were five dwelling characteristics entered in the regression (homeownership, bedroom number, household size, length in the residential region, and access to private yard) and four-factor scores representing respondents' personal preferences (suburban life, pro-car attitude, preference for nature and privacy, and preference for urban density).

For the socio-demographic variables, dummy variables were created for gender, income, level of education, occupation, household type, and language code. Here, four dummy variables of income (Very high, high, medium, and low) are measured against very low income. Gender was coded as '1' for females and '0' for males, while the dummy for the level of education was university and college education coded as '1' and basic education as '0'. The occupation variable was negative with the dummy variable for unemployed/unable to work coded as '1' while in some sort of employment is '0'. Three dummy variables were created for household type (couple living together, couple with child/children, single parent with child/ children) measured against a single person living alone/with parents/ in a shared apartment. The Icelandic language was coded as '1' and both English and Polish language as '0'. The dwelling characteristic, length in the residential region, were coded as '1' for less than a year and '0' for else. The household size was coded as '1' for three or fewer inhabitants and '0' for more than one bedroom. The number of inhabitants in a household was coded as '1' for eight or more inhabitants, and '0' for less than eight inhabitants. Finally, the dwelling characteristics of homeownership and access to a private yard are positive, that is, coded as '1' while lacking is '0'.

Table 4 Variables, attributes, and analysis

Variable	Type	Attributes	Regression analysis	Factor analysis
Age	Continuous	Number of years	Yes	
Gender	Binary	Male, Female	Yes	
Occupation	Categorical	Employed full time, employed part-time, self-employed, stay at home, student, unable to work, unemployed, and other	Yes	
Education	Categorical	Basic education, secondary education, vocational education, undergraduate level, graduate level, and postgraduate level	Yes	
Language code	Categorical	IS, EN, PI	Yes	
Hours worked	Categorical	less than 30; 30-35 hours; 35-40 hours; 40-45 hours; and more than 45 hours	Yes	
Income	Categorical	Less than 150,000 ISK, 150,000-300,000 ISK, 300,000-450,000 ISK, 450,000-600,000 ISK, 600,000-900,000 ISK, more than 900,000 ISK, I do not want to tell	Yes	

Household type	Categorical	couple living together; couple living with child/children; single parent with child/children; single person living in a shared apartment; single person living on his or her own; single person living with parent; and other	Yes	
Satisfaction with the material standard of living	Ordinal	0-10		Yes
Satisfaction with the current state of health	Ordinal	0-10		Yes
Satisfaction with personal relationships	Ordinal	0-10		Yes
Satisfaction with feeling part of the community	Ordinal	0-10		Yes
Satisfaction with the amount of leisure time	Ordinal	0-10		Yes
Satisfaction with job or studies	Ordinal	0-10		Yes
Satisfaction with the quality of the local environment	Ordinal	0-10		Yes
Satisfaction with life achievements	Ordinal	0-10		Yes
Satisfaction with feeling safe	Ordinal	0-10		Yes
Satisfaction with our life as a whole these days	Ordinal	0-10	Yes	Yes
Personal attitudes	Ordinal	0-5	Yes	
Distance to the city center	Interval	Shortest driving distance to the city in km	Yes	
Population density	Interval	Population density per hectare within 1km	Yes	
Open spaces	Interval	Proportion of open spaces within 1Km	Yes	
Vegetation cover	Interval	Proportion of vegetation cover in a street network within 1km		
Green spaces	Interval	Proportion of green spaces within 1Km	Yes	
Open spaces	Interval	Proportion of open spaces within 1Km	Yes	
Street connectivity	Interval	Street connectivity within 500m within 1Km	Yes	

Qualitative data analysis

In qualitative research, content analysis is useful in reducing the volume of text collected, such as interview data. It helps in identifying and grouping similar content in categories to

seek to create some understanding of it (Bryman, 2016; Krippendorff, 2004). There are three approaches that a researcher might utilize when conducting a qualitative content analysis study. The three types are conventional, directed, and summative approaches (Bryman, 2016). The conventional type uses grounded theory to develop codes directly from the text whereby a researcher may be able to generate a new theory from the data analysis. Secondly, the directed type begins with a known theory or relevant research findings, which are followed by coding and themes in the analysis process. Finally, the summative approach involves the counting of words and finding the underlying meanings which enable the researcher to explore the usage of themes in the text. This study will follow the conventional type of content analysis in the development of codes directly from the text. For this study, qualitative content analysis began with an examination of the transcribed and translated interviewees to discover themes and patterns which were grouped together, and specific codes were developed to explain the relationship between respondents' social well-being and their satisfaction with life in their residential location as affected by their built environment. Specifically, the analysis of the interview data began with reading all the ten transcripts on the specific target areas of this study. Afterward, the rereading of the transcripts carefully enabled the highlighting of texts that described a relationship between the urban form environment and the respondents' overall well-being.

Additionally, keywords and phrases containing participants exact words that showed these relationships were entered into an excel data sheet with the respondents' information, which was then transferred to a table on a word document, and this began the coding process. Coding identified themes in the data, and this was in the form of repeated words in an interview by different respondents, which were then assigned codes, which became the preliminary codes in guiding the rest of the analysis process. Specific keywords began to show a pattern aligning to the preliminary codes, while new codes were added into the existing codes. Once all the transcripts were coded, the codes were carefully organized with some combined, while others were divided into sub-categories.

To improve consistency and trustworthiness of the data analysis process, there was a second auditor, who served as an advisor, in addition to the primary researcher. The second auditor reviewed the emerging themes from the interview analysis, and this helped verify and revise some original themes. Moreover, some primary themes stayed the same, even after the review of the second auditor. This helped to ensure inter-coder reliability in the research process. This was also necessary because the interviews had to be translated from the Icelandic language to English, and it ensured that no words were lost in translation as the second auditor was efficient and fluent in the Icelandic language. The review from the second auditor also served is aiding to eliminate any biases and assumptions from the interviews through open coding and formation of themes. The full interview codebook can be found in appendix C.

4 Results

This chapter is divided into three sections in the presentation of the results of this study. The first section is the correlation analysis of satisfaction with life and satisfaction with life domains, whereby both the bivariate and multivariate regression results are presented. The second section shows the hierarchical regression analysis. In contrast, the third section presents the results from the qualitative content analysis to highlight the relationship between urban form and participants' subjective and social well-being.

4.1 Correlation analysis

The first research question asked: *What is the relationship between respondents' life satisfaction, domain satisfaction, and social well-being with the urban form characteristics in the Reykjavik region?* It was, therefore, necessary to create a summary score of respondents' satisfaction with life domains and to find an index for social well-being from the domains.

Bivariate Spearman's correlation was used as the primary tool to investigate the presence of a relationship between the variables under study. The first correlation analysis conducted assessed the relationship between all the satisfaction with life domains to see whether there were significant associations between them. The results from that correlation are presented in Table 5 below and show significant relationships between all the satisfaction variables.

Table 5 Bivariate Spearman's correlation between satisfaction with life and life domains

Satisfaction with...	...the material standard of living	...the current state of health	...personal relationships	...feeling part of the community	...amount of leisure time	...job or studies	...quality of the local environment	...life achievements	...feeling safe
...the material standard of living	1	.439**	.356**	.456**	.411**	.463**	.495**	.562**	.519**
...the current state of health	.439**	1	.421**	.391**	.363**	.385**	.412**	.499**	.465**
...personal relationships	.356**	.421**	1	.509**	.354**	.341**	.494**	.484**	.409**
...feeling part of the community	.456**	.391**	.509**	1	.382**	.460**	.509**	.552**	.440**
...the amount of leisure time	.411**	.363**	.354**	.382**	1	.368**	.440**	.413**	.309**
...job or studies	.463**	.385**	.341**	.460**	.368**	1	.429**	.595**	.364**

...quality of the local environment	.495**	.412**	.494**	.509**	.440**	.429**	1	.476**	.505**
...life achievements	.562**	.499**	.484**	.552**	.413**	.595**	.476**	1	.495**
...feeling safe	.519**	.465**	.409**	.440**	.309**	.364**	.505**	.495**	1

** . Correlation is significant at the 0.01 level (2-tailed).

From the results above it was evident that all the satisfaction factors were highly correlated with each other, with a statistical significance of $p < 0.01$. All the nine satisfaction with life domains correlated at least .3 with all other items, suggesting reasonable factorability while the coefficients for correlation matrix were over .5, as shown in Table 5 above. From the correlation analysis results, it was evident that there was a significant relationship amongst all the satisfaction variables, and it was possible to summarize them as one variable, which was then used as an index for respondents' satisfaction with life domains. Additionally, the single question of satisfaction with life, measured on a Likert scale of 1-10, would be used as an index for individual life satisfaction.

The next step was to conduct a factor analysis to simplify the data by reducing the number of variables and find convergence to create a social well-being index.

Factor analysis for respondents' satisfaction variables

Factor analysis was conducted using the principal component analysis, where the varimax rotation approach was used. The Kaiser-Meyer-Olkin measure of sampling adequacy was .911, above the commonly recommended minimum value of .6, and Bartlett's test of sphericity was substantial at 2510.106, $p < 0.01$. From the initial analysis, it was evident that the first component accounted for more than 50% of the variance with an eigenvalue of 4.528 and a total percentage variance of 56.596 %, as shown in figure 6. Moreover, the first four components accounted for an 81% cumulative value of the variance.

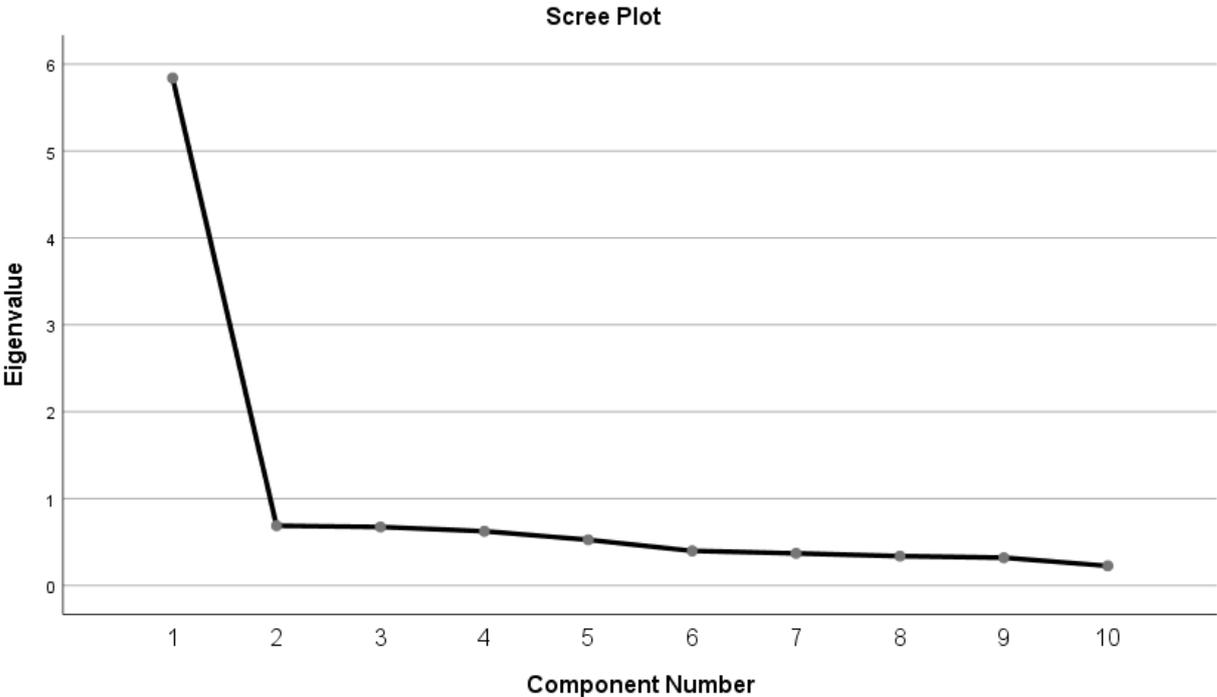


Figure 6 Scree plot of satisfaction variables

Four components were extracted, in the rotated matrix, showing that there were different interactions between the various variables. The varimax with the Kaiser model normalization rotation method revealed some interesting results, as shown in table 5. Satisfaction with the material standard of living (.740), satisfaction with the current state of health (.833), and satisfaction with feeling safe (.791) had the highest significant positive loadings on factor 1. Satisfaction with job or studies (.893) and satisfaction with the amount of leisure time (.984) had the highest positive loadings on factors two and three, respectively. Satisfaction with feeling part of the community (.543) and satisfaction with personal relationships (.847) had the highest positive loading on component 3.

Table 6 Rotated component matrix between satisfaction variables

	Rotated Component Matrix^a			
		Component		
	1	2	3	4
Satisfaction with material standard of living	.726	.373	.107	.244
Satisfaction with the current state of health	.779	.145	.213	.215
Satisfaction with personal relationships	.338	.105	.852	.160
Satisfaction with feeling part of the community	.186	.563	.625	.200
Satisfaction with the amount of leisure time	.234	.184	.189	.928
Satisfaction with job or studies	.256	.881	.106	.141
Satisfaction with life achievements	.532	.576	.350	.150
Satisfaction with feeling safe	.756	.212	.381	.039

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

To answer the first research question, it was essential to create an index comprised of answers associated with social well-being. Therefore, the two highest loadings on component three (table 6), satisfaction with personal relationships, and satisfaction with having a sense of community were analyzed together as an index of respondents' understanding of social well-being.

Factor analysis for respondents' preferences and attitudes

Factor analysis was carried out for the respondents' attitudes and preferences to reduce the number of variables and create indexes that would be utilized in the regression analyses. Tables 14 and 15 in appendix B show the correlation analyses of respondents' personal preferences that were performed as an initial step before the factor analysis. Respondents' preferences for certain neighborhood qualities may affect their well-being, and it was, therefore, important to include the variables in the regression analyses for urban form measures. Factor analysis was performed using the principal axis factoring, where the

varimax rotation approach was used. The Kaiser-Meyer-Olkin measure of sampling adequacy was .814, above the commonly recommended minimum value of .6, and Bartlett's test of sphericity was substantial at 2895.140, $p < 0.001$. From the initial analysis, it was evident that the first four components account for more than 40% of the variance with an eigenvalue of 7.158 and a total cumulative value percentage variance of 54.895% of the variance, as shown in figure 7.

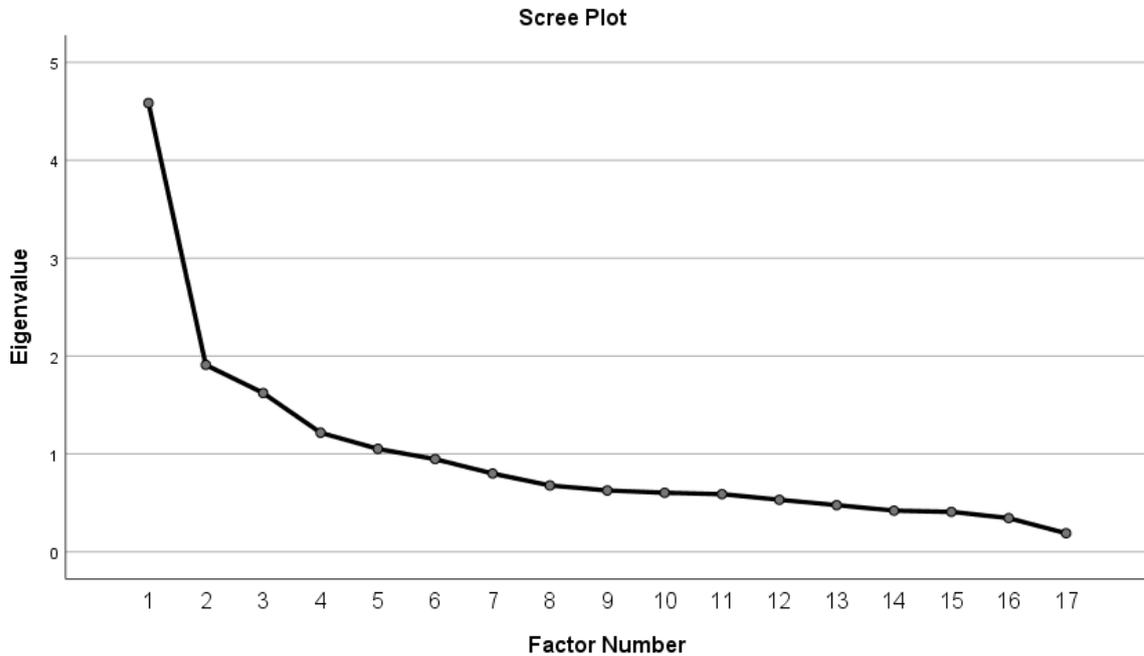


Figure 7 Scree plot of personal attitudes and preferences

Table 7 Rotated factor loadings retained in the four-factor solution. Answers to respondents' attitudes and preferences. Please state how much you agree or disagree with statements below (1 = strongly disagree, 3 = neither agree nor disagree, 5 = strongly agree).

Rotated Factor Matrix^a				
Item	Factor 1	Factor 2	Factor 3	Factor 4
	Suburban preference	Pro-car attitude	Preference for nature and privacy	Preference for urban density
I prefer to live in a suburban neighborhood, even if it means traveling longer distances	.806	.145	.235	-.109
If I could live anywhere, I would live in the suburbs	.749	.218	.279	-.050
Suburban life is boring	-.676	-.165	-.065	.018
I like living in a neighborhood where a lot is going on	-.565	-.123	.091	.332
I do not mind traveling a bit longer for the everyday services I use	.444	.169	.153	.017

I appreciate tranquility and calmness in a residential area	.406	.052	.305	-.059
I want to live close to the vast nature and recreational areas	.307	-.117	.548	-.010
Having shops and services within walking distance of my home is important to me	-.380	-.357	.128	.211
The car is my preferred way of getting around the city	.224	.808	.130	-.003
I appreciate good travel connections by car	.176	.575	.197	.064
I prefer getting around in an active way such as walking or cycling	-.181	-.616	.247	.085
I do not mind getting around using public transportation	-.098	-.578	-.071	.235
I can be comfortable living in close proximity to my neighbors	.002	-.132	-.151	.786
Living in a multiple-family unit would not give me enough privacy	.036	.201	.514	-.379
I am comfortable riding with strangers	-.036	-.207	-.046	.295
The neighborhood park is enough nature for me	-.068	.049	-.052	.207
I like to have a large yard at my home	.139	.081	.508	-.190

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

Suburban preference- The first factor represents respondents who have a suburban preference, and respondents who scored high on this factor represent those who prefer to live in the suburban area and do not mind the longer travel distances from their residences to access services. Also, respondents who scored high on this factor do not consider the suburban life boring and prefer to reside in a calmer area as opposed to one with a lot going on. Those who scored low on this factor find the suburban life boring and prefer to live in a neighborhood where a lot is going on; besides, they value shorter travel time to access their daily services.

Pro-car attitude-The second factor represents respondents who have a pro-car attitude, and those who scored high on this factor represent those who prefer to utilize the car as their primary mode of transportation and do not prefer to use public transit or active modes of transportation such as cycling or walking. In contrast, those who scored low prefer getting around in an active way by cycling or walking and do not mind the use of public transport.

Preference for nature and privacy- The third factor represents respondents who prefer greenspace access and privacy and are not comfortable with urban density. Respondents who scored high on this factor represent those who prefer to live close to vast nature and recreational services and would like to have a large yard in their home. Moreover, it also

includes respondents who prefer who value their privacy and prefer not to live in a multi-family home. Respondents who scored low on this factor are indifferent to greenspace access and more comfortable with shared housing.

Preference for urban density- The fourth factor represents respondents who prefer urban density and enjoy living in an area where a lot is going on, as well as, living in apartment buildings close to their neighbors without feeling a lack of privacy. Those who scored low on this factor are not in favor of urban density or living close to their neighbors.

4.1.1 Relationship between individual life satisfaction, the sum of domain scores and social well-being with urban form measures

Before the bivariate analysis could be performed, a correlation analysis was done between the urban form measures to investigate the association between the variables and eliminate any problem of multicollinearity. From the analysis, only the proportion of greenspaces was used in further analysis, and vegetation cover was dropped due to the high correlation between the two variables (Table16, appendix B). The bivariate Pearson's correlation analysis shows that there was no statistically significant association between respondents' self-reported individual satisfaction with life, and the sum of domain scores with all the GIS-based urban form measures with $p > 0.05$ as shown in table 8. However, there was statistical significance with population density and domain satisfaction with $p > 0.05$, which showed a negative association with respondents' satisfaction levels.

These results indicate that high population density around an individual's home may have a discernible negative impact on their well-being.

Table 8 Bivariate Pearson's correlation matrix between urban form measures and satisfaction with life, the sum of domain scores and social well-being

		Distance to the city center in km	Proportion of green spaces within 1km	Population density Within 1km	Street Connectivity within 500m	Proportion of open spaces within 1km
Individual life satisfaction	Pearson Correlation	-.046	-.049	-.032	.002	-.014
Domain satisfaction	Pearson Correlation	-.003	-.024	-.075*	-.014	.009
Social well- being	Pearson Correlation	-.005	-.040	-.072	.008	-.011

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation matrix between satisfaction factors and dwelling characteristics revealed some interesting findings. Respondents' satisfaction with life was positively associated with the household size, which depicts the number of people living in the house $p > 0.01$. However, respondents' satisfaction with life domains showed no statistically significant correlation with either of the household characteristics. Finally, bivariate Pearson's correlation analysis results revealed a positive association with both the number of people living in a household as depicted with household size variable and the bedroom number with respondents' social well-being with $p > 0.05$, as shown in Table 9 below.

These results indicate that household density and home size can have a positive impact on respondents' social well-being.

Table 9 Bivariate Pearson's correlation matrix between dwelling characteristics and satisfaction with life, the sum of domain scores and social well-being

		Household Size	Length in Residential Apartment	Bedroom Number	Inhabitant Number
Individual Life satisfaction	Pearson	.090*	-.065	.047	.047
	Correlation				
Domain satisfaction	Pearson	.038	-.064	.062	.006
	Correlation				
Social well-being	Pearson	.111*	-.044	.111**	.092*
	Correlation				

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

4.1.2 Relationship between respondents' socio-demographic characteristics, dwelling characteristics, and personal preferences, with life satisfaction, domain satisfaction, and social well-being

The mean and median comparison of socio-demographic variables revealed that females had higher satisfaction levels than their male counterparts. In contrast, respondents who were both unemployed and unable to work had lower satisfaction levels than those in employment. Moreover, respondents with a basic level of education had lower satisfaction levels than those with higher education levels. Respondents who used the Icelandic language code had higher satisfaction levels than both the Polish and English language speakers. Not surprisingly, respondents who reported higher income also had higher satisfaction levels as compared to the lower-level earners (Table 18). When comparing the means of the dwelling characteristics, respondents living with fewer inhabitants in a home had lower social well-being than those with more inhabitants.

Additionally, both access to a private yard and homeownership revealed higher domain satisfaction levels (Table 17). Finally, respondents who preferred living in areas with vast

nature and recreational services and some privacy all reported higher levels of their life satisfaction, domain satisfaction, and social well-being (Table 19). The tables mentioned above can be viewed in appendix C.

4.1.3 Relationship between respondents' socio-demographic and dwelling characteristics with population density

The study compared respondents' means with population density to see whether there was a relationship between respondents' socio-demographic and dwelling characteristics with population density. Results showed that college students and high-income earners tend to live in areas with lower population density than people with lower income and basic education, as shown in table 19 in appendix C. Moreover, there was a slight indication that single individuals tend to live in areas with higher population density than couples with children. None of the dwelling characteristics was correlated to population density.

4.2 Hierarchical multiple regressions

From the correlation analysis above, it was evident that only the urban form variable population density has any significant correlation with respondents' life satisfaction, domain satisfaction, and social well-being. Therefore, there was no need to conduct further regression analysis on the other four urban form variables (green space access, street connectivity, distance to the city center, and open space access). This section will only focus on the population density characteristic.

To further investigate the effects of population density on respondents' life satisfaction, domain satisfaction, and social well-being, hierarchical regression analyses were conducted. Three hierarchical regression analyses were performed with the dependent variables: life satisfaction, domain satisfaction, and social well-being. This study performed a four-stage hierarchical regression analysis for each of the dependent variables. The first independent variables entered into the regression equation in step one were the respondents' socio-demographic variables. Respondents' dwelling characteristics variables were entered next. Population density variable was then introduced at level 3, and finally, respondents' preferences were entered last at step four. The respondents' socio-demographic and dwelling characteristics were entered first before population density to serve as control variables as they have been shown to also influence respondents' life satisfaction, domain satisfaction, and social well-being. If the population density variable entered next significantly increased the squared multiple correlations (R^2), this would suggest that population density had a significant impact on respondents' life satisfaction, domain satisfaction, and social well-being. The results are shown in Tables 10, 11, and 12.

In general, the regression results were consistent with those in sub-section 4.1.1 and 4.1.2 for urban form correlations, and respondent' socio-demographic average values. Women, individuals with high income, and individuals with college or university education, all showed higher satisfaction levels with their life than men, low-income earners, and individuals' who had basic education. On the other hand, unemployed individuals and those who were unable to work had lower levels of life satisfaction, domain satisfaction, and social well-being. Individuals' who preferred nature and privacy were also very satisfied with all

aspects of their life, life satisfaction, domain satisfaction, and social well-being. Surprisingly, high population density lowered both an individual's domain satisfaction and social well-being, while in the correlation analyses, it was only correlated with domain satisfaction. Moreover, only the dwelling characteristic of household size was significant, as respondents who live with fewer inhabitants had lower social well-being, while both homeownership and private yard access showed no significance for well-being.

4.2.1 Effects on Life satisfaction

As can be seen from Table 10 below, when population density was added in the regression in step 3, there was no statistically significant change in R^2 , showing that in this study, population density did not influence respondents' life satisfaction.

Table 10 Summary of hierarchical regression for population density and Life satisfaction (only significant predictors of socio-demographic/dwelling variables shown in the table).

Predictors	Model 1	Model 2	Model 3	Model 4
Gender (1, being female; 0, male)	.107*	.111*	.111*	.092*
Occupation (1, unemployed/ unable to work; 0, Employed full/part-time / self-employed)	-.170***	-.165***	-.167***	-.153**
Household type (1, Couple living with child/ children; 0, single person)	.132*			
Population density				
Nature and privacy preference				.193***
R^2	.089	.093	.094	.121
Adjusted R^2	.069	.066	.065	.086
ΔR^2	.089	.004	.001	.027
ΔF	4.532***	.595	.469	3.855**

Note * $p < .05$ ** $p < .01$ *** $p < .001$

Dependent Variable: life satisfaction

Predictors: (Constant), singleparentwithchildren, IncomeMdummy, Icelandictimmy, Occupationdummy, Femaledummy, couplelivingtogether, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren

Predictors: (Constant), singleparentwithchildren, IncomeMdummy, Icelandictimmy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, PrivateYard, ownPlace, bedroomnumbernew, householdsize3orless

Predictors: (Constant), singleparentwithchildren, IncomeMdummy, Icelandictimmy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, PrivateYard, ownPlace, bedroomnumber2orless, householdsize3orless, popdennb1km

Predictors: (Constant), singleparentwithchildren, IncomeMdumy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, PrivateYard, ownPlace, bedroomnumber3orless, householdsize3orless, popdennb1km, F2_procar, F4_Urbandensity, F1_suburban, F3_natureandprivacy

Table 10 above shows that individual life satisfaction was not statistically determined by population density.

However, among the socio-demographic, in the first model, life satisfaction was explained by being female (beta .107, $p < .01$), being unemployed or unable to work (beta -.170, $p < .001$), and being a couple with child (beta .132, $p < .05$). Individual life satisfaction in model two was explained by being female (beta .111, $p < .01$), and being unemployed or unable to work (beta -.165, $p < .001$). In model three, life satisfaction was explained by being female (beta .111, $p < .01$), and being unemployed or unable to work (beta -.167, $p < .001$).

Life satisfaction in the fourth model was explained by being female (beta .092, $p < .05$), being unemployed or unable to work (beta -.153, $p < .01$), and the individual preference for nature and privacy (beta .193, $p < .001$).

4.2.2 Effects on domain satisfaction

As can be seen in Table 11 below, population density accounted for a significant proportion of the variance in respondents' domain satisfaction when introduced in model 3, $\Delta R^2 = .008$). This result showed that population density accounted for an additional 0.8% of the variance in domain satisfaction and was statistically significant ($\Delta F = 5200$, $P = .023$, beta -.094). Therefore, in this study, findings indicated that an increase in population density lowered an individual's domain satisfaction.

Table 11 Summary of hierarchical regression for population density and Domain satisfaction (only significant predictors of socio-demographic/dwelling variables shown in the table).

Predictors	Model 1	Model 2	Model 3	Model 4
Gender (1, being female; 0, male)	.150***	.155***	.153***	.130**
Occupation (1, unemployed/ unable to work; 0, Employed full/part-time / self-employed)	-.262***	-.254***	-.260***	-.243***
Level of education (1, College/ university education; 0 Basic/Secondary education)	.111**	.102*	.095*	.085*
Income (1, Very high Income- above 670k; 0, Very low income- below 290k)				.111*
Income (1, High Income- between 510k and 670k; 0, Very low income- below 290k)	.119*	.124*	.121*	
Population density			-.094*	-.093*

Preferences-Nature and Privacy				.228***
R ²	.155	.163	.171	.210
Adjusted R ²	.137	.138	.145	.179
Δ R ²	.155	.008	.008	.039
Δ F	8.524***	1.216	5.200*	6.207***

Note * p < .05 ** p < .01 *** p < .001

Dependent Variable: Domainsatisfaction
Predictors: (Constant), singleparentwithchildren, IncomeMdummy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogether, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren
Predictors: (Constant), singleparentwithchildren, IncomeMdummy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, privateYard, ownPlace, bedroomnumbernew, householdsize3orless
Predictors: (Constant), singleparentwithchildren, IncomeMdummy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, PrivateYard, ownPlace, bedroomnumber2orless, householdsize3orless, popdennb1km
Predictors: (Constant), singleparentwithchildren, IncomeMdummy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, PrivateYard, ownPlace, bedroomnumber3orless, householdsize3orless, popdennb1km, F2_procar, F4_Urbandensity, F1_suburban, F3_natureandprivacy

Table 11 above shows that population density negatively influenced participants' domain satisfaction even after controlling for socio-demographic and dwelling characteristics (beta -.093, p < .05) in model four.

Among the socio-demographic and dwelling characteristics, these were the findings. In model one, being female (beta .150, p < .001, having a college or university education (beta .111, p < .01), and having high income between 510k and 670k (beta .119, p < .05) were all positive predictors for an individual's domain satisfaction. Being unemployed a negative predictor for domain satisfaction (beta -.262, p < .001). In model two, domain satisfaction was positively explained by being female (beta .155, p < .001), having a college or university education (beta .102, p < .05), having a high income between 510k and 670k (beta .124, p < .05), and negatively affected by being unemployed or unable to work (beta -.254, p < .001). In model three, domain satisfaction was positively explained by being female (beta .153, p < .001), having a college or university education (beta .097, p < .05), having a high income between 510k and 670k (beta .102, p < .05), having a high income between 510k and 670k (beta .121, p < .05), and negatively affected by being unemployed or unable to work (beta -.260, p < .001).

Domain satisfaction in the fourth model was positively explained by being female (beta .130, p < .01), having a college or university education (beta .085, p < .05), being unemployed or unable to work (beta -.243, p < .001), having a very high income above 670k (beta .085, p < .05), and having the personal preference score for nature and privacy (beta .288, p < .001).

Being unemployed was a negative predictor for domain satisfaction (beta -.243, $p < .001$) in the fourth model.

Being unemployed and unable to work, and the personal preference for nature and privacy had the highest statistical significance on participants' domain satisfaction in this study.

4.2.3 Effects on social well-being

As can be seen in Table 12 below, population density accounted for a significant proportion of the variance in respondents' domain satisfaction when introduced in model 3, $\Delta R^2 = .008$). This result shows that population density accounted for an additional 0.8% of the variance in domain satisfaction and was statistically significant ($\Delta F = 5034$, $P = < .05$, beta -.110). Therefore, in this study, findings indicate that an increase in population density lowered an individual's domain satisfaction.

Table 12 Summary of hierarchical regression for population density and social well-being (only significant predictors of socio-demographic/dwelling variables shown in the table).

Predictors	Model 1	Model 2	Model 3	Model 4
Gender (1, being female; 0, male)	.230***	.237***	.235***	.218***
Occupation (1, unemployed/ unable to work; 0, Employed full/part-time / self-employed)	-.259***	-.250***	-.257***	-.239***
Spoken Language (1, Icelandic; 0, English/Polish)	.098*			.
Household type (1, Couple living together; 0, single person)	.144**	.160**	.167**	.158**
Household type (1, Couple living with child/ children; 0, single person)	.178**	.119*	.130*	.133*
Household type (1, Single parent with child/ children; 0, single person)				
Household size (3 or less inhabitants)		-.107*	-.107*	-.106*
Population density			-.110**	-.089*
Personal preference- Nature, and Privacy				.222***
R^2	.179	.196	.204	.241
Adjusted R^2	.162	.172	.178	.211
ΔR^2	.179	.016	.008	.038
ΔF	10.154***	2.555*	5.034*	6.230***

Note * $p < .05$ ** $p < .01$ *** $p < .001$

Predictors: (Constant), singleparentwithchildren, IncomeMdumy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogether, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren

Predictors: (Constant), singleparentwithchildren, IncomeMdumy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, privateYard, ownPlace, bedroomnumbernew, householdsize3orless

Predictors: (Constant), singleparentwithchildren, IncomeMdumy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, PrivateYard, ownPlace, bedroomnumber2orless, householdsize3orless, popdennb1km

Predictors: (Constant), singleparentwithchildren, IncomeMdumy, Icelandicdummy, Occupationdummy, Femaledummy, couplelivingtogethernew, Educationdummy, IncomeLdummy, IncomeHdummy, IncomeVHdummy, couplewithchildren, PrivateYard, ownPlace, bedroomnumber3orless, householdsize3orless, popdennb1km, F2_procar, F4_Urbandensity, F1_suburban, F3_natureandprivacy

Table 12 above shows that population density negatively influences participants' social well-being even after controlling for socio-demographic and dwelling characteristics (beta $-.089$, $p < .05$) in model four.

Among the socio-demographic and dwelling characteristics, these were the findings. In model one, being female (beta $.230$, $p < .001$), speaking the Icelandic language (beta $.098$, $p < .05$), being a couple living together (beta $.144$, $p < .01$), and being a couple living with children (beta $.178$, $p < .01$), were all positive predictors for an individual's social well-being. Being unemployed was also a negative predictor for social well-being (beta $-.259$, $p < .001$).

In model two, domain satisfaction was positively explained by being female (beta $.237$, $p < .001$), being a couple living together (beta $.160$, $p < .01$), and being a couple living with children (beta $.119$, $p < .05$). Social well-being was also negatively affected by being unemployed or unable to work (beta $-.250$, $p < .001$) and being in a household with fewer than three inhabitants (beta $-.107$, $p < .05$). In model three, social well-being was positively explained by being female (beta $.235$, $p < .001$), being a couple living together (beta $.167$, $p < .01$), and being a couple living with children (beta $.130$, $p < .05$). Social well-being was also negatively affected by being unemployed or unable to work (beta $-.257$, $p < .001$) and being in a household with fewer than three inhabitants (beta $-.107$, $p < .05$).

Social well-being in the fourth model was positively explained by being female (beta $.218$, $p < .001$), being a couple living together (beta $.158$, $p < .01$), and being a couple living with children (beta $.133$, $p < .05$), and having the personal preference score for nature and privacy (beta $.222$, $p < .001$). Social well-being was also negatively affected by being unemployed or unable to work (beta $-.239$, $p < .001$), and being in a household with fewer than three inhabitants (beta $-.106$, $p < .05$).

Furthermore, the effect of the language spoken had no significant impact on respondents' social well-being once personal preferences were included in the regression. Individual's preference for living in areas with vast nature and recreation and having some privacy was significant for the well-being and reduces the significant negative impact of the language spoken for social well-being.

Being female, being unemployed, and unable to work, and the preference for nature and privacy, had the highest statistical significance on an individual's social well-being.

4.2.4 Concluding interpretation of quantitative results

Results from the first correlation analysis between life satisfaction and life domains show significant correlations between all the variables, and this is because satisfaction with different aspects of life and the environment interact together in determining a person's well-being. Whereby if a person is satisfied with their material standard of living, then they are satisfied with their life achievements, and this also goes with satisfaction with their job or studies. Such individuals are also satisfied with the amount of leisure time and can afford to live in areas that they deem pleasing to them; therefore, they are also happy with their local environment and feeling safe. Moreover, individuals who are satisfied with their personal relationships may even feel confident with feeling like a part of their community, and all these factors play a role in the overall well-being of individuals.

The best predictors of participants' domain satisfaction and social well-being were gender, occupation, and respondents' preference for nature and privacy in their residential areas. Females may be prone to be more socially active, and this may contribute to their social well-being. Individuals who are unemployed and unable to work are disadvantaged in society, and this may be a contributing factor in lowering their domain satisfaction and social well-being. Contact with nature can have various benefits to an individuals' well-being and may include benefits for their mental, physical, psychological, and social well-being.

Bivariate correlation analysis revealed that population density was correlated with participants' domain satisfaction. Results from the hierarchical regression analysis affirmed that high population density lowers individuals' social well-being and domain satisfaction. A possible explanation for this finding might be that individuals living in denser areas such as the compact city face negative externalities, which may lower their well-being. Some of the negative externalities may include noise, traffic, congestion, and these factors may lower their satisfaction levels compared to those living in less dense areas. However, earlier studies have found income to be contributing factor as wealthier families might choose to reside further away from the inner city thus improving their well-being, but in this study, income did not alter the results which are interesting findings to explore further in the qualitative analysis

4.3 Qualitative content analysis

The preliminary analysis of the interview data revealed a few codes and themes (Appendix C), which were then narrowed down in the final analysis. The first key codes and themes that were recurrent in all the interviews when discussing Reykjavík urban form as relating to respondents well-being are; housing size/condition, access to backyard/garden/balcony, neighborhood vegetation access and quality, access to green space, perceived privacy, and access to open space. In addition, there was the proximity to entertainment services, the rootedness of the area, proximity to the city center, proximity to the workplace, neighborhood noise, noise pollution, proximity to services, good neighborliness, neighborhood walkability, and neighborhood safety. These codes were mentioned in multiple interviews and formed the basis for the final analysis.

Some of the codes originated from the direct questions asked to the interviewees. These codes are dwelling characteristics, access to green spaces, vegetation access and quality,

population density, good neighborliness, neighborhood walkability, proximity to services, and access to open space. The remaining codes appeared spontaneous by the interviewer, and they are perceived privacy, proximity to entertainment services, the rootedness of an area, sense of belonging, neighborhood diversity, proximity to the city center, noise pollution, and privacy and isolation.

Following the full analysis of the fourteen qualitative interviews, the key codes and themes were divided into groups to answer the second research question. The second research question aims to explore in-depth how urban form affects the subjective and social well-being of residents while expounding on the quantitative results. Nine key themes emerged after grouping the initial codes as related in answering the second research question.

For the analysis, the participants were grouped into two areas according to their residential address, compact neighborhood residents, and low-density suburban neighborhood residents according to how they describe their surroundings. Compact neighborhoods are those with high population densities, apartments/ high-rise buildings, and mixed land-use, both commercial and residential. The participants included in this category live in the city center (Austurbær, Miðbær, and Vesturbær) and near the city center (Laugardalur, and Birkigrund in Kópavogur) represent the compact area residents. On the other hand, low-density suburban neighborhoods are those with lower population densities, detached homes, and separate land uses. Participants included in this category live further away from the city center (Grafarvogur, and Grafarholt, Álftanes, Hafnafjórður, and Mosfellsbær) represent the low-density suburban area residents in this study.

4.3.1 Social environment and interviewee's social well-being

The second research question asked: *How do the urban form characteristics affect interviewees' subjective well-being and social well-being?* Five key themes emerged as affecting interviewees' well-being from the neighborhood socio-relational aspects in all the interviews. The four themes that affect participants' social well-being are (1) neighborhood composition, (2) neighborhood attachment, (3) open space access, and (4) proximity to entertainment and cultural facilities. These five themes were present in almost all interviews and are closely related to each other and help to answer the second research question.

Neighborhood composition

How diverse a neighborhood is, in terms of ethnicity, cultural differences, age-groups, or language, can affect an individual's social integration into a community and may affect their social well-being. Interviewees mentioned the benefits of social diversity and social acceptance in the neighborhood for their well-being. In this study, there was suggestive evidence that neighborhood social diversity may be positively associated with the socialization of some participants in compact areas. In contrast, neighborhood diversity may also negatively be associated with socialization due to language barriers in suburban areas. These three different quotes below demonstrate the effect of neighborhood diversity on participants' social well-being.

“for well-being, I could talk for two days [laughs]. People are allowed to be as they are, so I think it matters a lot, a positive attitude and diversity. There are people who live there from many different origins, and I think it's (diversity) really positive. Yes, such diversity.” (Interviewee 2: Female, Austurbær, compact neighborhood resident, coupled-no kids)

“so, there are other tiny houses on the same, on the same plot, umm although I don’t have much contact with them, they speak very limited Icelandic and kind of no English. I would want to get to know them if we spoke the same language, it would be very fun to(communicate).”(Interviewee 4: Female, Grafarholt, low-density suburban area resident, single-no kids)

“Well, my neighbors, you know, they are Icelandic, so they do not really talk. So, but it is quite good, we have like a Facebook group and every time there is something, you know to do with the house. It is quite nice, especially the one downstairs, where you can see into the house, they always greet, of course.” (Interviewee 5: Female, Álftanes, suburban area resident, coupled-no kids)

The theme of neighborhood composition, as discussed by participants, highlights the role that neighborhood diversity may play on residents’ social well-being in both the compact and suburban areas. Some interviewees living in the compact areas were happy with the social acceptance and integration of various cultural groups in the neighborhoods. However, some participants residing in some suburban areas who encountered language barriers were not pleased with the social aspect. There were some indications that neighborhood diversity may influence interviewees' social integration in different areas in Reykjavík.

Neighborhood attachment

Interviewees spoke on how having familial and friendship connections in an area, created a basis for social support and may create neighborhood attachment. Having that social support is beneficial for their social well-being. The participants living in both the compact areas and low-density suburban regions mentioned the social support gained from living near family and friends. There were indications that the sense of familiarity and recognition of others created a sense of safety.

“Finally, we have quite some people we know there. We know a couple from Scotland who moved there and have a guest house there. And finally, the other grandparents of the grandchild of my boyfriend live there. So, we have dinner parties on both sides, so it’s quite nice.” (Interviewee 5: Female, Álftanes, low-density suburban area resident, coupled-no kids)

“It was a bit of a must to choose then at least a neighborhood where (the family) felt safe [Icelandic: tryggir?], had lived before, and knew people, and, so it was actually for that reason:” (Interviewee 7: Male, Grafarvogur, low-density suburban area resident, father of one)

“My wife’s parents live relatively close by, well she grew up there and knew uh the neighborhood and all that, I grew up in Vesturbær, so she kind of persuaded me to go there and just, I’m satisfied with it..” (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, married-three children)

“Ehh... so, this is the Seltjarnanes, just, so we feel it is a bit like a small local community (in the sense of those small fishing villages in Iceland I think), though this is in, in the Capital city, so it’s like, you know you recognize [alternative: know] quite many on this, this stamp (used as a small area of land). You know many of your neighbors, even though you don’t know them. There is this, automatic like neighborhood watch going on kind of and one can, yes, people are chatting together a lot” (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, married-three children)

Moreover, participants’ feelings of belonging and rootedness to an area that feels ‘lived-in’ made them feel good and creates a sense of attachment to the area. Interviewees mentioned being able to participate in activities, and this was positive for their well-being. Living in a well-established area was mentioned as a very positive attribute to a residential area.

“There are many things which I find positive about the neighborhood and make me feel good, and I have incredibly positive emotions towards. I feel like I ‘live’ there [alternative translation: I feel like I belong

there]. If you want to take part in it, then there are all sorts happening.’’ (Interviewee 8: Female, Vesturbær, compact neighborhood resident, single-no kids)

‘‘So, it’s obvious, most things in this neighborhood are very established, one feels very good, it matters a lot, I at least cannot really imagine moving away.’’ (Interviewee 9: Male, Miðbær/Vesturbær, compact neighborhood resident, father of one)

Neighbors, just like family and friends, can be a source for social support and assistance and may influence an individual’s well-being. Helpful neighbors may also create some security in the neighborhood by being each other's keeper (Interviewee 3: Male, Seltjarnanes).

‘‘Yeah I at least find it to be a big benefit (neighborly vibe), I didn’t choose this place because of that, but I think it’s a benefit after having experienced it there, it’s a certain security and you know when my neighbors go on holiday, they often let us know you know ‘just so you know if there is any traffic [in the sense of strangers around the house]’. And we do the same, so, for example, the neighbors sometimes leave the teenagers behind, just ‘hey if they have a party, then let us know’ hehe. So, it’s like that, very good. (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, married-three children)

Moreover, interviewee 3 (Male, Seltjarnanes, low-density suburban area resident) expressed his displeasure with his previous residency, living in a social apartment due to the noise from parties.

‘‘I’ve lived in an apartment building where there was a social apartment, and it was kind of like a lot of disturbance from it and, and... often like, horrible parties on weekends, and, different and like, so I wouldn’t want to go back to, such an apartment building just because of that experience, it was just somehow, a bad experience, so I, yes. We ideally just want to be in such a single-family home. So, and are just happy where we are.’’ (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, married-three children)

Participants spoke on many issues connecting to their attachment in a particular neighborhood, and this was viewed as important for their social well-being. Participants mentioned that familial relationships and knowledge of an area prior, as an influence in their choice of residential location. Additionally, some suburban residents expressed their satisfaction with having family and friends living close by for social support. Moreover, the recognition of residents living nearby may create feelings of belonging and a sense of trust, which may foster a sense of community, as mentioned by one participant. Residents may choose to reside in an area for an extended period when there is positive social contact.

Good neighborliness can foster a sense of community when there are positive social relations that provide social support and perceived safety in an area, and this was mentioned as positive for the social well-being of an interviewee. However, residents may also prefer living in areas where there is less nuisance from the neighbors, and this includes rowdy and noisy neighbors, which is primarily a problem in compact areas where there is shared housing due to high population density. Findings suggest that living in social housing may be detrimental to participants' happiness, as pointed out by an interviewer. Neighborhood engagement activities such as assisting each other when in need or looking out for each other, may provide a basis for social networks and thus improve participants’ social well-being.

Access to open spaces

Participants mentioned access to open spaces such as urban parks and community centers in compact neighborhoods as affecting their social well-being. Interviewee 10 (Female, Laugardalur, compact area resident) and 11 (Female, Austurbær, compact area resident),

spoke about the social benefits of having access to the urban shared garden, in terms of being able to host parties and the well-being of the children.

“(Neighborhood vegetation) It’s very good, we, of course, have uhh, Hljómskólagarðurinn just right by us, umm, there there’s an uhh, grill accommodation for example which is open to the public and we can host kids birthday parties there, you know that’s awesome.” (Interviewee 11: Female, Austurbær, compact neighborhood resident, mother of one)

“It is a very short distance to a large open area, Laugardalur, Húsdýragarðurinn, the Botanical Garden, the kids love it.” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

The compact neighborhood participant (Interviewee 10: Female, Laugardalur) also mentioned her displeasure with the densification policy in certain areas that might reduce the open spaces available for outdoor recreation and negatively affect individuals' social well-being.

“I find many things being taken to the extremes like building on the heart garden square where there was built a hotel instead of having an open space; it is very necessary for people to have open spaces, squares, and the like.” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

Access and availability of open spaces in compact neighborhoods were suggested as having a positive influence on the social well-being of some interviewees living in compact neighborhoods. Public spaces providing outdoor recreational services, should not be substituted for residential or commercial properties as it may negatively affect the social well-being of residents.

Proximity to entertainment and cultural facilities

Participants mentioned access to service centers such as pubs, and cultural centers such as cinema and theatres, in both compact neighborhoods and low-density suburban neighborhoods as affecting their social well-being. Participants living in both the compact neighborhoods and low-density suburban neighborhoods reported the importance of access to entertainment services for their well-being. One participant living in a compact neighborhood (Interviewee 13: Female, Miðbær) was pleased with the short travel time to access cultural services and mentioned that those places were important to her quality of life.

“; [places important for your quality of life]yes, you know, the cultural life of the city center, umm, I like to have the big art museums so close to me, uhh, the Sundhöll, and just bars and restaurants, it’s just, it’s just a giant, giant factor. (Interviewee 13: Female, Miðbær, compact city resident, mother of one)

Moreover, another participant living in the suburban areas (Interviewee 4: Female, Grafarholt) also expressed the importance of access to cultural services and entertainment facilities for her well-being even though she needs to drive to get to them.

“I often go to Reykjavík FabLab, doing something fun, and with family, friends, I find it terrific to go to the cinema, I find it very fun, how much life there is, and there are so many festivals and concerts and. uh, there is really a lot of life, if I want to go to the theatre there’s always the theatre if I want a concert then there’s always one somewhere, so, I feel that that’s really good, regarding the culture, yeah.” (Interviewee 4: Female, Grafarholt, suburban area resident, single- no kids)

While two other compact neighborhood residents (Interviewee 8: Female, Vesturbær, and Interviewee 2: Female, Austurbær) mentioned the convenience of having facilities such as cafes nearby as a basis to meet with people, and this contributes positively to their social well-being.

“[places important for quality of life] Yes, I go to the cafes a lot. Where I go mostly is just right here downtown, I am mostly just in this area. Then I go to visits. We are very active in inviting people home. (Interviewee 2: Female, Austurbær, compact neighborhood resident, coupled-no kids)

Another participant living in the suburbs (Interviewee 7: Male, Grafarvogur) also spoke about his social well-being when discussing the importance of the local pub for socialization.

“there’s a pub, I find that the pub atmosphere is quite important, you know, I like it, so, and, and it [the pub atmosphere] is fun there in Gullöldin even though it’s a bit like, umm, like kind of a fisherman’s pub, but, the atmosphere is good there, and so I, we have sometimes met up there and also just gone with my wife and something. I find it very fun.” (Interviewee 7: Male, Grafarvogur, low-density suburban neighborhood resident, father of one)

Participants living near the city center and the local centers in the suburbs mentioned their social well-being as being positively affected by residing near the city center or a local center. At the same time, interviewee 10 (Female, Laugardalur, compact area resident) expressed her feelings of boredom that would arise if she had to live further away from the city center. In addition, others chose the city center location due to the proximity to entertainment services.

“No, uhh, I wouldn’t say that, it’s of course in the city center, and that which uhh, places to meet people and places for uhh, social interaction, in general, are just the city center, all of it [of the city center]. It’s very, very important to me.” (Interviewee 11: Female, Austurbær, compact city resident, mother of one)

“I would preferably not want to go, you know, far outside a downtown core, basically, it depends on the further away we go the less exciting it is for me.” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

Moreover, having swimming pools and access to a gymnasium was also mentioned by participants when discussing the social, physical, and mental benefits they receive for their well-being.

“[places important for improving quality of life]the gym is important, these visits I go to, I also go to my parents and my friends. I find it very important.” (Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

“[How the city supports well-being]There are, of course, the pools.” [the significance of swimming]It improves both my physical and mental health. I go into the cold tub, and it works as well.” (Interviewee 2: Female, Austurbær, compact neighborhood resident, coupled-no kids)

“It can be, talking to people in the hot tubs. Yeah, you can, of course, do that, meet people, yes in the pool.”(Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, married-three children)

“(where to meet people) Well in the pool. And you can meet the president very often in the pool.” (Interviewee 5: Female, Álftanes, suburban area resident, coupled-no kids)

The proximity of entertainment services and cultural facilities may contribute positively to the social life of participants through organizing gatherings with their friends, which enhances their social well-being, as suggested by some interviewees’ responses. Participants’ access to cultural and entertainment activities may create a basis for social interaction, cohesion, and inclusion of residents in an area. Interviewees’ responses suggest that access to public spaces such as pools and gymnasiums may also provide physical and mental well-being for participants. There were indications that the urban form features such as access to open spaces in addition to localized, supporting services such as entertainment and cultural

facilities, may help interviewees' social well-being in both the compact city and suburban neighborhoods.

4.3.2 Physical environment and interviewees' subjective well-being

Five key themes appeared as affecting an individual's physical and mental well-being from the neighborhood structural, functional, and contextual aspects in all the interviews. The five themes that were identified as affecting an individual's physical, emotional, and mental well-being are (1) neighborhood quality, (2) green space access, (3) commuting time, (4) housing necessity, and (5) Population density. All these five themes emerged in response to the interview questions asked by the interviewer and helped to answer the third research question.

Neighborhood quality

The theme of neighborhood quality emerged after grouping three codes from the interviewees related to the quality of the neighborhood as affecting an individual's well-being. The four codes are neighborhood walkability, traffic management, and noise pollution.

An interviewee living in the city center in Hofsvallagata (Interviewee 6: Male, Miðbær/Vesturbær) expressed the constraint that the neighborhood design in terms of lacking cycling paths, puts on his family and well-being. The participant mentioned that he would prefer to cycle more and is unable to while stating that he would be interested in residing in a place more geared for walking traffic.

"I really like to like... use bicycles, and like... I would really like to, like take a bicycle for going around, and like, one thing for example for the bicycles it will be for most of these areas there are no paths for cycling in, because it's quite compact areas, and there are no facilities for those" (Interviewee 6: Male, Miðbær/Vesturbær, compact city resident, married-no kids)

"Of course, it would be nice to live somewhere that... you have a nice walking area nearby" (Interviewee 6: Male, Miðbær/Vesturbær, compact neighborhood resident, married-no kids)

In contrast, several participants residing in the city center, and one in the suburbs expressed their satisfaction with the neighborhood walkability and the physical and mental benefits they derive from it, and this contributes to their well-being.

"I feel that my closest environment supports my well-being well; I am anyway relaxed; it's easy for me to be able to go outside and walk, exercise, get fresh air. I think it supports it (well-being) rather than ruins it." (Interviewee 8: Female, Vesturbær, compact neighborhood resident, single-no kids)

".... And that there is good accessibility (in the neighborhood), that matters to me. That I can walk and move." (Interviewee 2: Female, Austurbær, compact neighborhood resident, coupled-no kids)

"Extremely positive(neighborhood walkability), I was thinking about it, for example, in connection with this walk in the morning, it's just an incredibly good start for the day, being alone outside for 10 minutes somehow. Yes, meditation. It is a bit like that, it's like, it's a certain centering [alternative translation: core-ing oneself]." (Interviewee 11: Female, Austurbær, compact neighborhood resident, mother of one)

“[placing bicycle and walk paths] makes it easier for me to run, yes, completely, you know, definitely, uhh. Yes, just access to these places. (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, father of three)

Many participants, regardless of living in compact neighborhoods or the low-density suburbs, spoke about the benefits of neighborhood walkability for their well-being. Interviewees expressed the physical and mental benefits gained by being physically active. Furthermore, they reported on acquiring time for relaxation and meditation in neighborhoods with good pedestrian accessibility that support walkability.

Interviewees living in areas affected by noise pollution expressed their dissatisfaction while those who lived in calm and quiet areas were pleased with the neighborhood. One participant (Interviewee 14: Male, Hafnarfjörður) who previously lived near the city center in proximity to the domestic airport but had relocated to Hafnarfjörður voiced his annoyance with the loud noise emitting from the airport. The participant expressed his disinterest in residing in such an area again.

“And then like the airport is super loud. So, I don't want to live there again, you know. I'm not the huge, not [the best fan of big cities] (mhm) I kind of like where I am right now.” (Interviewee 14: Male, Hafnarfjörður, low-density suburban neighborhood resident, married-no kids)

The negative impact of noise nuisance in the compact area was also real for another participant (Interviewee 6: Male, Miðbær/Vesturbær) residing near the city center in the Hofsvallagata area due to the noise pollution in the area emitting from both traffic and party-goers, particularly on weekends.

“Sometimes it is getting noisy during the weekend nights, that... because it's not that far from downtown and you can hear that, Of course, it would be nice to live somewhere that. you are living with less noise/pollution or noise from the cars and driving and so on” (Interviewee 6: Male, Miðbær/Vesturbær, compact neighborhood resident, married-no kids)

Additionally, noise emitting from construction work was mentioned by one participant (Interviewee 1: Female, Kópavogur) as an annoyance for her family, and this is negative for her well-being.

“These days or so over the past two months, there is some fuss, it's been building out there in Lund [laughs]. Of course, I know it's temporary, there are always some machines and all day long. It's tiring. The kids have also been complaining about it.” (Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

Suburban area residents may also prefer living in quiet areas, and those residing in proximity to cultural and community centers might also be subject to noise pollution, as expressed by interviewee 12 living in Mosfellsbær.

“Noise is of course always a problem there, and noise very easily gets down the hills there. The noise can come down into the valley, so the noise that comes around will be heard tremendously well, e.g., if it's a sports tournament or something like that. Then you hear it very well. It can be annoying, depending on when this is held. Sometimes people have a party there at night.” (Interviewee 12: Male, Mosfellsbær, low-density suburban neighborhood resident, single-no kids)

Loud noises in and near residential areas may serve as a disamenity and cause annoyance and irritation. Noise pollution may be a cause of disruption in daily activities, and this was revealed as negatively affecting some participants' well-being.

Two participants living in the compact city area expressed their satisfaction with living in areas with calm traffic for their well-being. However, one participant (Interviewee 13: Female, Miðbær) mentioned that she might occasionally need to escape some cars when needed.

“ Uhh, cars. I can’t stand cars; I preferably want never to be close to them, umm, which is another thing which is a complete luxury in Þingholt, I can walk on the street to work, I just go down one street, occasionally have to escape to the sidewalk if a car needs to get passed. Still, it’s really calm car traffic, which I really like. Umm, yeah, I don’t really know what else I want to avoid. (Interviewee 13: Female, Miðbær, compact neighborhood resident, mother of one)

‘to be able to walk down to the ocean and experience that, also when you walk around in old Vesturbær, where all the traffic is supposed to be 30, then there is not much traffic, it’s not fast. It’s just a relaxed environment, that’s also a thing I seek. (Interviewee 8: Female, Vesturbær, compact neighborhood resident, single-no kids)

However, the participant (Interviewee 10: Female, Laugardalur) also mentioned her displeasure with the lack of more speed bumps to slow down cars. As a mother, she might be worried about her children’s well-being in such traffic.

“What’s I find the most annoying is that it’s a 30 street, but cars are always driving ridiculously fast, it lacks more speed barriers in the area where I live, but there are speed barriers further up the street, but just outside of where I live cars drive like maniacs, that’s what annoys me the most, but I just moved from one the main traffic streets of the city, so it’s nothing compared to that.” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

One suburban neighborhood resident (Interviewee 3: Male, Seltjarnanes) expressed his hope for the city to manage the traffic better for pedestrians and drivers as this affects his well-being.

“If it’s possible to ease the traffic, then the city is helping me(for well-being). That’s always popular.” (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, father of three)

Residential environmental quality may affect individuals’ well-being in various ways. Neighborhood accessibility was mentioned as a positive feature by several participants living in compact neighborhoods and low-density suburban neighborhoods, and this may promote their physical well-being. Participants in both compact neighborhoods and low-density suburban areas expressed their displeasure with living in areas affected noise pollution as it may impede on their well-being. Moreover, interviewees reported on their preference for living in areas with calm traffic for promoting their well-being.

Green space access

Many participants who took part in the interviews expressed some sort of satisfaction gained with green space access to their health or wellbeing. Participants who had access to private gardens and yards spoke about the physical and social benefits gained from access to these spaces.

“(private garden) We use [the garden] very much, the kids play there, or when there is good weather”.
(Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

Private garden can serve as a privacy tool in the compact and low-density suburban areas, and two participants spoke on the privacy aspect of private garden access. In particular, one compact neighborhood participant (Interviewee 10: Female, Laugardalur) stated that her

decision to choose the house was influenced by the added benefit of a private garden to ensure privacy for her family. She can use to garden with her children for physical benefits as well as social benefits, showing the importance of green space access to her well-being.

“Yeah, I mean there are gardens everywhere, everyone has their own hedges, and in the summer, there is constant gardening going on with everyone.”

“[How it is important]I feel it’s like, yeah both to have more private, the privacy you know it’s like, it’s a certain natural fence, between, and also just beautiful, and you know, yes, I kind of like it.” (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, married-three children)

“it’s so important to me to be able to have a garden, it’s really important to me to have privacy,” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

“I plan to work on the garden so that we can spend more time in it and have a good outdoor area, with a larger porch, as I feel very good outdoors, and there is a lot of nature in this garden.” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

Moreover, participants living in compact neighborhoods who did not have private garden access still expressed the benefits of having shared green spaces for their physical well-being. In particular, one even went further to mention that they selected the location to be near nature (Interviewee 1: Female, Kópavogur).

“We just live there right below, Fossvogur. From there, natural paths are just in every direction. I was very much outside running, and of course, I used it very much, and the kids play there, and there is frisbee golf, you can go out into Nauthólsvík, bicycle or walking or something like that. It will be useful in such leisure time.” (Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

“it was bright, the main thing was the environment in this neighborhood, and to have all green, we had searched a lot, and there were not many places that were green, and it is also cheaper to be here, and we just searched for that that we could pay and be near nature, the children can walk everywhere.” (Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

“in this flat that we will have access to a kind of... green park area. Very near like, within two minutes from our place. Which is very good that we can go and take a walk and it’s very handy and accessible for us, and there’s a playground for the babies and kids, and so on, so it’s a good advantage when we selected this and then we noticed that was a plus too. It’s a backyard, but it’s public.” (Interviewee 6: Male, Miðbær/Vesturbær, compact neighborhood resident, married-no kids)

Additionally, participants living in the suburban and compact areas spoke of the psychological benefits of vegetation access to their mental well-being. One compact city respondent (Interviewee 1: Female, Kópavogur) spoke about the healing benefits she receives from the neighborhood vegetation, saying that’s it’s essential for her well-being.

“yes, the forest (laughs) and nature, and here it is completely serene/peaceful/quiet here yes, yes, there are maybe what I feel good about is the vegetation. There are root grown trees here, it is, uhh yes but umm, but to have life, both animal life and human ha-ha. I’m very lucky with that(vegetation cover)” (Interviewee 4: Female, Grafarholt, low-density suburban neighborhood resident, single-no kids)

“Yeah, I just feel it is really healing (neighborhood vegetation), I often feel like during the summer; I feel like I live somewhere in the Nordic countries. There is so much forest in there; this is kind of weird you just feel the smell of the trees, I don’t know what it is completely, you feel like this is a Swedish forest. It’s a good feeling.” (Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

“ [city supports well-being I feel very comfortable living near the Fossvogur valley, and the trees that are there and the vegetation, I find it important., it feels good in the town(Kópavogur). (Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

Moreover, living in barren land was suggested by an interviewer as an unattractive option for residential location choice, which can indicate that aesthetic appeal and neighborhood vegetation matter for participants' well-being.

“Yeah’ (neighborhood vegetation matters) I couldn’t think of going to Kóra neighborhood where everything was so bare and ... I’m naturally raised in such a green/sprawling neighborhood. And I think it might have had some effect/factored. I couldn’t think of going anywhere like everything was new and bare.” (Interviewee 1: Female, Kópavogur compact neighborhood resident, mother of three)

Proximity and access to green space in both the compact neighborhoods and low-density suburban neighborhoods were mentioned as beneficial for the participants' physical, mental, and psychological well-being. Participants living in the compact areas who had access to private gardens also mentioned the benefits of privacy accorded to them from their garden spaces. Several participants expressed their satisfaction with having access to green spaces in their residential areas, whether public or shared. Additionally, interviewees reported seeking well-vegetated areas as opposed to bare areas, which may tie into the neighborhood aesthetic appeal in attracting potential residents.

Commuting time

Several participants residing in the city spoke on the convenience of residing close to areas of interest for their day to day activities such as grocery stores, entertainment centers, and places of employment, and this affects their well-being.

“[places important for quality of life]It’s mainly the center [Miðbær], ... all the places that I can very easily walk to from it(home). I have just, a huge amount of, uhh, local services within walking distance from my home.” (Interviewee 13: Female, Miðbær, compact neighborhood resident, mother of one)

“There are many things that make me feel good. It’s [neighborhood] a short walk down to the sea, and I see the view from there. It’s a short distance to a lively neighborhood, a service area where Grandi is. Short distance to the center as well, I feel that’s all positive, how that’s all come to life.” (Interviewee 8: Female, Vesturbær, compact neighborhood resident, single-no kids)

“I think it’s very comfortable to be this close to the [city] center, without being in it, and I find it very comfortable how short it is to a lot of services.” (Interviewee 8: Female, Vesturbær, compact neighborhood resident, single-no kids)

“[places important for quality of life]I’m happy with the school, it’s pretty close, it’s about 800 m. They always walk to school, except if we wake up late, or if it is crazy weather or something. So, I feel good at Kópavogur town; it feels good in the town (Kópavogur). (Interviewee 1: Female, Kópavogur, compact neighborhood resident, mother of three)

Additionally, one participant living in the suburbs spoke about his satisfaction with the short commuting time to access shopping centers, schools, entertainment services.

“it’s comfortable too (proximity to services), my boys, umm, that we can send our boys, or go with them for all sorts of entertainment there is, they can go ice skating, bowling, cinema and, you know, it just takes 5 minutes to walk out there. (Interviewee 7: Male, Grafarvogur, low-density suburban area resident, father of three)

Participants also spoke of their displeasure with residing in areas with limited access to services and longer travel time to access services when prompted to express where they would least prefer to reside as living in such areas negatively affects their wellbeing

“And then you got school campus, so like... walking to groceries, the closest places were half-hour walk away. (mhm) Which in stormy weather isn't the funniest thing to do. (mhm)” (Interviewee 14: Male, Hafnarfjörður, suburban area resident, married-no kids)

Proximity to supporting services in a neighborhood such as grocery stores and occupation and education institutions was mentioned as positively affecting the well-being of participants in this study both in the compact city and suburban areas. The reduced travel time to these areas gives some participants the luxury of walking instead of using transportation services, which is beneficial for their physical well-being. Areas with limited access to services or no service access are viewed to be unfavorable by participants as residential areas. And this is highlighting the importance of localized services in both compact and suburban areas.

Housing necessity

A few participants who were all homeowners spoke on their satisfaction with the size of their homes, and one participant expressed her need to have a house with a certain amount of rooms, which was a necessity when purchasing her home. The participant was pleased that her children had their own rooms. Moreover, participants who were satisfied with the size of their houses expressed their delight in having extra storage area.

“The house had the number of rooms I was looking for...and this house just ticked all the boxes. The house, it is about 100 square meters, is a very good size, there are three bedrooms, so the kids have their own room” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

“Ok, yeah, so my apartment is I think around 75 m², it has two bedrooms, I've had it for a year, and it's cool. And yeah, downstairs, I have a storage room and stuff like that.” (Interviewee 6: Male, Miðbær/Vesturbær, compact neighborhood resident, single-no kids)

“I have to say the (housing) price was a very strong influence and the size, because we lived before in a 50 sqm flat, with one bedroom, and now it is 74 sqm, also just with one bedroom but you just have a bit more space, and you have like a geymsla (storage room). Interviewee 5: Female, Álfanes, suburban area resident, coupled-no kids)

Also, for the social aspect, one participant who had an extra room in her home stated that she was pleased to be able to entertain guests in her home without feeling crowded.

“It's (house) 71sqm, that's just fine for me, I can receive people and let them sleepover, they're not in my way, even... I have had a tenant, and that was just fine. Now I have more space for all my junk [laughs]. (Interviewee 8: Female, Vesturbær, compact neighborhood resident, single-no kids)

Two participants who are both homeowners spoke about the importance of having a home for their quality of life, with one expressing the luxury of relaxation in the home.

“[places important for quality of life]It's just my home, this house, is a giant factor in my quality of life.” (Interviewee 13: Female, Miðbær, compact neighborhood resident, mother of one)

“[places important for your well-being]Uhh, it's my home. I work a lot, and it's uh, important to me, and then there's relaxation in between which is then the home.” (Interviewee 7: Male, Grafarvogur, low-density suburban neighborhood resident, father of three)

Interviewees' responses suggest that housing can be considered necessary for individual well-being both in the compact neighborhoods and low-density suburban areas. One participant mentioned that price was a determining factor in the choice of home, and this may indicate that there is a need to have more affordable housing. Housing size may also

contribute to individual well-being by allowing the delegation of individual rooms and some form of personal space in a home. One participant also mentioned the benefits of having a home with an extra room for social well-being when hosting guests.

Population density

Density in urban areas can affect well-being negatively due to the lack of privacy when living in close contact with other residents. Two residents residing in compact neighborhoods and one in the suburbs expressed their need for having privacy as affecting their well-being. It is important to note that neighborhood vegetation may serve to create some privacy, which may be considered beneficial for well-being. One participant spoke about her desire to not live in an area with a small private space and having a lot of neighbors, while another spoke of having the privacy to not be near other residents which can be associated with social housing. Moreover, another participant living in the low-density suburban areas mentioned that she would experience more disturbance from her neighbors if they were denser.

“I do not want to live in a big apartment house, where my only private area would just be a small balcony. Yes, first of all, I do not want to live in a big apartment building with a lot of neighbors and a small private area.” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

“a lot of peace and quiet, and the neighbors can't see in, which I think is a very good advantage, having that privacy, not to close to other residents.” (Interviewee 10: Female, Laugardalur, compact neighborhood resident, mother of two)

“[importance of vegetation]... I feel it's like, yeah both to have more private, the privacy you know it's like, it's a certain natural fence, between, and also just beautiful, and you know, so I once lived in Stockholm there's a lot of vegetation, but I just, yes, I kind of like it.” (Interviewee 3: Male, Seltjarnanes, low-density suburban neighborhood resident, married-three children)

“If it(the area) were denser I would hear my neighbors too much, so yeah, it's like, yes...” (Interviewee 4: Female, Grafarholt, low-density suburban neighborhood resident, single-no kids)

Another participant living in the suburban area spoke about how population density might affect her well-being in terms of feelings of isolation when living in more dense areas. She mentioned her need for having a small community around her not to feel isolated, highlighting the importance of social well-being to individuals living in the suburban areas. She also mentioned feeling more isolated if the area was less dense than it was at that moment. Another participant also mentioned feelings of isolation when going for walks in a sparsely populated area in Hafnarfjörður and his need for having some social contact. The participant mentioned that it affected his well-being when walking and having no one else around.

“And also, there are humans; people live here, people work here, and, I'm never isolated even though I don't talk to them a lot then we always say good morning and stuff like that.” (Interviewee 4: Female, Grafarholt, low-density suburban neighborhood resident, single-no kids)

“I want to move to a smaller community, I feel that it's lacking, like in Copenhagen I was more isolated than in Reykjavík, and I was more isolated in Reykjavík than in Mosfellsbær, so it's somehow the smaller the town, the less isolated, it works in the opposite way because there are so many (people), but, I a little bit want a smaller community, yes.” (Interviewee 4: Female, Grafarholt, low-density suburban neighborhood resident, single-no kids)

“it's maybe just the people [direct translation: human life], to have the people, but it's just really boring to walk for 10 minutes before I see the first person who is walking in the same direction or hear someone or

something like that.” (Interviewee 9: Male, Miðbær/Vesturbær, compact neighborhood resident, father of one)

Participants living in the compact city had mixed feelings about the population density, and densification when asked what they thought about it and how it affected them. One participant was pleased with the development in the area due to densification as it had allowed better accessibility and service access.

“I have been living in this street for seven years now, and we have seen so many incredibly positive developments. When we moved, there was no cafe where we live now, and the house there called Stakkholt? “It was a hole with garbage, and Hlemmur was no Mathöll; it was just Hlemmur. Actually, the most positive thing that has happened is just the development all around us. Now we have a sidewalk here. There was never a sidewalk here, you understand. We always had to walk on the other side and then cross the street.

I: So, you are happy with the development and densification that is happening right now?

“Very much indeed, I am incredibly pleased with it.” (Interviewee 2: Female, Austurbær, compact neighborhood resident, coupled-no kids)

The high population density in the compact city can create feelings of overcrowding or lack of personal space, and this may cause some participants to seek a bit of privacy from their close neighbors, which affects their well-being. In this study, both compact neighborhood participants and low-density suburban neighborhood participants mentioned their need and access to privacy, and this may be due to higher population density in these areas. Additionally, one participant was thrilled with the densification and development in their residential areas due to better service access and accessibility.

4.4 Concluding interpretation of qualitative results

The qualitative analysis suggested many potential areas of general interest in how the residential environment, both in the compact neighborhoods and the low-density suburban areas, may affect the respondents' social and subjective well-being. The interviewee's responses suggest that the urban form does can affect participants' subjective well-being and that social well-being is just as important in the urban form context.

The main themes suggest some relationship between the urban form and the subjective and social well-being of residents. Most of the interviewees mentioned the necessity for green space access, and vegetation access, as well as the importance of neighborhood accessibility as some of the physical built environment characteristics affecting their mental and physical well-being. The presence of these urban form features, and the benefits gotten by respondents in these areas was expressed as positively affecting their well-being, while the lack of was negative for their well-being. Additionally, interviewees discussed the benefits of open space access and proximity to cultural services and entertainment facilities for their social well-being in the Reykjavik metropolitan area. Moreover, participants also mentioned good residential environmental quality and the significance of good housing for their well-being. Finally, respondents had mixed feelings on the role of population density and area densification as affecting their well-being.

Some themes have relationships whereby they influence each other and interact in influencing respondents' well-being, as seen in this study. A relationship may exist between access to green spaces, vegetation access, and aesthetic appeal of the neighborhood.

Moreover, access to open spaces can influence both subjective and social well-being. Also, access to services influences the choice of location for respondents and their subjective well-being.

4.5 Summary of quantitative and qualitative results

Both the qualitative and quantitative results reveal the role of the urban form in subjective well-being, as influenced by several factors in the respondents' perceived built and social environment. The importance of the respondents' social environment was discussed frequently in the interviews. It was somewhat evident in the quantitative survey results, as the hierarchical regression analysis showed the influence of population density as affecting respondents' social well-being. Moreover, women, couples with children, and respondents preferred to live near nature and have some privacy; all reported higher levels of social well-being. In contrast, unemployed individuals and those living in homes with fewer inhabitants had lower social well-being. Unemployed individuals might be disadvantaged in society, whereby it might be more difficult for them to fulfill their needs, such as access to some daily services due to income restrictions. Moreover, individuals who are unable to work may have feelings of hopelessness due to not being able to be in the workforce and might be financially independent, which lowers their life satisfaction and domain satisfaction. Additionally, it might be more difficult for unemployed individuals to partake in social activities and go to cultural events, which might play a role in lowering their social well-being.

Results from the quantitative analysis revealed that population density near respondents' home had a major negative impact on participants' social well-being. Interviewees discussed the negative effects of population density on their well-being, and the two major takeaways were the need for privacy in compact areas and feelings of isolation in densely populated areas negatively affecting respondents' social well-being. Moreover, results from the hierarchical analysis revealed that respondents' preference for living close to nature and recreational services, and privacy was positive and significant for their social well-being. Respondents who scored high on their preference for nature and privacy preferred having a large yard and were not comfortable living in multifamily units due to the lack of privacy, which was reflected in some interviews. Interview results suggest that having a private yard, or some neighborhood vegetation that acts as a barrier might be beneficial to give participants some privacy from neighbors.

Interview results suggest the physical and mental well-being benefits that participants gain, and it is connected to green spaces availability near residential areas and neighborhood vegetation. Interviewees were also very happy with having great accessibility in their neighborhoods, and they spoke of the physical benefits of the walkability factor in both the low-density suburban neighborhoods and compact neighborhoods. However, contrary to the qualitative results, the quantitative survey results showed that the GIS-based urban form measure of green space access and street connectivity had no impact on residents' overall well-being. This could be explained by the different aspects of well-being whereby when respondents answer the survey, it might be based on evaluative or emotive components of their life, which is different in interviews.

Moreover, findings suggest the importance of walking paths in residential areas and good street connectivity as participants expressed their satisfaction with being able to go on walks and exercise. Therefore, the neighborhood accessibility and walkability design may influence participants' physical well-being. Additionally, findings suggest that participants were in favor of having good residential environmental quality for their well-being, such as clean and well-vegetated areas, as opposed to living in barren areas.

In addition, content analysis suggests on the benefits of reduced distances for participants to access daily services. Participants mentioned the benefits of short commuting time to obtain their daily services such as grocery stores, entertainment services, as well as workplaces and schools, as positively affecting their well-being. The preference for living in a neighborhood with less noise pollution, or traffic inconveniences, regardless of being in the city or suburbia, was discussed in the interviews as having a positive influence on respondents' well-being.

Interviews results also suggested that housing may be an essential aspect in supporting individuals' well-being as determined by size and condition, especially for relaxation and to some extent fostering social well-being. Interviewees discussed their satisfaction with owning larger sized homes with extra rooms for their social well-being, such as having guests over and each inhabitant having their own place.

5 Discussion: Urban Form and Subjective Well-Being

This study set out to analyze the relationship between the built and social environment on respondents' self-reported life satisfaction, domain satisfaction, and social well-being. Quantitative analyses assessed the relationship between GIS-based urban form measures, dwelling characteristics, personal attitudes, and socio-demographic characteristics of young adults in the Reykjavík region with their self-reported life satisfaction, domain satisfaction, and social well-being. The qualitative analysis explored how urban form characteristics relate to interviewees' subjective and social well-being, as well as determining whether the experimental outcomes were confirmed in the exploratory analysis.

The results of the survey and interviews suggest how the physical and social environment in the Reykjavík Metropolitan region affects respondents' life satisfaction, domain satisfaction, and social well-being. Regression analysis findings indicate that population density is linked negatively to respondents' domain satisfaction and social well-being. Several factors that may contribute to residents' subjective well-being were identified in the interview analysis. Some solutions to improving respondents' subjective well-being through the synthesis of the data, can be determined as well as suggestions for future planning strategies and directions for future research.

5.1 Quantitative results

The first research question asked: *What is the relationship between respondents' life satisfaction, domain satisfaction, and social well-being with the urban form characteristics in the Reykjavík region?*

First and foremost, findings from the bivariate correlation analysis revealed that respondents' life satisfaction, domain satisfaction, and social well-being are not affected by proximity to the city center, green and open space access, and street connectivity. These findings are contrary to previous studies that found greenspace access (Davern et al., 2017; Lee et al., 2011), proximity to the city center (Brown et al., 2016), and street connectivity (Cao, 2016), as affecting respondents' subjective well-being. One explanation for the difference in this study's findings with previous studies, may be attributed on the sample chosen, young adults. Moreover, it may due to the difference in components of well-being, effective component (momentary pleasure) and cognitive well-being (long-term benefits), in the responses from respondents.

The main finding indicates that a higher population density around a respondent's home is associated with lower levels of domain satisfaction and social well-being. This negative correlation between population density and domain satisfaction is consistent with the findings of other authors (Cramer et al., 2004; Fassio et al., 2013; Guite et al., 2006; Kramer, 2018). The negative impact of population density on an individual's satisfaction with the life domains might be due to the negative externalities of living in densely populated areas such as congestion, pollution, and traffic. The negative impact of population density on well-being may reduce with higher income as individuals who are financially capable of residing in less dense areas usually prefer to move further away from the city center. However, in this study,

income has no significant impact on lowering the negative effects of population density on respondents' well-being showing that the residential environmental environment might have a more substantial determinant of respondents' well-being than income. It can be inferred that population density is seen as detrimental in both the affluent neighborhoods and the less affluent neighborhoods in the compact areas. Therefore, policymakers need to consider the contexts people live in when making decisions.

Contrary to previous studies (Kytta et al., 2016; Mouratidis, 2018a), this study results found that population density has a negative impact on respondents' social well-being even after controlling for socio-demographic variables. However, this finding is in line with (Cramer et al., 2004) who found that individuals living in less dense neighborhoods to have better social well-being. One reason why high population density near respondents' home is negative for respondents' social well-being could be due to an increase in alienation and anonymity by some residences due to the higher daily impersonal interactions, which may also lead to stress for some individuals and lower their wellbeing. It might be harder to form meaningful, long-lasting social connections in densely populated areas than in less dense areas partly due to some disconnect in densely populated areas.

Results also revealed a few socio-demographic and dwelling characteristics were associated with respondents' life satisfaction, domain satisfaction, and social well-being. In particular, women reported higher levels of life satisfaction, domain satisfaction, and social well-being than men confirming results from previous studies (Aoshima et al., 2018; Appleton et al., 2008). One possible explanation for this result could be that women are stronger against feelings of unexpected stress, and these feelings of loneliness in men tend to decrease their satisfaction as pointed out by (Diener, 1984).

Not surprisingly, individuals who are unemployed and unable to work reported lower levels of life satisfaction, domain satisfaction, and social well-being when compared to respondents who were employed or had some sort of income, which is in line with previous studies (Ardahan, 2014; Ballas et al., 2011; Brereton et al., 2008). Unemployed individuals might be disadvantaged in society, whereby it might be more difficult for them to fulfill their needs, which might lower their life satisfaction and domain satisfaction. Additionally, it might be more difficult for unemployed individuals to partake in social activities and go to cultural events, which might play a role in lowering their social well-being.

Higher-income earners and those with a college or university education reported higher levels of domain satisfaction than lower-income earners and those with basic education, which echoes earlier studies (Appleton et al., 2008; Ardahan, 2014; Vemuri et al., 2009). Individuals who are highly educated might receive better career prospects and job opportunities that may make it easier for them to have a good income. These perks may increase their satisfaction with aspects of their life, such as achievements and material well-being, among others, and this counts to their domain satisfaction.

Furthermore, couples living together or with children reported higher levels of social well-being than single individuals. Earlier studies have found that individuals who are in relationships and those with dependent children report higher levels of satisfaction with their life than those who are single (Appleton et al., 2008; Ballas et al., 2011; Ma et al., 2018). An explanation for the reduced levels of satisfaction among single individuals may be due to a lack of companionship, which affects their wellbeing. Besides, couples with children

might experience better social well-being due to the benefit of having contact with other parents when children play together, which increases their social capital.

Results from the hierarchical analyses revealed that only respondents' preference for nature and privacy improved their life satisfaction, domain satisfaction, and social well-being levels. The reason the choice for greenspace access positively influences respondents' well-being, could be due to the physical and psychological benefits derived from such areas, which is in line with earlier studies (Bertram et al., 2015; Yuan et al., 2018). Moreover, respondents who preferred private yard access and living in areas with vast nature reported higher levels of social well-being. One of the reasons for these findings could be due to some social contact that residents might get from access to such places depending on their level of physical activity, whether predetermined or by chance as found by (Peters et al., 2010)

The question remains of why population density is negative and significant for respondents' domain satisfaction and social well-being even after controlling for confounding variables such as income and homeownership. One possibility could be that the compact urban form may offer employment opportunities that are favorable to individuals seeking to further their skills. Therefore individuals' may choose to reside in such densely populated areas at the detriment of their present happiness in a trade-off for their future happiness. However, not all individuals get to realize their dreams and hopes, living in these densely populated neighborhoods due to the competitiveness and resource allocations. Such individuals might, therefore, become unhappy in their residential areas, and it may also be difficult for them to relocate mainly after investing a lot of their time and years in their hopes and dreams of a better future. Most of these individuals might end up stuck in these dense neighborhoods lowering their well-being. Policymakers who are interested in promoting the health and well-being of residents should aid migration for financially constrained households that have a desire to relocate outside the dense city.

5.2 Qualitative results

The second research question asked: *How do the urban form characteristics affect interviewees' subjective well-being and social well-being?*

Interviews' responses suggested that perceived neighborhood diversity in compact neighborhoods may be favorable for social well-being and unfavorable for social well-being in low-density suburban areas, and this was due to hindrance in social integration from language barriers. These findings can add to the growing literature on social integration, ethnicity, and life satisfaction (Knies et al., 2016). Densely populated urban neighborhoods may be more susceptible to the inclusion of individuals from diverse backgrounds, than suburban areas that may be less susceptible to such integration, especially in smaller communities. Moreover, findings suggest that some residents in the compact neighborhood may experience social isolation, and it may be due to increased densities in these neighborhoods that may result in segregations. Decrease in social support may indicate some form of social isolation for individuals in such areas. Social isolation has mostly been linked to elderly individuals (Mehl, 1992; Rubinstein et al., 1994; Thompson et al., 1990), but this study suggests that social support is also vital for young adults (Cacioppo et al., 2003; Matthews et al., 2016). It is, therefore, an excellent idea to enhance community engagements that foster good neighbor relationships for the well-being of residents. It is, therefore,

essential for policymakers to find ways to equalize quality of all neighborhoods that will enhance social cohesion in communities as neighborhood diversity, when appropriately managed, can be a catalyst for social cohesion.

The content analysis findings suggested that neighborhood attachment, created through having families and friends close by, sense of familiarity, area rootedness, and good neighborliness, can be associated with improved social well-being of residents in Reykjavík city. Slightly more low-density suburban area residents reported on such relationships than compact neighborhoods, which may support findings by (Cramer et al., 2004) on how contact with friends and family for social well-being in more in less dense areas. Also, the qualitative findings suggested that social support and a sense of security and trust of the people in the neighborhood may be vital for individuals' social well-being. These findings suggest that previous research in Turkey (Ardahan, 2014), Norway (Mouratidis, 2018a) on social support and social capital on an individual's social well-being may also apply to young adults in Reykjavík.

The qualitative findings suggested that proximity and access to open spaces, and entertainment and cultural facilities, regardless of the residents' location, in the Reykjavík capital region, had a significant role in the respondents' social and psychological well-being. These findings also support earlier research done in the UK (Guite et al., 2006) and Australia (Abass et al., 2018) with older adults on the significant link between the physical urban environments and the impact on residents' well-being (Guite et al., 2006). The results suggest that the facilities (cultural, entertainment) and opportunities (open spaces) available for enhancing individuals' subsistence needs, such as social capital, participation needs, and leisure needs, may affect may serve to strengthen or prohibit their social well-being. Therefore, urban planning needs to consider the fair distribution of recreational services in all areas of the Reykjavík region.

There were some suggestive implications of the neighborhood residential quality, in terms of traffic, noise pollution, and accessibility, to participants' physical and psychological well-being. Findings suggest that neighborhood accessibility in compact neighborhoods and low-density suburban neighborhoods may promote the physical well-being of Reykjavík city residents by enhancing active travel. These findings agree with an earlier study that found the neighborhood environmental factors as affecting the physical well-being of residents in an area (Pikora et al., 2006) and that active travel may improve the health and well-being of individuals (Humphreys et al., 2013; McCarthy et al., 2018). Moreover, findings suggest that noise pollution in both compact and low-density suburban neighborhoods is detrimental to the well-being of residents in line with (Brereton et al., 2008) findings and that better traffic management in residential areas can improve their well-being.

The qualitative findings suggested that proximity and access to green spaces and vegetation cover in a neighborhood are beneficial for the physical and mental well-being of residents. These findings would be consistent with the two theories that explain an individual's need for contact with nature as green space access may contribute to attention restoration and reduction of stress levels (Ohly et al., 2016; Ulrich et al., 1991). These findings are consistent with earlier evidence of a significant link between the health and well-being of urban residents' and their proximity and access to green spaces in the urban areas (Lee et al., 2011; White et al., 2013; Wood et al., 2017). Moreover, urban green spaces have also been shown to contribute to physical activity (Pietilä et al., 2015). Additionally, having a private garden

offers a bit of privacy in compact areas, which supports the findings on the necessity of urban green spaces (Davern et al., 2017), especially as a buffer from the high population densities.

Many interviewees mentioned proximity to service centers as positive for their well-being. Residents' choice of residential location was also influenced by living close to service areas, and this was because of the short commuting time, and the findings may support the conclusion by (Ma et al., 2018) that short commuting time is beneficial for residents' subjective well-being. Participants may choose in areas that support their well-being and this may include getting good service access while other areas that have poor services may be considered as a hindrance. Moreover, proximity to service access was connected to participants need for living near the city centre and local centers showing that an influx in population density in such areas may be driven by the opportunities available.

Interviews also revealed that housing affects respondents' quality of life whereby, having extra rooms in a house can enhance social well-being. These findings support claims by (Ibem et al., 2013) on the importance of housing for an individual's well-being.

5.3 Synthesis

The third research question asked: *To what extent and in what ways does the urban form affect respondents' and interviewees' subjective well-being and social well-being in Reykjavík metropolitan region?*

In the interviews, social support from family, friends, and neighbors, and proximity to entertainment and cultural services appeared as an asset for the social well-being of residents in Reykjavík city. Moreover, quantitative findings indicate that respondents experience higher social well-being when they live with more inhabitants in a home, and this would highlight the importance of companionship and social support in the neighborhood for well-being, as found in an earlier study (Ardahan, 2014). Hierarchical regression results also found that living in densely populated neighborhoods lowered respondents' social well-being. Interview findings gave some suggestive evidence that compact city residents may face social isolation due to high densities. That neighborhood diversity may create communication barriers for some residents, which may not promote socialization between residents. Both social isolation and communication barriers do not give participants opportunities for social support and may contribute to lowering their social well-being. Another explanation for the lowered social well-being of individuals living in dense areas can be attributed to the availability of outdoor recreational services, and the opportunities availed to residents for social gatherings. Therefore, it may be beneficial to provide more ample outdoor recreational services, which may facilitate interactions between residents.

Many compact area residents expressed their need for living in areas with short commuting time to access everyday services. This finding would suggest that people might choose to live near the city center, which is connected to dense neighborhoods for short distances and easy access to services. However, due to the increased population density in the compact regions, there is more shared housing, and as participants mentioned, social housing might be detrimental for their well-being due to neighborhood noise and reduced private area. Moreover, quantitative findings indicate that respondents' preference for living with some privacy increases their domain satisfaction, and this may not be possible in some compact

neighborhoods due to housing affordability and availability. It can, therefore, be inferred that participants might face a trade-off between living in shared housing that would not give them enough privacy and the need for short commuting time to services by deciding to live in compact neighborhoods. This may be one of the reasons that population density can be seen as lowering respondent' domain satisfaction in Reykjavík city, and the results are in agreement with the earlier study (Brown et al., 2016). Besides, interview findings suggest that traffic nuisance and noise pollution might additionally be linked to lowering respondents' domain satisfaction in compact neighborhoods. Moreover, a few suburban area residents also expressed their satisfaction with living near local centers and shopping centers, while areas with poor service access lowered participants' well-being because of the longer distances for service access, especially in bad weather conditions. New strategies should be developed that ensure all residents, regardless of their location in the city or suburbs, have equal access to services and opportunities available to reduce the influx of people moving to the city center seeking better services and opportunities.

In the interviews, the proximity and access of green space in a residential area were discussed as often being positive for respondents' physical well-being. Many respondents' mentioned partaking in physical activities themselves or their children when they have access to green spaces near their residential areas. Moreover, others spoke of the emotional impact they experience living close to well-vegetated and forested areas, which is in line with previous studies (White et al., 2013; Wood et al., 2017). In contrast, the survey results showed no statistical significance between respondents' overall well-being and access to green spaces. However, the lack of statistical significance with the survey should not be considered to negate the emotional connection and physical benefits between Icelanders and urban green space access that was expressed in the qualitative interviews. This may reveal that respondents might value the benefits of having green areas, but it might be connected to their moods and emotions and brings them momentary happiness but doesn't factor in the long term. Additionally, the regression analysis results of the survey showed that respondents' preference for living in areas close to vast nature and recreation was positive for their overall well-being, which ties in with the responses from the interviews.

5.4 Limitations

The respondents chosen for the study are only young urban residents between the ages of 25 and 40 and, therefore, not inclusive of the entire range of age categories. The choice of young individuals as the target group creates a limitation with age representation. The research solely focuses on three aspects of subjective well-being, which are life satisfaction, domain satisfaction, and social well-being, as has been outlined in the introduction, and elements such as respondents' happiness and positive and negative affect are not included. Moreover, the survey instruments do not cover any questions on respondents' social well-being in their residential locations. Finally, the geographical scope that the study covers is relatively small, and might be viewed as a limitation; therefore, caution needs to be taken when generalizing the findings.

Notwithstanding the limitations above, this research contributes significantly to the literature on urban form and well-being. The study results offer empirical evidence for relationships between urban form characteristics, dwelling characteristics, personal preferences and individuals' life satisfaction, domain satisfaction and social well-being. The findings may

prove helpful to decision-makers looking to reconcile the health and well-being of residents with the different urban forms in the Reykjavík region.

Conclusions and Recommendations

This study provides evidence on how the built environment and the social environment relate to individuals' life satisfaction, domain satisfaction, and social well-being in Reykjavík city. The main issues identified in this study include the significance of the neighborhood social environment for respondents' social well-being, the necessity of the physical built environment characteristics on respondents' subjective well-being, and the negative effect of high population density on respondents' social well-being and domain satisfaction. The city must work with urban designers and planners to create satisfactory neighborhood residential environments, to support residents' subjective and social well-being. Through careful planning, the city can increase the residents' satisfaction with their residential environment, which will ultimately improve their overall well-being in their neighborhoods.

Improving the urban environment

For families, having parks nearby serves as an outdoor recreational arena for children to play outdoors, and walking paths in such parks are a welcome distraction from the hustle and bustle of the city whereby residents can take a mental break while having a leisurely walk. City planners and designers must work together to ensure access to urban green spaces is sufficient for all population groups and users in the urban and suburban areas. The city must be conscious of not substituting open and green spaces that serve as outdoor recreational areas for more residential areas, as this is detrimental for the well-being of residents living in these areas. It would be beneficial for the city to plant more trees in the regions that are lacking to improve the aesthetic appeal of such regions, and this may also improve the physical and emotional well-being of residents in these areas. Additionally, policymakers and urban designers should work together to supply publicly accessible green and open spaces that will promote community well-being as they may encourage people to assemble from time to time, and this may diminish the potential for social isolation.

Moreover, the negative externalities of densification, such as traffic congestion and noise pollution, as identified by interviewees, may be significant contributors to lowering individuals' satisfaction with life domains. The city is already striving to be more sustainable through encouraging more active modes of transport such as walking or cycling, and the use of public transportation, and these measures help in alleviating the traffic problem. Furthermore, urban planners and policymakers need to consider an increase in footbridges for pedestrians in high traffic pedestrian zones to ease any traffic congestion. Urban planners should also check that all the 30km roads are well fitted with speed barriers for the safety of the pedestrians in these neighborhoods. Additionally, speed reduction near residential areas may serve as a potential measure for noise reduction due to traffic, as well as inserting more speed barriers for traffic calming, and this will also serve for safety in residential areas.

It is, therefore, essential for urban planners and designers to consider the interests of the current residents of such proposed area densification projects. The local communities in such areas should receive information first hand as it will promote their awareness, and the public can also be involved in the decision making to ensure their well-being is not compromised in expansion projects that may alter their residential environmental quality. One way would be to have public meetings and focus group meetings to educate the public on the potential benefits of urban densification such as reduced distances to service access, to reduce any

resistance, and enhance the residents' understanding of how the densification projects will improve their well-being. Through working together, urban planners, designers, and policymakers can contribute positively to enhance individual well-being for the benefit of all.

Achieving a city that aims at sustainability with its modern developments while it supports residents' subjective and social well-being will require innovative planning by experts with consistent input from residents.

The qualitative findings offer a platform for future research which could expand further on the impact of the urban form on affecting participants' subjective well-being by using quantitative research. Also, future can expand on the locations and have respondents from outside the Reykjavík region and other municipalities. Future research may also be conducted on a different sample of respondents such as the elderly to see if there is convergence or divergence of results on the impact of the urban form on their well-being. This study uses self-reported measures of subjective well-being and future research is welcome to test the objective well-being of residents by experimental measures.

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Appendix A. Life satisfaction and urban form literature

Table 13 Summary of selected results on life satisfaction and urban form

Study	Sample from	Methods applied	Key results
Guite et al. (2006)	Greenwich/England	Univariate and multivariate regression analyses	Poor access to green spaces; feelings of over-crowding in the home; noise from neighbors; perceptions of crime; and community facilities predict poor mental well-being
Cramer et al. (2004)	Oslo/Norway	Factor analysis, multiple regression analysis, and multivariate correlation analysis	Densely populated urban areas have more inferior quality of life Being female, Higher income, level of education, being married, living with a partner and good somatic health + QoL,
Fassio et al. (2013)	Piedmont/Italy	Descriptive, bivariate, and hierarchical regression analyses	Being female, being married, lack of chronic disease and higher income +QoL, living in low populated areas +perceived psychological QoL,
McCarthy et al. (2018)	Nova Scotia/Canada	Exploratory factor analysis and random parameters ordered probit model	Residential proximity to park or sports field +LS, Being community-minded +LS, Daily out-of-home travel, and increased access to various transportation modes +LS

Study	Sample from	Methods applied	Key results
Mouratidis (2018)	Oslo/Norway	Structural equations model, path analysis and qualitative analysis	Shorter distances to the city center, mixed land uses and higher densities + Social well-being
Cao (2016)	Minneapolis/USA	Path analysis and structural equations model	Age has a u-shaped curve with LS, Higher education, household income and number of vehicles in household + LS, Residential satisfaction + LS, poor health - LS, Higher densities - LS, Cul-de-sac density- LS
Lawless et al. (2011)	County-level/ USA	Correlations analysis	Income + LS, less dense counties + LS
Liu et al. (2017)	Guangzhou/China	Multilevel linear model	Social support, neighborhood amenities, and neighborhood cleanliness + LS
Brown (2016)	OECD Metropolitan areas (France/Japan/Spain/Netherlands and Sweden)	Econometric analysis and ordered probit regression model	Increase in home size + LS but tradeoff with distance to the city center, mixed land use - LS, Centralization - LS
Jokela et al. (2015)	London/UK	A random-intercept multilevel linear regression model. Random-effect linear regression and random-slope multilevel regression	Higher openness to experience + LS (population density and ethnic diversity), higher agreeableness and conscientiousness - LS
Brereton et al. (2008)	Dublin/Ireland	Ordered probit regression and ordinary least squares (OLS) regression	Population density + LS, living outside Dublin + LS, further distance from airport + LS, Living in public housing - LS, Having three or more children - LS, Higher education + LS, Being separated/ divorced - LS, Being unemployed - LS, Being male - LS

Study	Sample from	Methods applied	Key results
Ma et al., (2018)	Beijing/China	A multilevel ordinal response model	Age u-shaped relationship with LS, tertiary education + LS, being married + LS, homeowners + LS, longer duration of residence + LS, self-rated health + LS, satisfaction with neighborhood attributes + LS
Ballas et al. (2011)	Britain/UK	Linear and multilevel modeling approach	Good health + LS, unemployment – LS, increased length in residential address + LS, unemployment - LS
Dang et al. (2017)	Beijing/China	Bivariate response binomial multilevel model and bivariate response probit multilevel model	bivariate response binomial multilevel model with probit regression
Vemuri et al. (2009)	Baltimore-Maryland/USA	Bivariate correlation, binomial logistic model, and multivariate logistic regression logistic models	Higher-income and education + LS, homeownership, social capital and both perceived good environmental quality + LS
Ibem et al. (2013)	Ogun State/Nigeria	Exploratory factor analysis with Categorical Principal Component Analysis (CPCA) and Varimax rotation methods and multivariate (multiple) regression analysis (MRA)-Categorical Regression Analysis with optimal scaling technique (CATREG)	Being married, higher income and homeownership + LS, Residents satisfaction with different component of their housing environment and housing services + LS
Abass et al. (2018)	Geelong/Australia	Exploratory factor analysis (EFA), parallel analysis and hierarchical multiple regression analyses	Increased length of residency, provision of open spaces, higher income, homeownership, and neighborhood connectivity +LS

Study	Sample from	Methods applied	Key results
Ambrey et al. (2013)	Australia	Ordinary least squares (OLS) and ordered logit models	Urban greenspace + LS
Aoshima et al., 2018	Kobe, Ashiya, Nishinomiya, and Amagasaki/Japan	Multiple regression analysis and two-stage-least squares analysis(2SLS).	Higher levels of greenspace + LS for residents in more densely populated areas, increased proximity to ocean + LS, increased proximity to significant airport – LS, Life satisfaction u-shaped in age, Males - LS, Being married, higher income, homeownership + LS, Unemployment, having severe health conditions, commuting time, lone parents - LS
De Vries et al. (2013)	Utrecht, Rotterdam, Arnhem, Den Bosch /Netherlands	Multilevel linear regression analysis with extra Poisson method	Increased quantity and quality of urban greenspace + mental health and social cohesion
Węziak-Białowolska (2016)	27 European cities	Two-level logistic and probit regression	Citizens dissatisfaction with green spaces, public transport, air quality, and cultural facilities - LS, age u-shaped LS, unemployment – LS, higher income, being female + LS
Bertram et al. (2015)	Berlin/Germany	Linear and non-linear regression and ordered logit regression analysis	An increased amount of green space within residential proximity + LS
White et al. (2013)	Urban and peri-urban areas/UK	A fixed-effects regression approach	Increased urban greenspace + LS by lowering mental distress, being unemployed and unmarried have higher mental distress – LS,

Study	Sample from	Methods applied	Key results
Wood et al. (2017)	Perth/Australia	Linear regression model	Increased quantity of parks within residential areas + mental health and well being
van den Berg et al. (2010)	Nationwide/Netherlands	Multilevel analysis	Green space at a 3-km radius of residential areas acts as a buffer for stressful events
Yuan et al. (2018)	Nationwide/China	Ordinary least squares	Green coverage + LS by improving residents subjective health and air quality, being female, higher income and education, community attachment and children in household + LS
Krekel et al. (2016)	Nationwide/Germany	Linear regression analysis	Increased distance to urban green coverage - LS,
Honold et al. (2016)	Berlin/Germany	Correlation analysis, hierarchical regression analysis, and qualitative content analysis	Reduced vegetation trails around participants home - mental restoration
MacKerron et al. (2009)	London/UK	Two ordered probit method and the OLS model	Perceived levels of pollution, poor health, the increased distance to central London - LS, being married, trust and social capital + LS
Rehdanz et al. (2008)	Germany	Ordered probit model and hedonic regression	Higher levels of air pollution and noise levels – LS, U-shaped curve age LS, Higher income + LS, unemployed, Single, and sick individuals – LS,
Francis et al., 2012	Perth/Australia	Univariate, multivariate, and linear analysis models	Subjective distance to the closest park and school – a sense of community, quality of public space more so than quantity is + sense of community

Study	Sample from	Methods applied	Key results
Kytta et al., 2016	Helsinki/Finland	Structural equations modeling	Perceived environmental quality was higher in city center neighborhoods compared to suburban neighborhoods, Easy access, and proximity to services þ well-being in urban areas and – well-being in suburban areas,
Ardahan, 2014	Antalya/Turkey	ANCOVA regression model	Trust to others, residential safety level, and neighbor relation + LS, Higher income + LS, being unemployed, single - LS, living with family - LS
Pierewan et al., 2014	Regional/Europe	Multilevel models	Living in countries with high levels of inequality -wellbeing, healthy individuals, married individuals + wellbeing, Being unemployed - wellbeing
Lovejoy et al., 2010	Northern California/USA	Factor analysis with oblique rotation, multivariate analysis, and ordered logit model	Residents´ perceptions of neighborhood aesthetic and safety increase neighborhood satisfaction
Aguado et al., 2018	Imbabura /Ecuador	Two stepwise multiple regression analysis and canonical correspondence analysis (CCA).	Good social relationship in urban areas + LS
Knies et al., 2016	National/UK	Ordinary least squares regression models	Ethnic minorities – LS, neighborhood concentrated with own ethnicity + LS
Maass et al., 2016	Malvik/Norway	Pearson’s correlation analysis, structural equations modeling approach	Experienced neighborhood social capital + LS

Study	Sample from	Methods applied	Key results
Kim et al. (2004)	Gaithersburg, Maryland, USA	Separate regression analyses	Open and green spaces promote a sense of community

Appendix B: Correlation analyses and respondents' average values

Table 14 Bivariate Spearman's correlation between respondents personal preferences and attitudes

Preferences	I like living in a neighborhood where a lot is going on	I appreciate tranquility and calmness in a residential area	I don't mind traveling a bit longer for the services I use	Having shops and services within walking distance of my home is important to me	Living in a multiple-family unit would not give me enough privacy	I can be comfortable living in close proximity to my neighbors	I want to live close to the vast nature and recreation services	I like to have a large yard in my home
I like living in a neighborhood where a lot is going on	1	-.287**	-.257**	.380**	-.105**	.227**	-.112**	-.087*
I appreciate tranquility and calmness in a residential area	-.287**	1	.179**	-.060	.202**	-.051	.352**	.192*
I don't mind traveling a bit longer for the services I use	-.257**	.179**	1.	-.389**	.155**	-.026	.165**	.185*
Having shops and services within walking distance of my home is important to me	.380**	-.060	-.389**	1	-.124**	.192**	.009	-.080*
Living in a multiple-family unit would not give me enough privacy	-.105**	.202**	.155**	-.124**	1	-.440**	.262**	.377*

I can be comfortable living in close proximity to my neighbors	.227**	-.051	-.026	.192**	-.440**	1	-.022	-.203*
I want to live close to the vast nature and recreation services	-.112**	.352**	.165**	.009	.262**	-.022	1	.322*
I like to have a large yard in my home	-.087*	.192**	.185**	-.080*	.377**	-.203**	.322**	1

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 15 Bivariate Spearman's correlation between respondents personal preferences and attitudes (cont)

Preferences	I appreciate good travel connections by car	I am comfortable riding with strangers	I prefer getting around in an active way such as walking or cycling	The neighborhood park is enough nature for me	If I could live anywhere, I would live in the suburbs	I don't mind traveling using public transportation	The car is my preferred way of getting around the city	I prefer to live in a suburban neighborhood even if it means traveling longer distances	Suburban life is boring
I appreciate good travel connections by car	1.000	-.096*	-.306**	.030	.315**	-.307**	.505**	.205**	-.243**
I am comfortable riding with strangers	-.096*	1.000	.165**	.028	-.132**	.278**	-.207**	-.121**	.126**
I prefer getting around in an active way such as walking or cycling	-.306**	.165**	1.000	-.020	-.237**	.408**	-.496**	-.205**	.235**
The neighborhood park is enough nature for me	.030	.028	-.020	1.000	-.008	.041	.022	-.055	.030

If I could live anywhere, I would live in the suburbs	.315**	-.132**	-.237**	-.008	1.000	-.240**	.398**	.784**	-.593**
I don't mind getting around using public transportation	-.307**	.278**	.408**	.041	-.240**	1.000	-.517**	-.220**	.168**
The car is my preferred way of getting around the city	.505**	-.207**	-.496**	.022	.398**	-.517**	1.000	.353**	-.275**
I prefer to live in a suburban neighborhood, even if it means traveling longer distances	.205**	-.121**	-.205**	-.055	.784**	-.220**	.353**	1.000	-.560**
Suburban life is boring	-.243**	.126**	.235**	.030	-.593**	.168**	-.275**	-.560**	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 16 Bivariate Pearson's correlation analysis between urban form measures

	Distance to the City Centre in km	Vegetation Cover in Street Network 1km	Population density Within 1km	Proportion of green spaces within 1km	Proportion of open spaces within 1km	Street connectivity within 500m
Distance to the City Centre in km	1	.572**	-.164**	.486**	.563**	-.432**
Vegetation Cover in Street Network 1km	.572**	1	-.095*	.761**	.639**	-.381**
Population density Within 1km	-.440**	-.335**	1	-.280**	-.364**	.445**

Proportion of green spaces within 1km	.486**	.761**	-.155**	1	.818**	-.304**
Proportion of open spaces within 1km	.563**	.639**	-.249**	.818**	1	-.389**
Street connectivity within 500m	-.432**	-.381**	.282**	-.304**	-.389**	1

Table 17 Average values of respondents' domain satisfaction, individual life satisfaction and, social well-being with dwelling characteristics

	Dwelling characteristics						
	Frequency	Domain satisfaction		Ind. life satisfaction		Social well-being	
		Mean	Median	Mean	Median	Mean	Median
Type of residence							
Apartment	443	63.24	66.00	7.34	8.00	14.42	15.00
Detached house	105	63.95	66.00	7.37	8.00	14.28	16.00
Semi-detached house	83	64.30	68.00	7.48	8.00	14.61	16.00
Private yard							
No	360	61.21	65.00	7.11	8.00	13.94	15.00
Yes	335	64.88	68.00	7.55	8.00	14.82	16.00
Homeownership							
No	184	60.00	64.00	6.93	8.00	13.23	14.00
Yes	110	64.10	67.00	7.47	8.00	14.80	16.00
Length in Residential region							
Less than one year	16	66.62	72.00	6.88	7.00	13.06	15.00
1 to 10 years	192	70.59	75.00	7.24	8.00	13.86	15.00
11 to 20 years	128	68.16	71.00	7.34	8.00	14.23	15.00
21 to 30 years	208	71.62	76.00	7.36	8.00	14.80	16.00
31 to 40 years	160	70.07	74.00	7.43	8.00	14.64	16.00
Bedroom Number							
2 bedrooms or less	341	69.13	75.00	7.23	8.00	14.03	15.00
3 bedrooms or more	357	71.22	73.00	7.40	8.00	14.68	16.00
Household size (number of inhabitants)							
3 or less inhabitants	399	69.28	74.00	7.14	8.00	13.86	15.00
4 or more inhabitants	299	71.76	75.00	7.62	8.00	15.06	16.00

Table 18 Average values of respondents' domain satisfaction, individual life satisfaction, and social well-being with socio-demographic characteristics

	Sociodemographic characteristics						
	Domain satisfaction		Ind. life satisfaction		Social well-being		
	Frequency	Mean	Median	Mean	Median	Mean	Median
		100.00	100.00	10.00	10.00	20.00	20.00
Gender							
Male	280	61.11	66.00	7.16	8.00	13.32	14.00
Female	417	64.47	67.00	7.45	8.00	15.08	16.00
Occupation							
Employed full time	494	64.18	67.00	7.43	8.00	14.68	16.00
Employed part-time	41	62.39	66.00	7.10	8.00	14.20	16.00
Self-employed/Entrepreneur	34	67.21	69.50	7.82	8.00	15.41	16.00
Stay at home parent/Paternity or maternity leave	31	64.65	66.00	7.81	8.00	15.03	16.00
Student	65	62.20	65.00	7.26	8.00	14.09	15.00
Unable to work	19	35.74	42.00	4.89	5.00	8.11	9.00
Unemployed	11	48.45	51.00	5.91	6.00	9.64	10.00
Other	9	65.78	61.00	7.33	8.00	14.00	14.00
Level of education							
Basic education	52	52.40	53.50	6.27	6.00	11.60	12.00
Secondary education	105	60.48	64.00	7.06	8.00	13.88	14.00
Vocational education	52	60.17	63.50	7.08	8.00	13.52	14.00
Undergraduate level	219	63.34	66.00	7.43	8.00	14.60	16.00
Graduate-level	221	66.50	69.00	7.65	8.00	15.20	16.00
Postgraduate level	31	67.39	68.00	7.23	8.00	14.74	17.00
Language spoken							
Icelandic	589	62.93	66.00	7.37	8.00	14.58	16.00
English	88	64.07	65.50	6.93	8.00	13.17	14.00
Polish	28	61.39	66.00	7.79	8.50	13.64	15.00
The income per consumption unit							
Very low- below 290k	117	63.00	69.00	6.68	8.00	13.08	14.00
Low- between 290k and 390k	134	69.31	72.00	7.18	8.00	14.11	14.50
Medium- between 390k and 510k	157	72.57	77.00	7.58	8.00	14.96	16.00
High- between 510k and 670k	144	73.99	78.00	7.82	8.00	15.29	16.00
Very high- above 670k	96	73.03	77.50	7.29	8.00	14.26	15.00
Hours Worked							
Less than 30	75	60.55	66.00	6.47	7.00	12.05	13.00
30 to 35	57	71.84	78.00	7.49	8.00	14.77	16.00
35 to 40	130	69.64	74.00	7.31	8.00	14.19	15.00
40 to 45	267	72.70	75.00	7.46	8.00	15.21	16.00
More than 45	174	70.45	74.50	7.45	8.00	14.05	15.00

	Sociodemographic characteristics						
	Domain satisfaction	Ind. life satisfaction			Social well-being		
Household type							
Couple living together	145	71.72	76.00	7.23	8.00	14.58	16.00
Couple with Child/Children	351	72.09	75.00	7.68	8.00	15.01	16.00
A single parent with Child/Children	33	64.18	69.00	6.91	8.00	14.15	15.00
A single person living in a shared apartment	37	65.27	70.00	6.65	7.00	12.08	13.00
A single person living on his/her own	59	68.75	73.00	7.08	8.00	13.75	15.00
A single person with parents	56	65.52	68.50	6.55	7.00	12.57	14.00

Table 19 Bivariate Pearson's correlation matrix between respondents' personal preferences and satisfaction with life, the sum of domain satisfaction and social well-being

		Suburban preferences	Pro-car attitude	Nature and Privacy	Urban density
Individual Life satisfaction	Pearson Correlation	.016	.031	.177**	-.059
Domain satisfaction	Pearson Correlation	.010	.057	.230**	-.067
Social well-being	Pearson Correlation	.003	.062	.249**	-.050

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 20 Average values of population density with respondents' socio-demographic characteristics

Population density			
	N	Mean	Median
Gender			
Male	280	3822.84	4130.15
Female	415	3799.75	3995.03
Income per capita			
High - between 510k and 670k	145	3799.95	3994.67
Low - between 290k and 390k	133	4044.35	4183.74
Medium - between 390k and 510k	156	3618.32	3972.16

Very high - above 670k	96	3905.40	4141.57
Very low - below 290k	117	3697.32	3916.54
Occupation			
Employed part/full time	534	3791.09	4026.26
Self-employed/entrepreneur	34	3989.07	4100.74
Stay at home parent/paternity or maternity leave	31	3944.20	4283.49
Student	65	3745.88	4038.59
Unemployed/unable to work	30	3738.57	3943.69
Level of education			
Basic/ Secondary education	157	7198.67	7288.00
University/ College education	522	6623.26	6463.50
Spoken Language			
English	88	3591.46	4051.86
Icelandic	588	3836.80	4034.16
Polish	28	3936.36	4118.85
Household type			
Couple living together	144	3949.31	4152.73
Couple with child/children	351	3821.40	4020.86
A single parent with child/children	33	3746.54	3995.03
A single person living in a shared apartment	37	3494.52	4040.60
A single person living on his or her own	59	3626.54	3859.64
A single person living with parents	56	3785.02	3934.98

Appendix C: Multiple hierarchical regression analyses

Table 21 Full coefficients of hierarchical regression for population density and Life satisfaction

		Coefficients^a					
		Unstandardized		Standardized			
		Coefficients		Coefficients			
		Std.					
Model		B	Error	Beta	t	Sig.	
Model 1							
	(Constant)	6.231	.349		17.836	.000	***
Gender	Female	.464	.187	.107	2.480	.013	*

		Male				
Education	College/ university education	.427	.226	.084	1.892	.059
	Basic/ Secondary education					
Occupation	Unemployed/ unable to work	-1.883	.486	-.170	-3.874	.000 ***
	Employed full time/ part-time/Self-employed					
Income	Very high – above 670k	.479	.351	.078	1.365	.173
	High – between 510k and 670k	.513	.302	.097	1.696	.090
	Medium – between 390k and 510k	.064	.286	.013	.223	.823
	Low – between 290k and 390k	-.045	.285	-.008	-.158	.875
	Very Low – below 290k					
Spoken Language	Icelandic	.114	.254	.020	.448	.655
	English/ Polish					
Household Type	Couple living together	.212	.292	.041	.726	.468
	Couple with child/ children	.562	.248	.132	2.264	.024 *
	Single parent with child/children	.451	.497	.042	.908	.364
	A single person living alone/ with parents/ in a shared apartment					
Model 2						
	(Constant)	6.253	.413		15.156	.000 ***
Gender	Female	.483	.188	.111	2.566	.011 *
	Male					
Education	College/ university education	.407	.228	.080	1.782	.075
	Basic/ Secondary education					
Occupation	Unemployed/ unable to work	-1.834	.490	-.165	-3.744	.000 ***
	Employed full time/ part-time/Self-employed					
Income	Very high – above 670k	.509	.354	.083	1.436	.152
	High – between 510k and 670k	.545	.306	.103	1.780	.076
	Medium – between 390k and 510k	.084	.287	.017	.293	.769
	Low – between 290k and 390k	-.035	.289	-.007	-.123	.902
	Very Low – below 290k					

Spoken Language	Icelandic	.051	.261	.009	.194	.846	
	English/ Polish						
Household Type	Couple living together	.236	.300	.046	.788	.431	
	Couple with child/ children	.437	.268	.103	1.631	.103	
	Single parent with child/children	.428	.504	.039	.850	.396	
	A single person living alone/ with parents/ in a shared apartment						
Homeownership	Yes	.146	.232	.031	.627	.531	
	No						
Private Yard	Yes	.131	.195	.031	.674	.501	
	No						
Household size	Three or less inhabitants	-.256	.248	-.059	-1.032	.302	
	Four or more inhabitants						
Bedroom Number	Two rooms or Less	.110	.239	.026	.461	.645	
	Three rooms or more						
Model 3							
	(Constant)	6.364	.444		14.343	.000	***
Gender	Female	.480	.188	.111	2.548	.011	*
	Male						
Education	College/ university education	.395	.229	.077	1.722	.086	
	Basic/ Secondary education						
Occupation	Unemployed/ unable to work	-1.857	.491	-.167	-3.779	.000	***
	Employed full time/ part-time/Self-employed						
Income	Very high – above 670k	.509	.355	.083	1.437	.151	
	High – between 510k and 670k	.538	.306	.102	1.757	.079	
	Medium – between 390k and 510k	.072	.287	.014	.252	.801	
	Low – between 290k and 390k	-.023	.290	-.004	-.080	.936	
	Very Low – below 290k						
Spoken Language	Icelandic	.058	.262	.010	.223	.824	
	English/ Polish						
Household Type	Couple living together	.249	.300	.048	.830	.407	
	Couple with child/ children	.453	.269	.106	1.684	.093	

	Single parent with child/children	.434	.504	.040	.861	.390	
<hr/>							
	A single person living alone/ with parents/ in a shared apartment						
<hr/>							
Homeownership	Yes	.157	.233	.033	.674	.501	
	No						
Private Yard	Yes	.132	.195	.031	.674	.500	
	No						
Household size	Three or less inhabitants	-.255	.248	-.059	-1.027	.305	
	Four or more inhabitants						
Bedroom Number	Two rooms or Less	.116	.239	.027	.486	.627	
	Three rooms or more						
Population Density		-3.399E-5	.000	-.030	-.685	.494	
<hr/>							
Model 4							
<hr/>							
	(Constant)	6.568	.444		14.798	.000	***
Gender	Female	.398	.189	.092	2.102	.036	*
	Male						
<hr/>							
Education	College/ university education	.348	.229	.068	1.523	.128	
	Basic/ Secondary education						
<hr/>							
Occupation	Unemployed/ unable to work	-1.696	.488	-.153	-3.478	.001	**
	Employed full time/ part-time/Self-employed						
<hr/>							
Income	Very high – above 670k	.550	.351	.090	1.566	.118	
	High – between 510k and 670k	.460	.304	.087	1.512	.131	
	Medium – between 390k and 510k	-.024	.286	-.005	-.085	.932	
	Low – between 290k and 390k	-.032	.287	-.006	-.112	.911	
	Very Low – below 290k						
<hr/>							
Spoken Language	Icelandic	-.083	.266	-.014	-.313	.754	
	English/ Polish						
<hr/>							
Household Type	Couple living together	.225	.298	.043	.755	.451	
	Couple with child/ children	.441	.268	.104	1.647	.100	
	Single parent with child/children	.429	.499	.040	.859	.391	
<hr/>							

		A single person living alone/ with parents/ in a shared apartment				
Homeownership	Yes	.177	.231	.037	.767	.443
	No					
Private Yard	Yes	.154	.195	.036	.787	.432
	No					
Household size	Three or less inhabitants	-.234	.247	-.054	-.949	.343
	Four or more inhabitants					
Bedroom Number	Two rooms or Less	.110	.239	.026	.461	.645
	Three rooms or more					
Population density		-3.350E-5	.000	-.029	-.682	.496
Personal preferences	Suburban life	-.062	.098	-.031	-.634	.526
	Pro-car	-.107	.098	-.053	-1.093	.275
	Nature and Privacy	.441	.114	.193	3.851	.000 ***
	Urban Density	.078	.119	.030	.655	.513

a. Dependent Variable: Life satisfaction

Table 22 Full coefficients of hierarchical regression for population density and respondents' domain satisfaction

		Coefficients ^a				
		Unstandardized		Standardized		
		Coefficients		Coefficients		
		Std.				
Model		B	Error	Beta	t	Sig.
Model 1						
	(Constant)	62.585	2.760		22.678	.000 ***
Gender	Female	5.346	1.478	.150	3.616	.000 ***
	Male					
Education	College/ university education	4.646	1.781	.111	2.608	.009 **
	Basic/ Secondary education					
Occupation	Unemployed/ unable to work	-23.849	3.839	-.262	-6.213	.000 ***
	Employed full time/ part-time/Self-employed					
Income	Very high – above 670k	4.782	2.771	.095	1.726	.085
	High – between 510k and 670k	5.185	2.387	.119	2.172	.030 *

	Medium – between 390k and 510k	.648	2.256	.016	.287	.774	
	Low – between 290k and 390k	.232	2.254	.005	.103	.918	
	Very Low – below 290k						
Spoken Language	Icelandic	-2.093	2.005	-.044	-1.044	.297	
	English/ Polish						
Household Type	Couple living together	2.773	2.309	.065	1.201	.230	
	Couple with child/ children	3.444	1.960	.099	1.757	.080	
	Single parent with child/children	.767	3.927	.009	.195	.845	
	A single person living alone/ with parents/ in a shared apartment						
Model 2							
	(Constant)	62.634	3.251		19.266	.000	***
Gender	Female	5.514	1.482	.155	3.719	.000	***
	Male						
Education	College/ university education	4.269	1.800	.102	2.372	.018	*
	Basic/ Secondary education						
Occupation	Unemployed/ unable to work	-23.094	3.860	-.254	-5.982	.000	***
	Employed full time/ part-time/Self-employed						
Income	Very high – above 670k	5.137	2.793	.102	1.839	.066	
	High – between 510k and 670k	5.402	2.411	.124	2.241	.025	*
	Medium – between 390k and 510k	.770	2.259	.019	.341	.733	
	Low – between 290k and 390k	.611	2.277	.014	.269	.788	
	Very Low – below 290k						
Spoken Language	Icelandic	-2.855	2.060	-.060	-1.386	.166	
	English/ Polish						
Household Type	Couple living together	3.300	2.361	.078	1.397	.163	
	Couple with child/ children	2.374	2.111	.068	1.124	.261	
	Single parent with child/children	.944	3.969	.011	.238	.812	

	A single person living alone/ with parents/ in a shared apartment					
Homeownership	Yes	1.733	1.831	.044	.947	.344
	No					
Private Yard	Yes	1.664	1.538	.048	1.082	.280
	No					
Household size	Three or less inhabitants	-1.582	1.953	-.045	-.810	.418
	Four or more inhabitants					
Bedroom Number	Two rooms or Less	-.308	1.880	-.009	-.164	.870
	Three rooms or more					
Model 3						
	(Constant)	65.546	3.480		18.833	.000 ***
Gender	Female	5.432	1.477	.153	3.678	.000 ***
	Male					
Education	College/ university education	3.952	1.798	.095	2.198	.028 *
	Basic/ Secondary education					
Occupation	Unemployed/ unable to work	-23.684	3.853	-.260	-6.146	.000 ***
	Employed full time/ part- time/Self-employed					
Income	Very high – above 670k	5.152	2.781	.103	1.852	.065
	High – between 510k and 670k	5.238	2.402	.121	2.180	.030 *
	Medium – between 390k and 510k	.461	2.254	.011	.205	.838
	Low – between 290k and 390k	.932	2.272	.021	.410	.682
	Very Low – below 290k					
Spoken Language	Icelandic	-2.653	2.053	-.056	-1.292	.197
	English/ Polish					
Household Type	Couple living together	3.643	2.357	.086	1.546	.123
	Couple with child/ children	2.792	2.110	.080	1.323	.186
	Single parent with child/children	1.093	3.953	.012	.277	.782
	A single person living alone/ with parents/ in a shared apartment					
Homeownership	Yes	2.026	1.828	.052	1.109	.268
	No					

Private Yard	Yes	1.669	1.531	.048	1.090	.276	
	No						
Household size	Three or less inhabitants	-1.552	1.946	-.044	-.798	.426	
	Four or more inhabitants						
Bedroom Number	Two rooms or Less	-.148	1.873	-.004	-.079	.937	
	Three rooms or more						
Population Density		-.001	.000	-.094	-2.280	.023	*
Model 4							
	(Constant)	67.479	3.450		19.558	.000	***
Gender	Female	4.635	1.471	.130	3.150	.002	**
	Male						
Education	College/ university education	3.540	1.779	.085	1.990	.047	*
	Basic/ Secondary education						
Occupation	Unemployed/ unable to work	-22.135	3.791	-.243	-5.839	.000	***
	Employed full time/ part-time/Self-employed						
Income	Very high – above 670k	5.562	2.730	.111	2.038	.042	*
	High – between 510k and 670k	4.491	2.366	.103	1.898	.058	
	Medium – between 390k and 510k	-.475	2.225	-.012	-.214	.831	
	Low – between 290k and 390k	.858	2.231	.019	.384	.701	
	Very Low – below 290k						
Spoken Language	Icelandic	-4.039	2.068	-.085	-1.954	.051	
	English/ Polish						
Household Type	Couple living together	3.411	2.315	.080	1.474	.141	
	Couple with child/ children	2.599	2.081	.074	1.249	.212	
	Single parent with child/children	1.025	3.881	.012	.264	.792	
	A single person living alone/ with parents/ in a shared apartment						
Homeownership	Yes	2.203	1.797	.056	1.226	.221	
	No						
Private Yard	Yes	1.928	1.518	.055	1.271	.204	
	No						
Household size	Three or less inhabitants	-1.357	1.917	-.038	-.708	.479	

Bedroom Number	Four or more inhabitants						
	Two rooms or Less	-.104	1.861	-.003	-.056	.956	
Population density	Three rooms or more						
		-.001	.000	-.093	-2.307	.021	*
Personal preferences	Suburban life	-.321	.759	-.019	-.423	.672	
	Pro-car	-.935	.760	-.056	-1.231	.219	
	Nature and Privacy	4.272	.889	.228	4.804	.000	***
	Urban Density	.702	.926	.033	.758	.449	

a. Dependent Variable: domain satisfaction

Table 23 Full coefficients of hierarchical regression for population density and respondents' social well-being

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	t	Sig.
Model 1						
	(Constant)	10.848	.656		16.537	.000 ***
Gender	Female	1.973	.352	.230	5.612	.000 ***
	Male					
Education	College/ university education	.722	.425	.071	1.699	.090
	Basic/ Secondary education					
Occupation	Unemployed/ unable to work	-5.674	.912	-.259	-6.221	.000 ***
	Employed full time/ part-time/Self-employed					
Income	Very high – above 670k	-.158	.659	-.013	-.240	.811
	High – between 510k and 670k	.570	.567	.054	1.005	.316
	Medium – between 390k and 510k	-.159	.537	-.016	-.295	.768
	Low – between 290k and 390k	-.074	.536	-.007	-.138	.890
	Very Low – below 290k					
Spoken Language	Icelandic	1.121	.476	.098	2.352	.019 *
	English/ Polish					
Household Type	Couple living together	1.481	.551	.144	2.690	.007 **

	Couple with child/ children	1.498	.466	.178	3.216	.001	**
	Single parent with child/children	1.376	.933	.064	1.475	.141	
	A single person living alone/ with parents/ in a shared apartment						
Model 2							
	(Constant)	11.122	.768		14.473	.000	***
Gender	Female	2.034	.351	.237	5.799	.000	***
	Male						
Education	College/ university education	.628	.427	.062	1.472	.142	
	Basic/ Secondary education						
Occupation	Unemployed/ unable to work	-5.496	.912	-.250	-6.024	.000	***
	Employed full time/ part-time/Self-employed						
Income	Very high – above 670k	-.053	.661	-.004	-.080	.936	
	High – between 510k and 670k	.670	.570	.064	1.176	.240	
	Medium – between 390k and 510k	-.104	.535	-.011	-.194	.846	
	Low – between 290k and 390k	.022	.538	.002	.040	.968	
	Very Low – below 290k						
Spoken Language	Icelandic	.844	.487	.074	1.733	.084	
	English/ Polish						
Household Type	Couple living together	1.639	.560	.160	2.930	.004	**
	Couple with child/ children	1.000	.499	.119	2.003	.046	*
	Single parent with child/children	1.359	.938	.063	1.448	.148	
	A single person living alone/ with parents/ in a shared apartment						
Homeownership	Yes	.659	.434	.070	1.521	.129	
	No						
Private Yard	Yes	.304	.364	.036	.836	.404	
	No						
Household size	Three or less inhabitants	-.913	.462	-.107	-1.978	.048	*
	Four or more inhabitants						
Bedroom Number	Two rooms or Less	.093	.445	.011	.208	.835	

		Three rooms or more					
		Model 3					
	(Constant)	11.799	.823		14.341	.000	***
Gender	Female	2.017	.349	.235	5.771	.000	***
	Male						
Education	College/ university education	.557	.427	.055	1.307	.192	
	Basic/ Secondary education						
Occupation	Unemployed/ unable to work	-5.632	.911	-.257	-6.184	.000	***
	Employed full time/ part-time/Self-employed						
Income	Very high – above 670k	-.047	.658	-.004	-.071	.943	
	High – between 510k and 670k	.631	.568	.060	1.112	.267	
	Medium – between 390k and 510k	-.179	.534	-.018	-.335	.738	
	Low – between 290k and 390k	.096	.537	.009	.179	.858	
	Very Low – below 290k						
Spoken Language	Icelandic	.890	.485	.078	1.833	.067	
	English/ Polish						
Household Type	Couple living together	1.716	.558	.167	3.073	.002	**
	Couple with child/ children	1.098	.499	.130	2.200	.028	*
	Single parent with child/children	1.395	.935	.065	1.492	.136	
	A single person living alone/ with parents/ in a shared apartment						
Homeownership	Yes	.725	.433	.077	1.676	.094	
	No						
Private Yard	Yes	.306	.362	.036	.846	.398	
	No						
Household size	Three or less inhabitants	-.906	.460	-.107	-1.971	.049	*
	Four or more inhabitants						
Bedroom Number	Two rooms or Less	.129	.443	.015	.290	.772	
	Three rooms or more						
Population Density		.000	.000	-.091	-2.244	.025	*
		Model 4					
	(Constant)	12.341	.815		15.134	.000	***

Gender	Female	1.867	.348	.218	5.366	.000	***
	Male						
Education	College/ university education	.454	.422	.045	1.075	.283	
	Basic/ Secondary education						
Occupation	Unemployed/ unable to work	-5.246	.896	-.239	-5.854	.000	***
	Employed full time/ part-time/Self-employed						
Income	Very high – above 670k	.020	.646	.002	.030	.976	
	High – between 510k and 670k	.403	.559	.039	.721	.471	
	Medium – between 390k and 510k	-.454	.527	-.046	-.862	.389	
	Low – between 290k and 390k	.046	.527	.004	.087	.931	
	Very Low – below 290k						
Spoken Language	Icelandic	.483	.489	.042	.988	.324	
	English/ Polish						
Household Type	Couple living together	1.616	.548	.158	2.947	.003	**
	Couple with child/ children	1.119	.492	.133	2.274	.023	*
	Single parent with child/children	1.337	.917	.062	1.458	.146	
	A single person living alone/ with parents/ in a shared apartment						
Homeownership	Yes	.769	.425	.081	1.807	.071	
	No						
Private Yard	Yes	.355	.359	.042	.988	.324	
	No						
Household size	Three or less inhabitants	-.903	.453	-.106	-1.992	.047	*
	Four or more inhabitants						
Bedroom Number	Two rooms or Less	.108	.440	.013	.246	.806	
	Three rooms or more						
Population density		.000	.000	-.089	-2.252	.025	*
Personal preferences	Suburban life	-.284	.180	-.071	-1.578	.115	
	Pro-car	-.169	.180	-.042	-.944	.346	
	Nature and Privacy	1.001	.210	.222	4.758	.000	***
	Urban Density	.057	.219	.011	.260	.795	

Appendix C: Interviews codebook

Table 24 Interviews coding

Interviewee	Quote	Descriptive	Condensed descriptive	Code	Themes
Interviewee 1: female, married, mother of three, homeowner, Kópavogur	yes, this is just very convenient (home size), just so pretty for us, yes, very (house decorating and design) I think I would have so that everyone feels good and I find it (house) beautiful	She finds the home size as fitting to the family and wants people to feel good at home. She is pleased with the home design	Housing condition and design creates space for family life and feelings of contentment	Home condition and design affect subjective well-being	Housing necessity home for well-being
Interviewee 1: female, married, mother of three, homeowner, Kópavogur	(private garden) Yes, we took it all through five years ago, something like that. And we have a pallet and a balcony that can be walked out and down the garden. We use it very much , the kids play there, or when there is good weather.	She has access to a balcony and a private garden. They use the garden often, and her children use the garden as a play area	Access to a private garden enables being outdoorsy and children playing outdoors	Private garden can be used for exercise promoting physical and emotional health	Green space access for wellbeing
Interviewee 1: female, married, mother of three, homeowner, Kópavogur	We just live there right below Fossvogur. From there, natural paths are just in every direction . I was very much outside running , and of course, I used it very much , and the kids play there , and there is frisbee golf, you can go out into	Access to neighborhood vegetation promotes her and the children to be physically active	Accessible urban greenspace enables physical stimulation through exercise for both children and adults	Neighborhood greenspace and vegetation promote physical well-being	Green space access for well being

	Nauthólsvík, bicycle or walking or something like that. It will be useful in such leisure time.				
Interviewee 1: female, married, mother of three, homeowner, Kópavogur	Yeah, I just feel it is really healing (neighborhood vegetation), There is so much forest in there; this is kind of weird you just feel the smell of the trees , I don't know what it is completely you feel like this is a Swedish forest. It's a good feeling.	She finds the neighborhood vegetation very healing and is pleased with the quantity of forested area. She gets pleasure from being in close contact with nature	The amount of forested area in a residential area can affect an individual's emotional and mental state	Quantity of urban greenspace affect emotional and psychological well-being	Greenspace for well being
Interviewee 1: female, married, mother of three, homeowner, Kópavogur	Yeah' (neighborhood vegetation matters) I couldn't think of going to Kóra neighborhood where everything was so bare and ... I'm naturally raised in such a green/sprawling neighborhood. and I think it might have had some effect/factored. I couldn't think of going anywhere like everything was new and bare. [Laughing]	Cannot imagine living in an area that lacks vegetation and is bare and this might be influenced by her childhood of living in a green sprawling neighborhood	Individuals perspective on the access to greenspace may affect their choice in residential area	Residential environmental quality can affect residential location choice	Residential environmental quality Green space access
Interviewee 1: female, married, mother, homeowner, Kópavogur	Such a mixed social group and lots of kids and so I like it very well, the kids have friends in the houses around and I just think it is fun as it is	She is pleased with the diverse population in the area and having playmates for her children	Having many kids from diverse background in an area is good for social well being	Residential population number and diversity can enhance social relations Social diversity important	Neighborhood composition

				for well-being	
Interviewee 1: female, married, mother, homeowner, Kópavogur	quiet and child friendly , I think it's a good area, I think we'll just be there for a long time , and we feel very well there . We are not thinking of moving.	She believes the area is good because it's not noisy and it's child friendly and she can see herself living in the area for a long time	Neighborhoods that are perceived as quiet and child friendly influence individual well-being	Residential environmental quality can influence personal well-being Quiet area for well-being	Residential environmental quality for well-being
Interviewee 1: female, married, mother of three, homeowner, Kópavogur	just find it okay to condense there. It was just an open area when we bought; most, maybe it was something that started with this . And then I just think it would be better to keep everything clean .	Finds it just fine to make the area more compact by building more residences Densification of an area needs to factor in the environmental quality and maintain cleanliness	Densification is not opposed if it doesn't destroy the aesthetic natural environment	City compactness might affect individual well being Aesthetic appeal for well-being	Residential environmental quality for well-being
Interviewee 1: female, married, mother of three, homeowner, Kópavogur	It's been building out there in Lund [laughs]. Of course, I know it's temporary, there are always some machines and all day long . It's tiring . The kids have also been complaining about it. So, I think maybe, this is almost perfect in that house	She is not pleased with the noise and commotion brought about by the new building projects in her area and it's tough on her children	The negative externalities of densification such as noise during construction might affect personal well-being	Residential environmental quality affects the individual well-being Quiet area for well-being	Residential environmental quality for well-being
Interviewee 8: female, single, lives alone, homeowner, Vesturbær	It's (house) 71sqm, that's just fine for me, I can receive people and let them sleepover, they're not in my way , even... I have	Finds the home size okay and she can host people easily without feeling	Home size enables social activities with guests	Home size affects social well-being	Housing as a necessity for well-being

	had a tenant, and that was just fine. Now I have more space for all my junk [laughs].	crowded. Has extra space for junk			
Interviewee 8: female, single, lives alone, homeowner, Vesturbær-	Yes, there is a garden, it's not used a lot, the house is actually built... a little slope and the slope is mainly in the back garden. It's all very sloping. So, it's not really possible to use it . It's mainly the kids in the house that can play there.	She believes the garden is not used a lot due to the design limitation of the apartment relative to the garden as it is sloping and impossible to use. However, children use the garden as a play area.	House and garden design limitations do not promote usage Access to a garden enables children to play outside	Design limitations hinder individuals' subjective well-being Garden access affects children physical well-being	Greenspace access for well-being
Interviewee 8: female, single, lives alone, homeowner, Vesturbær-	The gardens are well grown, very high trees , those who tend their gardens usually do it very well. I sometimes feel that the designed green areas, which don't necessarily have playground equipment or something like that, I feel they often fall short (alternative translation: fall dead down), no one is using them. That's often my feeling towards them . Those which are like more natural... I lived for some time in Sörlaskjól, there it's only built up on one side and then it's just open down to the beach, there are grass hollows, they are more natural . Not like: „here is	She believes the gardens are well taken off by the respective owners and she has the opinion that natural green areas are better off aesthetically to her than the designed green areas. She feels it would be better to leave the natural green areas as they are without any outside interference or manipulation	Natural vegetation cover and greenspace as opposed to designated man-made greenspace can affect personal well-being Urban landscape for well being	Importance of aesthetic natural environment for personal well-being Aesthetic appeal of neighborhood for well-being	Green space access for well-being

	supposed to be a green area“, but just, the built area evolved in that way. That I feel is more useful and is somehow more normal than something like: „here we are going to have a bit of grass and maybe one tree“.				
Interviewee 8: female, single, lives alone, homeowner , Vesturbær-	Not particularly. I don't need a lot of it (vegetation cover). I think it's beautiful... normal to have trees and vegetation when it looks pretty normal. These are trees which have been growing for x amount of time, have been allowed to grow , planted at different times. It's not a must or anything like that and I am not contemplating it endlessly.	She prefers natural vegetation cover that has not being manipulated to look a certain way and would prefer a natural forested area than a made forest as she believes the natural forest looks more normal.	Importance of aesthetic natural environment in the neighborhood	Aesthetic natural environment might be good for neighborhood	Urban vegetation cover Aesthetic appeal of neighborhood
Interviewee 8: female, single, lives alone, homeowner , Vesturbær-	the area is very comfortable, short distance to most services, short distance to the center , but still not in it. You don't have the partygoers puking in your backyard. You can just yourself walk home from the downtown party (i. djammið) [laughs], without having to pay for a taxi. I think my street and the closest houses are not especially sold under Airbnb. There are streets a	She sees the area is in a prime position for service and access to the center without it being in the city center and she does not have to deal with all the negatives that come with being located in the center. She loves the walkability aspect of the area. She is	Access to services and the city center is beneficial to residents who live in urban areas. Neighborhood walkability is beneficial for urban dwellers Individual perception of having Airbnb in the neighborhood can affect their well-being Proximity to Centre and service access may be	Living near the city center without being in the center affects personal well-being Airbnb in the neighborhood can affect the personal well-being of residents due to many reasons such as safety, noise, lack	Neighborhood accessibility for well-being Commuting time for well-being

	<p>little further away from me which I think there's a more obvious Airbnb vibe. Although it's beginning to be less of that again. It's maybe that which is the most worrying, for us from old Vesturbær...</p>	<p>wary of the safety issue in the area due to strangers occupying certain homes under Airbnb</p>	<p>beneficial for well-being</p>	<p>of comfort due to unfamiliar faces, xenophobia, and much more</p>	
<p>Interviewee 8: female, single, lives alone, homeowner, Vesturbær-</p>	<p>Well, I want the density to fit with the density of the surrounding area. I find it very abnormal that there will be planted on Héðinsreitur, which I don't really find that big, around 300 apartments or something..</p>	<p>She would like the increased population number to be at par with the land-use cover and resources in the area.</p>	<p>City compactness needs to factor in the resources available and can lead to feelings of overcrowding in a particular area</p>	<p>Densification and increased population number affects personal well-being</p>	<p>Area densification for well-being</p>
<p>Interviewee 8: female, single, lives alone, homeowner, Vesturbær-</p>	<p>people being stacked on top of each other in some boxes. The houses kind of look like that. These big balconies with glass, one experiences it as a prison One somehow looks at this and looks at that, and it in no way fits together.</p>	<p>Feels like people should not be concentrated in a single area and to her it's almost like a prison how the apartments are designed.</p>	<p>Structural limitations and lack of garden or yard might create loneliness and overcrowding</p>	<p>Increased population number in an area can affect mental well-being</p>	<p>Area densification and well being</p>
<p>Interviewee 8: female, single, lives alone, homeowner, Vesturbær-</p>	<p>There are many things that make me feel good. It's a short walk down to the sea and see the view from there. It's a short distance to a lively neighborhood, a service area where Grandi is. Short distance to the center as well, I</p>	<p>She is pleased with how close the neighborhood is to the sea, to surrounding neighborhoods and to the service area. She sees the area as a</p>	<p>Proximity to blue spaces can influence an individual's emotional well-being Proximity to other neighborhood and proximity to a service center can influence</p>	<p>Proximity to blue spaces, to other neighborhoods and service center can influence subjective well being</p>	<p>Commuting time for well-being</p>

	<p>feel that's all positive, how that's all come to life. I think it's very positive how it's just... a friendly neighborhood, if I look out of my back window, there are usually some cats.</p>	<p>lively neighborhood and very friendly as the area is pet friendly.</p>	<p>individual well-being</p> <p>An area that is pet friendly is perceived as a friendly neighborhood</p>		
<p>Interviewee 8: female, single, lives alone, homeowner, Vesturbær-</p>	<p>There are kids playing in the summer, not much right now but during the summer and stuff. There is a playschool nearby, many things which I find positive about the neighborhood and make me feel good and I have very positive emotions towards. I feel like I „live “there [alternative translation: I feel like I belong there]. If you want to take part in it then there's all sorts happening. There is sometimes, not every year, but my street and Framnesvegur sometimes throw a street market once a year. There are all sorts of things if you look for what's possible to do.</p>	<p>The area has children playing outside in the summer when there is good weather. It also has a playschool. She feels like she belongs in the neighborhood and the area has many events that residents can participate in if they are interested.</p>	<p>The neighborhood is child friendly as children can be outdoors playing and there is also a playschool</p> <p>An individual's sense of belonging in their neighborhood affects their emotional well-being</p> <p>Regular community events create a sense of community in a neighborhood and can affect an individual's well-being</p>	<p>Child friendly neighborhood affects subjective well-being</p> <p>Sense of belonging can influence an individual's attachment to their neighborhood and this may affect their well-being</p> <p>Sense of community affects an individual's social well-being</p>	<p>Neighborhood attachment for well-being</p>
<p>Interviewee 8: female, single, lives alone, homeowner</p>	<p>I somehow like it because it like a lived-in urban form if we can word it in that way.</p>	<p>The participant feels a sense of place and belonging in</p>	<p>Sense of place and belonging to a neighborhood can create place attachment and</p>	<p>Neighborhood attachment can affect an</p>	<p>Neighborhood attachment for well-being</p>

<p>, Vesturbær-</p>	<p>You can feel that it's not a place where people sleep, but a place where people habit and live and... somehow that kind of atmosphere that you feel that people live there, not just are there. That's one of the reasons I have kept myself in the old Vesturbær, it's a bit just what I know. In other neighborhoods I feel like...: „these are just institutions“. Like those new... especially apartment buildings.</p>	<p>the neighborhood. She is pleased with the neighborhood atmosphere and the other residents and it's one of the reasons she has been residing in the area for a while. She is not pleased with other neighborhoods that feel like institutions instead of residential areas especially the new apartment buildings</p>	<p>influence residents to reside there longer.</p>	<p>individual's well-being</p>	
<p>Interviewee 8: female, single, lives alone, homeowner , Vesturbær-</p>	<p>Well us in the house talk together of course, I say hi to some of the people who live in the closest houses. I, maybe as a single woman, am maybe not necessarily... although I know of people who live in my house who have children, they are even in more communication because there are children in the other houses and therefore know the others better. I have found out that someone lives nearby and have started talking and then I greet them. But</p>	<p>She talks to her roommates and greets her closest neighbors but finds it odd due to being single.</p> <p>The neighborhoods who have children are in more communication with each other due to the children and socialization of the children</p> <p>She has managed to befriend a neighbor</p>	<p>Children create context for more communication within residents in a neighborhood</p>	<p>Having relationships and social networks with people in the neighborhood can create neighborhood attachment and affect social well-being</p>	<p>Neighborhood attachment for well-being</p>

	you don't have to unless you want to.				
Interviewee 8: female, single, lives alone, homeowner, Vesturbær-	I feel it's very normal because I think it's become more of a children's neighborhood than it has been lately, and I can feel that there's more planned around that. Although it's quite laid back, people are in general not rowdy or anything.	She is pleased with the location of the neighborhood near the center with many events planned. She believes the neighborhood is structured more for family with children and it is a quiet area.	The central position of the neighborhood makes it a hub of social events. The neighborhood is designed to be more child friendly and it is a quiet area	Neighborhood centrality	Neighborhood attachment for well-being
Interviewee 8: female, single, lives alone, homeowner, Vesturbær-	My mother still lived in the apartment where I grew up, very close to her. Just comfortable in many ways, it didn't need much doing to it [maintenance] quite yet. I of course know the area very well. I am very happy to this point, I think it's very comfortable to be this close to the center, without being in it, and I find it very comfortable how short it is to a lot of service.	She finds it comforting to live close to her mother and she is very familiar with the area. she also didn't have to do a lot of maintenance to the house She is also pleased with the good service access living near the city center	Living near family members can affect an individual's emotional well-being Proximity to city center can benefit an individual with plenty of service access and this may influence their well-being Proximity to service access for well-being	Familial relationships in the neighborhood can create place attachment and affect an individual's well being Being raised somewhere creates attachment Proximity to the city center can affect an individual's well-being	Neighborhood attachment for well being Commuting time for well being
Interviewee 8: female, single, lives alone, homeowner, Vesturbær-	Yes, to be able to walk and somehow go somewhere and just walk and go sit in a café if that's what I feel like. Walk to the library. Something like that. That's a	She can walk almost everywhere from her neighborhood and can visit a café or go to social events around the	Neighborhood walkability can influence a person to be physically active and it can influence them to be socially active	Neighborhood walkability can influence an individual's physical, emotional,	Neighborhood accessibility/walkability for well-being

	thing that's quite important to me... It's possible to attend events here and there, within walking distance .	city which is important to her		and social well-being	
Interviewee 8: female, single, lives alone, homeowner, Vesturbær-	How are the conditions for walking? R: Just quite good , I just walk the streets, it's quite comfortable to walk. Not hard. Just walk paths, and this neighborhood was made for walking traffic . So, it's mainly the sea that you use as a leisure area? R: Yes, it's very comfortable to walk down to Ánanaust when one is going to take a walk, or walk out to Grandi and arrive to Ánanaust, you can walk all the way out to Nes, all the way to Grótta if one is in a great mood [alternative translation: in an industrious mood].	She finds the neighborhood accessibility good as she is able to walk to the places, she finds interesting in the neighborhood. She notes that the neighborhood was made for walking traffic. She finds it very comfortable to walk and utilizes her free time to walk towards the sea.	Neighborhood accessibility by having walking paths can contribute to individual physical well-being by encouraging them to walk more.	Neighborhood accessibility for physical well-being	Neighborhood accessibility/walkability for well being
Interviewee 10: female, mother of two, lives in shared apartment, homeowner, laugardalur -	The house, it is about 100 square meters, is very good size , there are 3 bedrooms, so the kids have their own room	She finds the home to be a god size and have enough rooms for her children	A home that has enough room for occupants creates privacy for occupants	Housing size may affect individual well being	Housing as a necessity for well-being
Interviewee 10: female, mother of two, lives in shared apartment,	I was not looking for this neighborhood, it was basically the house, first and foremost, and the	The greatest selling feature for choosing the residential location was	A home that has enough room for occupants creates privacy for occupants	Housing size affects individual well being	Housing as a necessity for well-being

<p>homeowner , laugardalur -</p>	<p>neighborhood that charmed me right away. I had heard good things about the school, the house had the number of rooms I was looking for., it was very difficult to find apartments with this number of rooms, and it's so important to me to be able to have a garden, it's really important to me to have privacy, and this house just ticked all the boxes. And it was just so beautiful that I was ready to move to this neighborhood right away.</p>	<p>the house and secondly the neighborhood because of the school. It was important for her to have a house with many rooms and a garden. She wanted the garden for privacy.</p>	<p>A private garden creates privacy for the occupants in the home</p>	<p>The privacy accorded by having a private garden can affect an individual's emotional well-being</p>	<p>Green space access for well-being</p>
<p>Interviewee 10: female, mother of two, lives in shared apartment, homeowner , laugardalur -</p>	<p>...with a large garden, you walk straight from the house straight into the garden, has a deck. ...a lot of beautiful flowers and plants, and right now it's most in use by the kids who play in it, there's a swing and it's located so that there's a lot of privacy on the side where the garden is, a lot of peace and quiet, and the neighbors can't see in, which I think is a very good advantage, having that privacy, not to close to other residents, but I plan to work on the garden so that we can spend more time in it and have a good</p>	<p>She has access to a large private garden that is mostly used by the children.</p> <p>Large private garden provides privacy and feelings of serenity.</p> <p>Pleased with the privacy the private garden offers from neighbors</p> <p>The garden provides a buffer from close neighbors</p> <p>Sees garden as providing a good</p>	<p>Access to private garden promotes children to play outside</p> <p>Private garden enables privacy and feelings of happiness</p> <p>The private garden creates a barrier from close neighbors</p> <p>The private garden provides a good outdoor area for social interaction</p>	<p>Access to the garden affects children physical well being</p> <p>Perceived privacy from access to a private garden can affect an individual's emotional well-being</p> <p>Private garden can influence individuals social well being</p> <p>Perceived privacy for well-being</p>	<p>Green space access for well-being</p> <p>Population density for well-being</p>

	outdoor area , with a larger porch, as I feel very good outdoors and there is a lot of nature in this garden	outdoor area for social interaction Very pleased with the garden			
Interviewee 10: female, mother of two, lives in shared apartment, homeowner, laugardalur -	What makes me happy in this neighborhood is first and foremost the vegetation, it's a very vegetated area , there a lot of big trees, the weather is calm there, it's of course in the heart of Laugardalur, the weather is generally very good, the big trees provide shelter from most wind directions	Importance of aesthetic urban landscapes for well-being Importance of maintaining a natural environment for weather control in wind buffering	A well-vegetated area creates an aesthetically appealing neighborhood for its residents	Urban vegetation cover can influence an individual's emotional and mental well-being	Greenspace access for well-being Neighborhood environmental quality for well-being
Interviewee 10: female, mother of two, lives in shared apartment, homeowner, laugardalur -	the neighborhood is very quiet, short distance to school, short distance to the shop, short distance to almost all services, or all services are within walking distance, a good neighborhood for children as they can walk carefree between houses, and to school where there is always a cross guard to cross the street. It is very short distance to a large open area, Laugardalur, Húsdýragarðurinn, the Botanical Garden, the kids love it.	She views the neighborhood as good, quiet and child friendly due to the safety aspect. The neighborhood is close to schools, shops, and services. The neighborhood is near the botanical garden which her children love to visit.	A neighborhood that is designed to the safety of children through street networks, paths and road adjustments is seen as child friendly Child-friendly area may positively affect well-being Quiet area may affect individual's well-being	A quiet neighborhood affects an individual's emotional and mental well-being Neighborhood walkability can affect an individual's physical well-being through exercise	Green space access for well being Neighborhood walkability for well-being
Interviewee 10: female, mother of two, lives in	What's I find the most annoying is that it's a 30 street, but cars are always	She is not pleased with the lack of speed bumps	A residential neighborhood whose road networks don't	The perception of unsafe roads in a	Neighborhood residential quality for well-being

an apartment complex, homeowner, Laugardalur	driving ridiculously fast, it's lacking more speed barriers in the area where I live, but there are speed barriers further up the street , but just outside of where I live cars drive like maniacs, that's what annoys me the most, but I just moved from one the main traffic streets of the city so it's nothing compared to that.	on the road in the residential area due to careless drivers who drive too fast and it can be a safety hazard especially with children living in the area	have speed barriers can be a concern for parents on the safety of their children	neighborhood can create annoyance and affect individual's emotional well-being	
Interviewee 10: female, mother of two, lives in shared apartment, homeowner, Laugardalur	Very good relationship with the neighbors , great neighbors on the upper floor, I have a few friends in the neighborhood who often come over, always walking between houses, have dogs, often walk to ours.	She has very good relationship with the neighbors and has a few friends who socialize occasionally	Friendship ties for well-being Good neighborliness for well-being	Having relationships and social networks with people in the neighborhood can create neighborhood attachment and affect social well-being	Neighborhood attachment for well-being
Interviewee 10: female, mother of two, lives in shared apartment, homeowner, Laugardalur	I find many things being taken to the extremes like building on the heart garden square where there was built a hotel instead of having an open space, it is very necessary for people to have open spaces, squares, and the like.	Not pleased with expansion especially when it interferes with shared open spaces		Access to open spaces can affect an individual's emotional well-being	Open space access for well-being
Interviewee 10: female, mother of two, lives in shared apartment,	Yes, first of all, I do not want to live in a big apartment building with a lot of neighbors	She does not want to a house and area where she feels crowded and	Increased number of tenants in an apartment complex can be overwhelming	An individual perception of having their privacy	Greenspace access for well-being

<p>homeowner , Laugardalur</p>	<p>and a small private area. Secondly, I do not want to live in a neighborhood where the only thing around for me in the neighborhood is a bonus shop, I want to be able to walk in nature, I want to be able to walk to some culture or cafés, I want to live a short distance from the city center, I think I live a little too far from the city center, it's probably because most of my family and friends live in that area.</p>	<p>her sense of privacy is infringed.</p> <p>She would prefer to live in an area in close contact with nature and close to city center to access social events and entertainment</p>	<p>and can create feelings of overcrowding and reduced private area hinders individual's privacy.</p> <p>Proximity to city center for well-being</p> <p>Proximity to cultural activities for well-being</p> <p>Proximity to services for well-being</p> <p>Perceived privacy for well-being</p>	<p>reduced can affect their emotional well-being</p> <p>Greenspace access affects a person emotional well-being</p> <p>Social relationships affect wellbeing and enhance neighborhood attachment</p>	<p>Neighborhood attachment for well-being</p> <p>Commuting time for well-being</p>
<p>Interviewee 10: female, mother of two, lives in shared apartment, homeowner , Laugardalur</p>	<p>I do not want to live in a big apartment house, where my only private area would just be a small balcony. And I do not want to be in a neighborhood that is brand new and there is no soft infrastructure (i. uppbygging) and no soul, it needs to be well-grown.</p>	<p>She does not want to live an apartment with limited private area.</p> <p>She has a preference of living in an established area instead of a newly built-up area</p>	<p>Living in an established area as opposed to a new one creates feeling of stability which may be due to lack of longtime residents (live in factor), or vegetation access, or services access. There may be sense of place or community in the rootedness</p>	<p>An individual perception of having their privacy reduced can affect their emotional and psychological well-being</p>	<p>Population density for well-being</p> <p>Neighborhood attachment for well being</p>
<p>Interviewee 10: female, mother of two, lives in shared apartment, homeowner , Laugardalur</p>	<p>Yes I'm not particularly interested in being in suburbs and waiting in traffic. . I don't know, I of course have a job in Reykjavík, so I wouldwithin Reykjavík I would preferably not want to go you know, far outside a downtown core,</p>	<p>She is not interested in living in the suburbs due to traffic inconvenience or anywhere else apart from near the city center due to her working in</p>	<p>Longer travel time due to living in the suburbs and waiting in traffic may influence an individual's location choice.</p> <p>Living further away from Reykjavik city center is seen as less exciting and</p>	<p>Traffic inconvenience affect an individual's well-being</p> <p>Access to cultural services affect and individual's</p>	<p>Neighborhood environmental quality for well being</p> <p>Cultural services for well-being</p>

	<p>basically it depends on the further away we go the less exciting it is for me, ... I have a job in town and my job isn't anywhere else than in town.</p>	<p>the center and</p> <p>She also finds it less exciting to travel further way from the city center.</p>	<p>creates boredom which may be due to lack of cultural services</p>	<p>social well-being</p>	
<p>Interviewee 9: male, shared apartment, father of one, homeowner , Åsvallagata -</p>	<p>Yeah, I am in a pretty big apartment, yes we are very happy with it</p>	<p>He is thrilled with the size of his apartment</p>	<p>Home size creates feelings of joy</p>	<p>Housing size affects subjective well being</p>	<p>Housing as a necessity for well-being</p>
<p>Interviewee 9: male, shared apartment, father of one, homeowner , Åsvallagata -</p>	<p>No. Not really, it's like an elongated garden, like a big courtyard, which is only possible to walk through, there are neighbor gardens, we don't ourselves have a garden, but like, still a shared space there behind, which is at least possible to walk through. Yeeeah (garden use), to some extent, we go outside with our boy on a sled or something like that. Not really (like having a private garden), it's like... It would be fun, but it's nothing I'm rather seeking</p>	<p>There is a shared garden. He lacks a private garden and thinks it would be fun but isn't seeking to have it. Has access to shared open space that supports walkability.</p> <p>Usage of the garden with his son to play</p>	<p>Lack of access to a private garden does not limit outdoor activities</p> <p>Access to shared garden promote children to play outside</p>	<p>Shared open spaces promote subjective well-being</p> <p>Garden access affects children physical well-being</p>	<p>Proximity to open spaces for wellbeing</p>
<p>Interviewee 9: male, shared apartment, father of one, homeowner ,</p>	<p>so, would you say that it was also well grown, as in green? Yeah compared to the area there are birds and we hear bird songs and something like</p>	<p>He is pleased with the diversity in the area with birds singing and the well-manicured gardens. He is not</p>	<p>A peaceful and serene environment which and contact with nature has been shown to reduce stress levels and improve</p>	<p>Aesthetic appeal of neighborhood to well-being</p>	<p>Neighborhood environmental quality for well-being</p>

<p>Ásvallagata -</p>	<p>that. The gardens around are well kept, so yeah compared to how dense the area is and everything like that then pretty decent,</p>	<p>concerned with compactness of the area as affecting the greenspace access</p>	<p>mental/psychological well-being.</p>		
<p>Interviewee 9: male, shared apartment, father of one, homeowner , Ásvallagata -</p>	<p>Very dense and, cozy. It's like, you recognize quite many around, more than I am used to from living elsewhere. Everything is really established (alternative translation: root grown), many people have lived there for decades, and I like that. Everyone somehow is really friendly, it is, compared to where I have lived before, it's much more of a home, regarding the people around. Everyone is there to be there, and are content, versus where I've lived where people stop for shorter amounts of time. it's many rather grown as in you know, the people are pretty fixed in the neighborhood I think, people aren't looking to move away in general.</p>	<p>He finds the area to be dense and cozy and there is a sense of familiarity with the residents. The area is very well established, and everyone is friendly and happy to be there which makes it feel more like a community</p>	<p>Living in an established area creates feeling of stability due the longtime residents. There is solidarity and people are really friendly with a sense of belonging by the residents.</p> <p>The rootedness of an area encourages the residents to feel safe due to the familiarity</p>	<p>Having a sense of familiarity with neighbors created place attachment which affects an individual's emotional well-being</p> <p>Residing in a well-established area creates a sense of community a sense of familiarity which can affect an individual's emotional and social well-being</p>	<p>Neighborhood attachment for well-being</p>
<p>Interviewee 9: male, shared apartment, father of one, homeowner ,</p>	<p>Yeah, just have a lot of effect, I, or we chose, also you know, I'm working almost next door, or at least in walking distance, and, I find there's a big</p>	<p>They chose the are particular due to his work and the walkability factor. They also chose the are due to</p>	<p>The walkability of an area is important for residents who prefer to walk to work</p> <p>The rootedness of an area</p>	<p>Residing in a well-established area creates a sense of community and perceived safety</p>	<p>Neighborhood walkability for well-being</p> <p>Neighborhood attachment for well-being</p>

<p>Ásvallagata -</p>	<p>difference, and have good kindergartens close which my boy attends, and we sense that there is little change in staff, so it's obviously, most things in this neighborhood is very established, one feels very good, it matters a lot, I at least can't really imagine moving away, or at least something really good would have to come along so that I would want to move.</p>	<p>the kindergarten s and the stability with the school staff which creates sense of safety.</p> <p>Another reason for choosing the neighborhood was due to its rootedness and he wants to live there for a long time.</p>	<p>encourages the residents to feel safe due to the familiarity and stability</p>	<p>which affect an individual's emotional and social well-being</p>	
<p>Interviewee 9: male, shared apartment, father of one, homeowner , Ásvallagata -</p>	<p>Yeah, we were looking for, we have always lived in the center since we moved in together my wife and I, and we were looking for [a place in] Miðbær and were mainly looking at Norðurmýrin, but then we saw this in Vesturbær, she is raised in Vesturbær, and she spoke well about it, it was always in this area, the central area, where we could be car-less, or pretty much carless, so it was very clear, it was 105, 101 or 107 that were considered, and not even everywhere within those neighborhoods, so it was just that, sort of mainly that with the car-</p>	<p>They chose the area due to its centrality in relation to the city center and this is because they have always lived in the center since childhood and they wanted to not have to use the car in their day to day activities.</p> <p>They mainly chose it so that they wouldn't have to use the car as much and to access the services</p>		<p>Travel mode opportunities affect residential selection</p> <p>Being raised somewhere creates attachment</p> <p>Proximity to city center for well-being</p> <p>Service access for well-being</p>	<p>Neighborhood attachment for well-being</p> <p>Commuting time for well-being</p>

	ness and local service.				
Interviewee 9: male, shared apartment, father of one, homeowner, Ásvallagata -	Mhm. Especially because of the shop Kjötborg , which is right across the street from us, which is like a social center . Yeah, or a social center, it's of course a shop, but people come there, stands and talk, and watches something which is on the television there , and something, it's very funny. But very cool and fun and it completely, you know, at Christmas they have Christmas glogg and everyone is invited, and you meet all the people there and something like that... with good neighbors which I also find important . I have some very good friends here	There is a shop in the neighborhood that acts like a social center for socialization and people gather for social events especially during holidays where they have events. He also finds the neighborhood area charming due to the good neighbors and friends	Open spaces create a social center enabling people to socialize The social center is a great platform to meet people during the social events and create social networks Good neighborliness for well-being Familial and friendship ties for well-being	Socialization in the neighborhood social center creates place attachment with affects individual's emotional well being Good neighbors and friends in the neighborhood create place attachment which affect a person's emotional well being	Neighborhood attachment for well-being Cultural activities for well-being
Interviewee 9: male, shared apartment, father of one, homeowner, Ásvallagata -	Yes it's of course the center so there's , it takes maybe like I say, takes maybe a maximum of 10 minutes to walk to work , kind of 10 minutes to walk to most things, because in the center there are most things, I sort of seek very little outside of the center , you know, I rather go on online shops if I need something outside of the	The area is centrally located in the city center and a short distance to his work place and most of the things he needs and before buying a car he could walk to almost all places and be carless due to the optimal position of		Neighborhood walkability encourages physical exercise and affects individual's physical well-being Proximity to work for well-being Proximity to city center for well-being	Neighborhood walkability for well being Commuting time for well-being

	<p>center, because I don't like going to Kringlan or something similar, it's a short distance to cafés and such, I go quite a lot, or like, quite a lot, yes, to cafés and umm short, sort of short distance to shops and stuff, we just recently bought a car, so up until that point we were able to be carless with a small child and everything like that.</p>	<p>the residential location.</p>		<p>Proximity to cultural activities for well-being</p> <p>Proximity to service access for well-being</p>	
<p>Interviewee 9: male, shared apartment, father of one, homeowner, Ásvallagata -</p>	<p>Yes, definitely. I, where I lived in Hafnarfjörður it was completely in the outskirts, kind of right by the aluminum factory, if you walk then you're basically just walking on the edge of Reykjanesbraut or something similar, there are no houses around and there's no like, yeah I don't know what it is that I find unpleasant about walking there, there's something about just walking through the neighborhood. I felt that a bit where I lived in Hafnarfjörður and somehow the neighborhoods were long and boring where there were only a few residential houses, very like, rather dispersed so I knew when I</p>	<p>He previously lived in a suburb and when he walked he would be in sort of wilderness without any built-up areas around which he found very boring. He prefers to walk in residential areas with concentrated houses instead of dispersed areas due to the weather factor (houses block wind) and this may have influenced his choice in residential location in the center which is</p>	<p>The compact city with the densely concentrated built up areas create a buffer from the wind and sort of security from the extreme weather events as compared to the suburban areas with the dispersed buildings.</p> <p>Having a sense of familiarity with the people you are walking with can create a sense of safety.</p>	<p>The urban landscape such as bare land on the outskirts of the center can influence physical well-being</p>	<p>Area densification for well-being</p> <p>Neighborhood walkability for well-being</p>

	would be in front of that house there would be wind, or something similar. Maybe that also influenced it or something, but yeah. So I feel that there's a difference that there is [inaudible] around and there is some people and a built environment so yeah, it's sort of the people as well, just knowing about others walking and something like that.	more compact. Having people around who he recognizes while walking creates as a sense of familiarity.			
Interviewee 6: Male, family, homeowner, Hofsvallag ata	It's one bedroom house...like flat, and it's not that big, but it's sufficient for our family, and... it's relatively old but it's renovated so it's in good shape now, and... yeah	Finds the apartment to be sufficient for the family and renovated well for them	The home size needs to fit for the family and the house condition creates a cozy space for the family	Home size and condition can affect individual wellbeing	Housing as a necessity for well being
Interviewee 9: Male, family, homeowner, Hofsvallag ata	<u>Ok. What else would you say is good about... this new place?</u> Ah... something that is quite interesting is that... in this flat that we will have access to a kind of... green park area. Very near like, within two minutes from our place. Which is very good, most probably in the summertime, and in the spring that we can go and take a walk and it's very handy and accessible for us, and there's a playground for the	Even when they have no private garden, the participant and his family find it very good to have the shared green areas for their well-being such as physical activities for the children	Shared green spaces in urban areas may offer an arena for outdoor activities for families	Shared green spaces may affect well-being	Greenspace access for well being

	babies and kids and so on, so it's a good advantage when we... selected this and then we noticed that was a plus to... (mhm) choose this, and...				
Interviewee 9: Male, family, homeowner, Hofsvallag ata-(Reza)	Yeah, like grocery stores, shopping centers are like within like ten minutes... driving, and... we can walk to some of them. So, the location is very good, and we have good access to... all we need actually.	The participant is happy with the short commuting time to access the daily services	Short travel time to access services may be beneficial for the well-being of residents	Service access for well-being	Commuting time for well being
Interviewee 9: Male, family, homeowner, Hofsvallag ata	I really like to like... use bicycles, and like... even buses and others, but over time, I think it's, it will be more difficult for me and for my family at least to switch to other travel modes, but... I would really like to, like... take bicycle for going around, and like... One thing for example for the... bicycles it will be... for most of these areas... there's no paths for cycling in, because it's quite compact areas, and there are no facilities for those,	The participant would like to travel actively with cycling or walking but the neighborhood design is constricting for his well-being	Good accessibility of street networks in compact areas to allow for pedestrian traffic might be beneficial for the well-being of its residents	Accessibility in the neighborhood may affect well-being	Neighborhood walkability for well being
Interviewee 9: Male, family, homeowner,	Of course it would be nice to live in somewhere that... you have a nice	He would prefer to have a nice walking area	Participant may have a preference for good accessibility in neighborhood	Accessibility in neighborhood may	Neighborhood walkability for the well-being

Hofsvallag ata	walking area nearby			affect well-being	
Interviewee 9: Male, family, homeowner , Hofsvallag ata	sometimes is getting noisy during the weekend nights, that... because it's not that far from the downtown and you can hear that , Of course it would be nice to live in somewhere that... you are living with less noise / pollution or noise from the cars and driving and so on.	He is not pleased with the noise pollution emanating from living so close to the city center and pollution from cars	Noise pollution from living close to main traffic may lower an individual's well-being	Noise pollution may affect an individuals' well being	Neighborhood environmental quality for well being
Interviewee 9: Male, family, homeowner , Hofsvallag ata	Yeah... mainly we selected this place because it was near to both our work and some surrounding areas downtown and also some shopping centers and stuff, (mhm) so... the location was the main element, and then the rental price , which was... quite reasonable, compared to the location	The area was selected due to it being in proximity to their workplaces and other areas in the city center and the shopping center. The rental price was also a deciding factor	Short commuting time to work place may affect participants choice of residential location	Proximity to service access for well being Proximity to city center for well-being Proximity to workplace for well-being	Commuting time for well-being
Interviewee 9: Male, family, homeowner , Hofsvallag ata-	Ehm... it's quite calm in a sense that... although it's quite near to the downtown, and... but... it's a... not that close and, but still we can get some... good access to like a theater, cinema, and other events that are... in town , near downtown, and we can (yeah) get to that very quickly, so... (ok) it's good . I should say for our family the	He finds the area to be calm due to the location near the center but not overwhelmingly so. He is able to access services from the city center very quickly	Short travel time to access services may be beneficial for the well-being of residents	Proximity to services access for well-being Proximity to culture activities for well being Proximity to city center for well	Commuting time for well-being Proximity to cultural and entertainment services for well-being

	<p>priority is to be near... shopping centers and downtown area, so... still we would.. consider... this area, that is Vesturbaer, or the downtown area that we would select to live, because, we would have good access and we would... spend less time on the car in some sense and more into getting what we want to.. get.</p>				
<p>Interviewee 9: Male, family, homeowner, Hofsvallag ata-</p>	<p>in this flat that we will have access to a kind of... green park area. Very near like, within two minutes from our place. Which is very good that we can go and take a walk and it's very handy and accessible for us, and there's a playground for the babies and kids and so on, so it's a good advantage when we... selected this and then we noticed that was a plus to...It's a backyard but it's public.</p> <p>guess there are many people living there, and... they seem quite happy (quietly).</p>	<p>There is a shared public park area that is within walking distance and very close to the respondent's home.</p> <p>Pleased with the convenience of having the park in close proximity to home and enabling walkability.</p> <p>The shared park has a playground for children to play in, which is was an attractive feature in selecting the residential location</p>	<p>Shared green areas in a neighborhood may be beneficial for the well-being of residents</p> <p>Greenspace proximity for well being</p>	<p>Access to public park area affects an individual's physical well-being</p> <p>The proximity of the public park to residential area affects an individual's subjective well-being</p> <p>Access to public park affects children's physical well-being</p>	<p>Green space access for well being</p> <p>Open space access for well being</p>
<p>Interviewee 14: Male, married, tenant, lives in a shared apartment,</p>	<p>But... I lived in student housing once, and that's like the wrong side of campus, cause it's kind of a dead</p>	<p>The participant lived in an area with poor service access and</p>	<p>Short commuting time to access services is beneficial for well-being</p>	<p>Service access for well-being</p> <p>Calm and quiet area</p>	<p>Commuting time for well-being</p>

<p>Vellir- outside Hafnarfjörð ur-</p>	<p>zone, you got the airport there. (mhm) And then you got school campus, so like... walking to groceries, the closest places were half hour walk away. (mhm) Which in stormy weather isn't the funniest thing to do. (mhm) And then like the airport is super loud. So I don't want to live there again, you know. I don't know, I'm not the huge, not [the best fan of big cities] (mhm) I kind of like where I am right now.</p>	<p>needed to walk long distances to access daily services which was not pleasant in bad weather conditions. He also mentions his pleasure with living near the airport and the noise pollution as bad for his well-being</p>	<p>Noise pollution may be a detriment for participants well-being</p>	<p>for well being</p>	<p>Neighborhood environmental quality for well-being</p>
<p>Interviewee 9: Male, married, tenant, lives in a shared apartment, Vellir- outside Hafnarfjörð ur-</p>	<p><u>Can you access everything you need on an everyday basis around your place.</u> Sure, yeah. Bonus is a five minute walk away. There is a pool, which is few minutes more than that. (mhm) There are lots of walking paths. And... the bus takes me to town easily.</p>	<p>He is pleased with the neighborhood walkability and the short commuting time to access services</p>	<p>Neighborhood walkability may affect well being</p>	<p>Short commuting time and neighborhood walkability may affect well-being</p>	<p>Commuting time for well-being Neighborhood walkability for well-being</p>
<p>Interviewee 6: Male, single, no kids, homeowner Bjargarstígur-(Nick)</p>	<p>Ehm... it's quite calm in a sense that... although it's quite near to the downtown, and... but... it's a... not that close and, but still we can get some... good access to like a theater, cinema, and other events that are... in town,</p>	<p>The participant lives near the city centre and is pleased with the calmness of the neighborhood</p>	<p>Living in a calm neighborhood can affect an individual's emotional well-being Proximity to entertainment services can affect an</p>	<p>Proximity to services for well being Proximity to city center for well being Calm neighborho</p>	<p>Commuting time for well-being</p>

	near downtown, and we can (yeah) get to that like very quickly, so... (ok) it's good.		individual's social well-being	od for well being	
Interviewee 6: Male, single, no kids, homeowner Bjargarstígur-	Sort of the best part of town in terms of location, it literally couldn't be better , it's just off Bergstaðastræti, it's like right in the center of Miðbær but it's on a quiet street, so you don't feel like you're in the middle of it.	Pleased with the residential location address due to it being near the city center. Prefers to be in a quiet street.		Proximity to city center affect emotional well-being Negative externalities such as noise pollution can affect subjective well-being	Neighborhood environmental quality for well-being
Interviewee 6: Male, single, no kids, homeowner Bjargarstígur-	Great, yeah my neighbors seem fine , we don't really hang out but they're all super chilled, helpful , no problems at all, like really, not noisy or anything, I'm super lucky.	He is pleased with his neighbors and they seem very calm and are not rowdy	Calm, quiet and helpful neighbors constitute good neighborliness Good neighborliness for well-being	Quiet neighborhood can affect emotional and psychological well-being	Neighborhood attachment for well being
Interviewee 6 Male, single, homeowner Bjargarstígur-	Because you know, my life is in the center, and I like the convenience of being downtown.	Happy that he lives in the city center and the convenience of the location	Convenience could be due to proximity to services and job and walkability	Proximity to city center affects respondent's subjective well-being	Commuting time for well being
Interviewee 6 Male, single, homeowner ? Bjargarstígur	Yeah I have a pretty solid social life, the bar is nearby	Proximity of the bar improves his social well-being		Cultural and entertainment services may promote social well-being	Cultural activities for well-being-social
Interviewee 4: Female, single, homeowner (house car)	yes all 13 square meters, (laughs) yes I say I live in a caravan that is built like a house, so I'm on wheels,	Pleased with the house car and the freedom to relocate anywhere	Home design creates feelings of happiness	A home on wheels is convenient to enable her to reside anywhere	Housing as a necessity for well-being

Grafarholt- (Valdis)	and I can put it in the back of the car, but it has a bathroom, kitchen, cupboards, more cabinets, and the bedroom and the then the room downstairs is a sofa and a little lounge, (do you feel big enough for you?) yes I did not miss anything , (is this furnished as you want?)yes, I built this forward, it is according to my ideas, a lot that I want to change is this I wanted. what feels good about it is the house I live in	quickly and the rooms available.		and the flexibility of moving	
Interviewee 4 Female, single, lives alone, homeowner (house car)	yes the forest (laughs) and nature and here it is completely serene/peaceful/quiet here yes there are maybe what feels good about it is the vegetation and that said there is plenty of vegetation and trees here this eh yes and also both wildlife and human but badyes, I'm very lucky with that(vegetation cover)	A peaceful and serene environment Pleased with the aesthetic natural environment Combination of wildlife and human	Quiet area for well being Calm area for well being Access to urban vegetation cover for well being Pristine urban landscape for well being	A quiet and calm area can affect an individual's emotional and mental well being	Green space access for well-being Neighborhood environmental quality for well-being
Female, single, lives alone, the homeowner (house car)- (Valdis)	A; You just said it is important to you [00:12:20] V: yes I do feel the difference between mom and dad living in blocks downtown and there are green spots and vegetation	Difference between built up areas and suburbs	Urban landscape Urban vegetation cover may affect well-being		Green space access for well-being

	<p>between all the blocks but then it starts to be building from the left and just all the places around and it's just cast between the blocks it's just a stone and there is that big difference just to have that said between the only ones and then the</p>				
<p>Interviewee 4: Female, single, lives alone, homeowner (house car) Grafarholt-</p>	<p>there are other little car houses here, same, on the same parking area, Okay, I do not have much contact with them, they speak very little Icelandic and have no English knowledge and here , my dad is working in the next house and I know the owner and so it's such a small community, Okay, and here, it's not that typical neighborhood, yeah ..and also there are people that live here, people there are, people working here and I never only though i don't talk to them so much and i always say good day and stuff</p>	<p>She does not communicate much with her neighbors due to the language barriers. Her father works nearby and she is familiar with the owner which makes the place feel like a small community. She does not talk much to other people who live and work there except exchanging pleasantries</p>	<p>Language barrier as hinderance for communication can affect the social aspect in a neighborhood</p> <p>Friendly and familial relationships create a sense of place attachment to a neighborhood.</p>	<p>Familial ties for well-being</p> <p>Neighborhood attachment for well being</p> <p>Sense of community for well-being</p> <p>Social diversity for well-being</p>	<p>Neighborhood composition for well-being</p>
<p>Interviewee 4: Female, single, lives alone, homeowner (house car) Grafarholt-</p>	<p>yes both (social aspect important) and i would totally like to, will get to know them if we spoke the same language and I feel it is minus (personal relationships)but it is not for me to live</p>	<p>She would be open to familiarizing herself with her neighbors if there was no communication hinderance and she finds</p>	<p>Language barrier as hinderance for communication can affect the social aspect in a neighborhood</p>	<p>Social diversity for well-being</p>	<p>Neighborhood composition for well-being</p>

	here and it would be very nice to have a yes,	this as taking away from her neighborhood experience.			
Interviewee 4: Female, single, lives alone, homeowner (house car)	it's yes I'm, there's a small yard , it's here a little here below my place or next door, it's full of rabbits and geese , and then there is a small river stream here just behind , but yes the yard is really just so common, (important for outdoor/green space) yes, it just doesn't have to be not to be grass, it is something else or, something else , here I can use more garden and stuff like that	She has a small garden as her backyard and there is a small stream with a combination of animal life and human life She prefers a private yard	Shared green space access for well-being	Green and blue space access can affect an individual's emotional and mental well-being	Green space access for well-being
Interviewee 4: Female, single, lives alone, homeowner (house car) Grafarholt-	and I am more isolated in Reykjavik than in moss (Mosfellsbær) so the smaller the town the more isolated I am, and this works for safety , because of the many people and I want a little Smári community yes necessarily, of course, I think here it's completely safe	She feels more isolated living in a smaller town than in a bigger community. She finds smaller communities to be more safe than big ones and feels completely safe there	Social isolation when living in compact cities Smaller community create a sense of safety Community-minded	Perceived safety for wellbeing Compact city features such as density for well-being	Population density for well-being
Interviewee 13-female, married, mother of one, homeowner , Þingholt	Uhh, we, it just, was always in our plans to get to downtown , we have always wanted that.(because of social aspect?)Yes and just a short distance to work and I just want, I	They have always wanted to live downtown due to the convenience of being near their workplace. The location	Proximity to work for well being Proximity to city center for well being		Short commuting time for well-being

	<p>want to be in the center if I, if I can. Umm no, it was, it was absolutely the location which was the decisive factor, but of course we wouldn't have bought whatever property, it was just, a question of waiting and finding the right apartment which we could afford, and, umm could imagine ourselves feeling good in, and was in the right place.</p>	<p>near the city center was the deciding factor and the price also factored in</p>			
<p>Interviewee 13-female, married, mother of one, homeowner, Bingham</p>	<p>No, uhh, I wouldn't say that, it's of course in the city center, and that which uhh, places to meet people and places for uhh, social interaction in general are just the city center, all of it [of the city center]. Is that important to you? Yes! It's very important to me</p>	<p>She is pleased with the location in the city center as it creates a good context to meet people and social interactions which are important to her</p>	<p>The social diversity in the city center is important to allow socialization</p>	<p>Proximity to city center and the access to cultural services can affect an individual's social well being</p>	<p>Cultural activities for well-being</p>
<p>Interviewee 13-female, married, mother of one, homeowner, Bingham</p>	<p>Yeah I find so, there are, there are of course like, like green areas are situated a bit outside of it, or around it, but, but there are a lot of trees in gardens and yeah, really green in the summers. Is that something that matters to you? Yeaah, just like, aesthetically, I just find it to be more beautiful</p>	<p>She finds the neighborhood more aesthetically appealing with the green areas around instead of it being bare especially with the color change in summer</p>		<p>Neighborhood aesthetic appeal for well-being</p>	<p>Neighborhood environmental quality for well-being</p>

<p>Interviewee 13-female, married, mother of one, homeowner, Þingholt</p>	<p>Would you want to have a garden? No, I feel that it's enough to have a balcony. Ok that's good, what about access to open and green areas, how is it? R: It's very good, we of course have uhh, Hljómskólagarðu rinn just right by us, umm, there there's a uhh, grill accommodation for example which is open to the public and we can through kids birthday parties there, you know that's awesome.</p>	<p>Balcony as important without a garden There is a shared public garden that she can go to and invite friends over for events and parties which is open to the public</p>	<p>Open spaces access can create a context for socialization</p>	<p>Access to public open spaces such as parks can affect an individual's social well being</p>	<p>Open space access for well being</p>
<p>Interviewee 13-female, married, mother of one, homeowner, Þingholt</p>	<p>this location is actually perfect, because it's both, both, such a short distance to umm, shops and services and work, in every direction, uhh, but also a bit remote from it, you know that, it's completely a neighborhood for itself. Another thing which is a complete luxury in Þingholt, I can walk on the street to work, I just go down one street, occasionally have to escape to the sidewalk if a car needs to get passed, but it's really calm car traffic, which I really like. Umm, yeah I don't really know, what else I want to avoid.</p>	<p>She finds the location to be perfect because it is a short distance to service access and work but also a bit further away from the center. She is also pleased with the walkability aspect of the area and is only occasionally concerned for her safety but mostly the traffic is calm</p>	<p>Living further away from the center creates a calm and quiet atmosphere for residents</p>	<p>Calm and quiet neighborhood for well being Traffic for well-being Proximity to services and work for well being</p>	<p>Neighborhood walkability for well being Neighborhood environmental quality for well-being</p>

<p>Interviewee 7: Male, father, five inhabitants, homeowner, Grafarvogur-</p>	<p>It's terrific, it has everything, uhh and we are exactly just in the best location, we are in between umm, Egilshöll and Spöng. And it's, so I, I just can't think of any service which isn't in walking distance from us.</p>	<p>He is very pleased with the location and he access all the services he needs within walking distance</p>		<p>Proximity to service access for well-being</p>	<p>Commuting time for well being</p>
<p>Interviewee 4: Male, father, five inhabitants, homeowner, Grafarvogur-</p>	<p>Yeah, I have friends in, or, best friend..., my best friend and friends of my wife and I they live there just in, uhh, just close by in walking distance, in the Rima neighborhood and, and, then there are you know, Egilshöll is there next door, and there there's a pub, my brother lives in the Folda neighborhood and there there's a pub.</p>	<p>He mentions that he has friends and family relations nearby and also talks of the benefit of the cultural and entertainment center nearby his home which he takes his children and it is in walking distance which is another positive for his well-being</p>	<p>Friendship ties for well-being Familial ties for well being</p>		<p>Neighborhood attachment for well-being Commuting time for well-being Cultural activities for well-being</p>
<p>Interviewee 4: Male, father, five inhabitants, homeowner, Grafarvogur-</p>	<p>I find that the pub atmosphere is quite important, you know, I like it, so, and, and it [the pub atmosphere] is fun there in Gullöldin even though it's a bit like, umm, like kind of a fisherman's pub, but, the atmosphere is good there, and so I, we have sometimes met up there and also just gone</p>				<p>Cultural and entertainment services for well-being</p>

	with my wife and something. I find it very fun, but other social life I'm not especially seeking				
Interviewee 4: Male, father, five inhabitants, homeowner, Grafarvogar-	Uhh, not really. And it was, but it was mainly connected to that, we actually moved from Norway, and, our boys had become so, so used to it there and preferably didn't want to move back home, so we decided to go, or it was a bit of a must to then at least choose a neighborhood where they felt safe [Icelandic: tryggir?], had lived before, and, knew, knew people, and, so it was actually for that reason, but also of course we are just very satisfied with Grafarvogur, we are suburb people.	He chose the neighborhood because he knew people prior to moving there and he felt a sense of safety by knowing the people who live there.	Perceived safety for well-being	Being raised in a place creates attachment Sense of familiarity creates attachment	Neighborhood attachment for well-being Neighborhood familiarity for well-being
Interviewee 4: Male, father, five inhabitants, homeowner, Grafarvogar	You talked about it earlier, that you can walk to all services, is that important as well? Could you not be in a suburb where there were no services? R: it's comfortable to, my boys, umm, that we can send our boys, or go with them for all sorts of entertainment there is, they can go ice skating,	There is short travel time for his and his family to access the entertainment services		Cultural activities for well-being	Commuting time for well being Cultural services for well-being

	bowling, cinema and, you know, it just takes 5 minutes to walk out there.				
Interviewee 4: Male, father, five inhabitants, homeowner - Grafarvogur-	R: Umm I feel that it's too close to like, the main traffic vein... in Reykjavik lies through the Hlíðar, and I just find that terrible. And, and, so, but, but then there's, so I, I find the suburbs, where it's, not far to, or like short, I'm very quick to get myself onto Vesturlandsvegur, so I like, am quick going to work, so if I manage to get before the traffic then...	He would like to live near the city center because he finds the main traffic as negatively affecting his well-being		Traffic for well-being	Neighborhood environmental quality for well-being
Interviewee 12: Male, single, three inhabitants, homeowner - Mosfellsbær-	Noise is of course always a problem there, noise very easily gets down the hills there. The noise can come down into the valley, so the noise that comes around will be heard tremendously well e.g. if it's a sports tournament or something like that. Then you hear it very well.	He is not pleased with the noise pollution in the area because he lives near a sporting centre and it might get really loud especially on weekends		Noise pollution for well-being	Residential environmental quality for well-being
Interviewee 12: Male, single, three inhabitants, homeowner -	It (noise) can be annoying depending on when this is held. Sometimes people have a party there at night. Then it happened one day... it was a			Noise pollution for well-being	Residential environmental quality for well-being

Mosfellsbær-	snow removing vehicle scraping the street, I couldn't tell which way the sound was coming, so I thought this was something inside the house. I spent about three nights trying to figure out where the noise was coming from.				
Interviewee 2: Female, coupled, no kids, homeowner, Stórholt	<p>V: I have been living in this street for 7 years now, and we have seen so many incredibly positive developments. When we moved, there was no cafe where we live now, and the house there called Stakkholt?</p> <p>S: Yes.</p> <p>V: It was a hole with garbage, and Hlemmur was no Mathöll, it was just Hlemmur.</p>			Compact city for well-being	Area densification for well-being
Interviewee 2: Female, coupled, no kids, homeowner, Stórholt	<p>Actually the most positive thing that has happened is just the development all around us. Now we have a sidewalk here, there was never a sidewalk here you understand. We always had to walk on the other side and then cross the street.</p> <p>S: So you are happy with the development and densification that</p>				Area densification for well-being

	<p>is happening right now?</p> <p>V: Very much indeed, I am incredibly pleased with it.</p>				
<p>Interviewee 2: [00:00] Female, coupled, no kids, homeowner, Stórholt</p>	<p>Would you want it to get more dense?</p> <p>V: I don't know, as you know when the Búseti apartments came there (Búseti is a co-operative building association which is owned by its members), It was just a pit and there was just some shed and something nasty. And when ... you know we were just thinking "ok" there will be coming I don't remember how many, some hundreds of apartments, we were just "what!, this will be way too dense" But then it was just awesome and cool.</p>			<p>Compact city for well-being</p>	<p>Area densification for well-being</p>
<p>Interviewee 2: Female, coupled, no kids, homeowner, Stórholt</p>	<p>So I've somehow got a lot more faith in when it's being condensed, that it will be done well. And that any x number of apartments, it can't tell you anything, you can't imagine it [laughs]. You know, you are thinking 400 apartments, you don't believe it or</p>				<p>Area densification for well-being</p>

	anything. I totally think it's positive.				
Interviewee 2: Female, coupled, no kids, homeowner, Stórholt	<p>Do you think there is enough open space?</p> <p>V: There was an initiative, they opened out of the parking lot here, they opened like a small park.</p> <p>S: I remember it.</p> <p>V: And I would have liked it bigger and a little bit more grass and I think it would have been incredibly positive if it had continued. It was crazy cute. There was one ridiculously happy [refers to self, laughs].</p>				Green space access for wellbeing
Interviewee 2: Female, coupled, no kids, homeowner, Stórholt	<p>People are allowed to be as they are, so I think it matters a lot, a positive attitude and diversity. There are people who live there from many different origins and I think it's really positive. Yes such diversity and the environment, that it is clean. And that there is good accessibility, that matters to me. That I can walk and move.</p>		<p>Social diversity for well-being</p> <p>Aesthetic appeal of neighborhood for well-being</p> <p>Neighborhood walkability for well-being</p>		Neighborhood composition for well-being
Interviewee 2: Female, coupled, no kids,	Where would you rather not live in Reykjavik and why?			Service access for well-being	Greenspace access for well-being

homeowner , Stórholt	<p>V: I think somewhere where you would just be bound by ... it would definitely just be somewhere far away.</p> <p>S: Why is that?</p> <p>V: It would be just a long journey and poor access to services.</p> <p>S: It is very green, does it matter to you?</p> <p>V: Yes and it is possible to cycle, cycle paths.</p>				<p>Commuting time for well-being</p> <p>Green space access for well-being</p> <p>Neighborhood quality for well-being</p>
Interviewee 3 Male, married, 3 kids, homeowner , Seltjarnanes	<p>Yes, and how would you then describe your residential neighborhood?</p> <p>It is just very calm, and comfortable, yes, a good blend of umm people, yes, a bit of, some old people who have lived there for a long time and then there has been a certain renewal, families like us and... Yes at least, it is very nice, and comfortable.</p>		Social diversity for well-being		Neighborhood composition for well-being
Interviewee 3: Male, married, 3 kids, homeowner , Seltjarnanes	<p>Ok, can you tell me what's good or bad about living there?</p> <p>Ehh... so, this is the Seltjarnanes, just, so we feel it is a bit like a small local community (in the sense of those small fishing villages in</p>			<p>Sense of familiarity for well-being</p> <p>Traffic for well-being</p> <p>Sense of community for well-being</p>	Neighborhood attachment for well being

	<p>Iceland I think), though this is in, in the Capital city, so it's like, you know you recognize [alternative: know] quite many on this, this stamp (used as a small area of land), and Umm... Yes, so, oh, I don't know,</p>			<p>Noise pollution for well-being</p> <p>Calm area for well-being</p>	
<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>I think you know many of your neighbors, even though you don't know them, you know like there's this, auto... automatic like neighborhood watch going on kind of and one can, yes, people are chatting together a lot so it's a very comfortable environment, not a lot of parties and noise and, umm, so yes,</p>		<p>Sense of recognition for well-being</p> <p>Good neighborliness for well-being</p> <p>Perceived security for well-being</p>		<p>Neighborhood attachment for well-being</p>
<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>just a somehow very friendly environment and, and also just, ehh, few heavy traffic streets with regards to the children, it is kind of just like around the Seltjarnanes that is fast traffic, so everything within is rather safe, so we think it's very good, ehh, bad, I don't know, um, I don't have anything I can think of, short distance to work for me, basically, um yes.</p>		<p>Perceived safety for well-being</p>		<p>Neighborhood quality for well-being</p> <p>Commuting time for well-being</p>

<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>How about like services around?</p> <p>Yeaah, the services where I am? Just very fine, short distance to the shops and, uhh for example, with the children then all their extracurricular activities are knitted into the schedule of the day, so you never need to drive them all around town for sports or something like that, it is just somehow a part of the school and, when it's 4 o'clock, they're done with everything they need to do, we think it's great, um yes.</p>				<p>Commuting time for well-being</p> <p>Cultural activities for well-being</p>
<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>You talked about this neighborly vibe, it is something that is important to you, would you choose a</p> <p>place based on that?</p> <p>Yeah I at least find it to be a big benefit, I didn't chose this place because of that, but I think it's a benefit after having experienced it there, it's a certain security and you know when my neighbors go on holiday, they often let us know you</p>		<p>Good neighborliness for well-being</p>	<p>Safety for well-being</p>	<p>Neighborhood attachment for well being</p>

	<p>know 'just so know, if there is any traffic [in the sense of strangers around the house]'and we do the same, so, for example... and for example, the neighbors sometimes leave the teenagers behind, just 'if they have a party, then let us' hehe. So it's like that, very good.</p>				
<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>But how is the access to green or open areas [recreational areas], something for outdoor recreation?</p> <p>Yes there is of course Valhúsa, I do not know if you know Seltjarnanes, it is of course a bit windy, but it is still an open area and there you can go with a ball and something, then of course there are playgrounds like by Mýrarhúsa school . s.</p>				<p>Open space access for well-being</p> <p>Cultural activities for well-being</p>
<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>no one can take the little one there, then there are running paths around all the Seltjarnanes and it's of course, Gróttu, there there's a beach and a shore and you know you can walk around and, so there there's outdoor recreation,</p>				<p>Open space access for well-being</p>

	<p>There's outdoor recreation wherever you want to find it basically. So yes, I just think it's good.</p> <p>Then there is a swimming pool.</p> <p>Swimming pool, exactly.</p> <p>And you use all of this?</p> <p>Yes. Yes</p>				
<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>(private garden) It's important for you to have... I feel it's like, yeah both to have more private, privacy you know it's like, it's a certain natural fence, between, and also just beautiful, and you know, so I once lived in Stockholm there there's a lot of vegetation, but I just, yes, I kind of like it.</p>		<p>Private garden serves as a tool for privacy</p> <p>Privacy for well-being</p>		<p>Green space access for well being</p> <p>Vegetation access for well-being</p>
<p>Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes</p>	<p>just be you know, talking to people in the hot tubs or.. Yeah, you can, of course, do that, meet people, yes in the pool or the Red Lion or something I, actually do not go there but. No there's not, there's for example no café like Kaffi Vest in Vesturbær, there's nothing like that, it would perhaps be mostly something like that, but... no,</p>		<p>Community spaces that encourage people to meet up may affect social well-being</p>		<p>Open space access for well-being</p>

	and I'm not necessarily pursuing that.				
Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes	<p>Ok, and maybe now about how you chose this place 13 years ago, do you remember the decision?</p> <p>Yes, ehh, my wife's parents live relatively close by, well she grew up there and knows uh the neighborhood and all that, I grew up in Vesturbær, so she kind of persuaded me to go there and just, I'm satisfied with it. It was kind of, short distance to the family, and yes.</p>		Familiar and friendship connections for well-being		<p>Neighborhood attachment for well-being</p> <p>Familial ties for well-being</p>
Interviewee 3: Male, married, 3 kids, homeowner, Seltjarnanes	<p>So the family was number one two and three?</p> <p>Yes it was quite big factor. Yes, then her sister has now just moved to this same street we live on, so we are all together.</p> <p>And how does the neighborhood stand up to your expectations?</p> <p>Just matches completely, so... like I say we're not going to leave.</p>			Familial and friendship ties for well-being	Neighborhood attachment for well-being
Interviewee 3: Male, married, 3 kids, homeowner	Ok, umm, yes what characteristics of a neighborhood do you seek and what		Population number for well-being	Neighborhood noise for well-being	Neighborhood attachment for well-being

<p>, Seltjarnanes</p>	<p>do you want to avoid?</p> <p>Yes, uhh. I've lived in an apartment building where there was a social apartment, and it was kind of like a lot of disturbance from it and, and... often like, horrible parties on weekends, and, different and like, so I wouldn't want to go back to, such an apartment building just because of that experience, it was just somehow, a bad experience, so I, yes. We ideally just want to be in such a single family home. So... and are just happy where we are.</p> <p>.</p>				
<p>Interviewee 5: Female, coupled, no kids, homeowner, Álftanes</p>	<p>What about the location within Reykjavik?</p> <p>Yes, as I say it is not so far from my work, so, it is..</p> <p>That's a big factor?</p> <p>Yes, just I can't be bothered to spend a great, much time in traffic so I'm so approximately 10-12 minutes driving to work, or cycling in summer, so... It's just, that's the way I want to have it.</p>			<p>Commuting time may affect well-being</p>	<p>Neighborhood quality for well-being</p> <p>Commuting time for well-being</p>

<p>Interviewee 5: Female, coupled, no kids, homeowner, Álftanes</p>	<p>Do you think it is green enough?</p> <p>Yes, there could be more trees but I doubt they would just thrive because of the wind.</p> <p>Is it important for you that it is green?</p> <p>Yes.</p>				<p>Green space access for well-being</p>
<p>Interviewee 5: Female, coupled, no kids, homeowner, Álftanes</p>	<p>Finally, we have quite some people we know there. We know a couple from Scotland, who moved there and have a guest house there. And finally the other grandparents of the grandchild of my boyfriend live there but we bought there without knowing that they lived there. So we have dinner parties on both sides, so it's quite nice.</p>		<p>Familial ties for well being</p> <p>Friendship ties for well-being</p>		<p>Neighborhood attachment for well-being</p>
<p>Interviewee 5: Female, coupled, no kids, homeowner, Álftanes</p>	<p>That's basically your relationship with them, you go there for dinner?</p> <p>Yes, or sometimes, you know people are always very busy, so sometimes you also do walks or bikes, just bike around, and yes that's is the only social life I have in Iceland.</p>				<p>Population density for well-being</p> <p>Open spaces for well-being</p>

	<p>You mentioned the Kaffi there, is there any other places where to meet people?</p> <p>Well, in the pool, and then there is the Kaffi Álftanes, or at home of people.</p>				
	<p>What's your relationship with your neighbors?</p> <p>Well, my neighbors, you know, they are Icelandic, so they don't really talk. So, but it's quite good, we have like a Facebook group and every time there is something, you know to do with the house, we had to re-paint it and change the carpets. It's quite nice, specially the one downstairs, where you can see into the house, they always greet, of course, but it is not that I have anything much to do with them.</p>			<p>Language barrier for well-being</p> <p>Social diversity for well-being</p>	<p>Neighborhood composition for well-being</p>
<p>Interviewee 5: Female, coupled, no kids, homeowner , Álftanes</p>	<p>What about location or greenness or density, did these things play a part in your decision?</p> <p>I have to say the price is a very strong influence and the size, because we lived before in a 50 sqm flat, with one bedroom, and now it is 74 sqm, also just with one</p>				<p>Housing as a necessity for well-being</p>

	bedroom but you just have a bit more space and you have like a geymsla,				
Interviewee 5 Female, coupled, no kids, homeowner , Álftanes	Where wouldn't you want to live? Yeah, like I wouldn't want to live close to Miklabraut and Hringbraut, also driving just Hringbraut, with this traffic lights, nei takk.			Traffic for well-being	Neighborhood quality for well-being