

Exploring the Influence of Leisure Participation on
Subjective Well-Being and Place Belonging:
The role of leisure opportunities and personality

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Abstract

In an attempt to improve the understanding of the relationship between leisure participation, place belonging and subjective well-being, this study considers the enabling and constraining roles of locational advantages and disadvantages and personality with regard to recreational engagement. Using a mapping based questionnaire, residents of Amsterdam were surveyed about their life satisfaction, feelings of belonging in Amsterdam, and their leisure habits and locations. Ordinal regression and spatial analyses suggest that satisfaction with how free time is spent is a common influence on both place belonging and subjective well-being. Furthermore, increases in the number of leisure activities inside the home decreases the odds of greater life satisfaction, whereas increases in the number of leisure activities outside the home improve the odds of positive feelings of place belonging. Activity space area has a small negative influence on place belonging, and the propensity for returning to the same leisure locations improves the odds of positive feelings of place belonging. Collectively, the findings from this research suggest that the physical presence of amenities alone is too narrow of a focus for understanding their influence on the life satisfaction and place belonging of Amsterdam residents. Rather, satisfaction with how free time is spent and where activities occur are important factors to consider as part of the relationship between leisure and place belonging and/or subjective well-being.

Exploring the Influence of Leisure Participation on Subjective Well-Being and Place Belonging: The role of leisure opportunities and personality in Amsterdam

Time is often something that people want more of, value highly, and sometimes feel short of; they will use expressions like “time is money” or “if I had all the time in the world”, to signify its importance. However, if time has worth, how is it being spent? People have obligations that consume significant portions of their days, like functional requirements such as resting and eating (Hägerstrand, 1970), or other responsibilities like working, studying, raising children, doing household chores or volunteering. Hamermesh (2014) suggests that despite increases in wealth and opportunities, having sufficient free time is necessary to make use of these benefits, yet, “what is important and novel in the developed world is that time is increasingly relatively scarce” (p. 119). This raises the question, if people were to have more free time, how would they spend it? As presented in his article *Not Enough Time?*, Hamermesh (2014) reveals evidence from Japan and Korea indicating that when working hours are reduced, people tended to spend the extra time on leisure activities. This implies that when given the opportunity, people want to be partaking in activities that bring them pleasure.

How people choose their recreational activities can depend on a variety of factors, some may be based on individual preferences (Schulz, Schulte, Raube, Disouky, & Kandler, 2017), whereas others could be the result of contextual circumstances like proximity to amenities (Hägerstrand, 1970). For example, someone living near the sea might choose to spend their free time by the water, whereas in Ahlfeldt’s (2011) Berlin case study, people chose to live in areas that allow close access to music venues. Since all leisure activities occur in space, even those within the home, it is worthwhile to consider

how spatial advantages and disadvantages might enable or restrict a person's ability to engage in different pastimes.

Imagine it is a warm, sunny, and pleasantly quiet afternoon in Amsterdam following a long, tiring work week. The conditions are perfect for any number of weekend activities, but how to decide which ones to do?



Figure 1. Group of people playing football in Vondelpark in Amsterdam

Going to Vondelpark with some

friends and playing football sounds nice. Making a trip to Amsterdam Noord to visit the Eyemuseum and seeing a new movie seems nice, or maybe to the Rijksmuseum to see a Rembrandt painting is better, but maybe those would be wiser on a rainy day instead.

What about having a coffee and slice of apple pie after visiting a market or visiting a cafe with old friends? The city offers many recreational attractions like these, but it can be difficult to choose which ones deserve the consideration. However, after identifying the possibilities, logistical limitations may reduce the list to only a few viable options. Factors such as cost, location, hours of operation, and interest in the activity can dictate which activities the valuable free time are spent on. Considering this, the goal of this research is improve the understanding of what may enable or restrict a person's ability to participate in leisure activities and thus the development of experiences and life satisfaction, contributing to their subjective well-being and place belonging.

Engaging in recreational activities has been suggested by many as an important factor in contributing positively to subjective well-being (Newman, Tay, & Diener, 2014).

Different psychological mechanisms can mediate the positive effects of leisure participation on a more overall evaluation of well-being (Newman, Tay, & Diener, 2014). Recreation could also serve as a way for people to develop meaning with where they live through sensory experiences (Tuan, 1975), and foster a sense of belonging (Bennett, 2014). These concepts provide the foundation of this research. However, not all people may have the same access to leisure opportunities, thus potentially limiting their ability to participate in these beneficial pastimes. Financial capacity may one determinant for participating in leisure activities, however, spatial variations could represent another factor influencing recreational engagement. For example, Ledyen Goldberg and Michelbach (2011) suggest that levels of happiness are associated with the quality of the built environment in addition to factors like income and physical health.

Considering the increasing competitiveness between cities, and interest in capitalizing on the attractiveness of urban regions, like the PwC *Cities of Opportunities Index* suggests, it may be valuable to understand whether leisure opportunities serve as a way to positively improve the lives of citizens. To explore this, an online questionnaire was developed and administered in the city of Amsterdam. Using geographic information systems (GIS) and ordinal regression, this research aims to better understand connections between leisure, subjective well-being and place belonging, as well as adding consideration for locational advantages and disadvantages and personality as factors that promote or inhibit leisure participation

Literature Review: What Have Others Suggested?

To frame the possible relationships between leisure, subjective well-being and place belonging it is important to understand how the components have been theorized and studied by other researchers.

Subjective Well-Being and Leisure

Subjective well-being is a broad concept that has been applied in a variety of research areas. When deconstructed in a literal manner, it can be understood as an individual's perception of their well-being. However, empirically defining and operationalizing subjective well-being (SWB) is more nuanced. For example, what factors contribute, and how are they measured? In a review of previous research, Diener (1984) suggests that despite attempts to understand specific influences on SWB like age or gender, evidence supports multiple contributing factors, including a person's relative income and employment status. However, socio-demographic characteristics are not the only explanations for SWB. Following an extensive review of progress made in the field SWB, Diener et al. (1999) conclude that

different variables lead to SWB for people with different values and different goals... Thus, it is pointless to search for a single cause of happiness. Instead, they [researchers] need to understand the complex interplay of culture, personality, cognitions, goals and resources, and the objective environment (p.295).

Perhaps in response to this conclusion, future authors explored potential influences on SWB beyond socio-demographics. For instance, Leyden et al. (2011) sought to explore possible relationships between happiness and the built environment. By using

quality of life data from 10 cities, they found a positive relationship between self-reported happiness and accessibility to different leisure amenities. They also found similar correlations with indicators of a high quality built environment, such as cleanliness and aesthetics. This indicates that aspects of a person's surroundings may influence their SWB. However, Diener et al. (1999) suggest there may be connections between multiple factors contributing to a person's SWB.

Despite a focus on isolating various aspects that contribute to SWB, different elements often correlate with a more general or global rating (Diener et al., 1999). To develop an overall framework, the authors theorized higher-level factors that capture different influences on SWB: pleasant and unpleasant affects, life satisfaction, and domain satisfaction. Here, affects are considered emotions and feelings like joy or guilt, and domains can be thought of as aspects of one's life, like work, family, leisure or self. This framework, or part of it, has been applied in many studies as a way to understand what influences SWB. For instance, in their study Tsurumi, Imauji and Managi (2019) observed a correlation between relative income and a single representation of SWB – life satisfaction. This corroborates previous findings that positively associates income with SWB, however as Diener et al. (1999) claim, other aspects such as personality and environment may also implicate SWB. One possible area of intersection between these elements is leisure participation.

Consider the Amsterdam example above, visiting a museum, a park, or a pub all require a disposition to do those activities, varying degrees of financial ability, and physical locations for them to occur. A culture that is generally accepting of these leisure choices may also be necessary, however, it is possible that a counter-culture exists which

also supports the actions (Maiello & Pasquinelli, 2015). In this hypothetical situation, leisure participation acts as a common setting for the different factors, as suggested by Diener et al. (1999), to interact and thus contribute to subjective well-being. Since these elements converge while partaking in recreation, it may be valuable to explore a possible association between leisure as one domain, in an overall SWB.

In a study of Taiwanese university students, Lu and Hu (2005) used hierarchical methods with multiple regression analysis to better understand the influence of personality and leisure participation on happiness and recreation satisfaction. Their results indicate that extraverts gained more satisfaction from leisure, which contributed to their higher reported happiness even when financial satisfaction was controlled. In addition, for neurotic people, leisure was found to be less of a significant influence on their happiness. The authors suggest their findings indicate that leisure engagement partially mediates the effects of personality on SWB, at least between neuroticism and extraversion. However, Diener et al. (1999) suggest that despite multiple studies that show positive associations between extraverts and SWB, it may be that the qualities of being an extrovert are actually due to higher levels of positive affect, such as those that arise from participating in different types of social activities. For example, feelings of accomplishment (positive affect) from playing football, which may translate to extraverted characteristics like talkativeness. This implies that a relationship exists, but causation may not be conclusively established.

Another way in which leisure participation captures influential elements of SWB is through its dependence on a physical environment. For example, many researchers have sought to understand possible implications of living near greenspace and positive health

benefits, such as Lee and Maheswaran (2011), whereby having access to greenspace is thought to be associated with improved levels of mental and physical conditions. In one study, Yuen and Jenkins (2019) explore the effects of short-term park visits on SWB in a suburban city in Alabama, United States. The research considered the synergistic effects of doing light physical activity within a natural setting. To conduct the study, participants completed the same version of a questionnaire prior to and after visiting an urban park. The survey contained questions about life satisfaction, as well as asking participants to respond to different affect words (how do you feel now? example words: alert, upset, etc.). Participants wore an accelerometer to record levels of physical activity, and were asked to complete the same questionnaire before and after the park visit. From this data, the researchers were able to determine whether SWB changed during their time in the park. The authors found that a park visit combined with light physical activity was indeed associated with improvements in SWB, and suggest that park spaces should be considered as important environmental features that can improve life satisfaction of residents by decision makers. However, greenspaces are not the only types of leisure locations. These could also include features of the built environment, like cafes and theatres or even the home (Broberg, Kyttä, & Fagerholm, 2013).

The above studies suggest that participating in leisure activities may be a site of convergence for multiple factors to affect SWB. For instance, using an online survey, Schulz et al. (2017) found a positive relationship between leisure engagement and subjective well-being, regardless of whether the activity matched a person's leisure interest. To better understand this association, Newman et al. (2014) developed a conceptual model that considers leisure in a bottom-up approach to influencing a

person's SWB. From the lowest level, leisure participation affects the general domain of subjective well-being through different psychological mechanisms .

This model is particularly valuable for two reasons. The first is that it recognizes different perspectives in defining leisure activities as either structural or subjective. This conceptualization is important because it signifies that there can be external or individual measures of a person's engagement in recreation. Newman et al. (2014) explain that structure refers to how leisure choices can be influenced by time (availability outside of work) or activities (number of times participating, or number of activities seen as leisure). However, they argue that this does not reflect the subjective nature of recreation because some activities may not be thought of as leisure for all individuals. For example, some people view cooking as a hobby, whereas others may find it to be a chore. To accommodate this, they suggest that subjective leisure can be measured by participation (time spent) and frequency of activities. In their model, by grouping both structural and subjective leisure together, it suggests that there are both external and individual elements acting on leisure engagement. In an analogous way, this was exemplified by Allen (2015) who, revealed that some people may determine where they live based on how well the location meets their leisure needs. For instance, some may favour living in areas that cater to a more rural lifestyle despite losing access to other leisure options, whereas others may seek to remain nearer urban amenities. This reflects the differentiation made by Newman et al. (2014) as both rural and urban settings present opportunities for leisure (structural), however a person's pastime preferences (subjective) may not align with the available options, possibly influencing their leisure participation. Therefore, both

structural and subjective perspectives should be considered when evaluating leisure, as a single measure may not capture the nuance of people's experiences.

The second reason the model developed by Newman et al. (2014) is valuable is that the authors identify that there are multiple avenues in which leisure activities can influence subjective well-being. The authors reviewed 100 articles as a representative subset of previous research on leisure and SWB, classifying five psychological processes – affiliation, autonomy, detachment, meaning, and mastery – that have the potential to be mediating factors for subjective well-being. For instance, detachment-recovery theory suggests that by participating in recreational activities, like spending time in nature, people are able to recover from fatigue, thus improving their SWB. However, other leisure activities can have different effects, such as playing an instrument leading to 'mastery' experiences whereby people are challenged and partake in continued learning, leading to feelings of accomplishment. These two examples reflect how various forms of recreation can have different positive effects on people, however, the authors note that when leisure activities meet multiple psychological needs, they have the potential to enhance SWB more than when only a single mechanism is used. This was corroborated by Yuen and Jenkins' (2019) previously mentioned study that noted a positive association between being in greenspace and light activity on SWB. Despite this, it may be possible to observe positive impacts on SWB without knowing the specifics of a person's recreational activities or psychological needs.

For instance, without knowing what participants did in the park, Yuen and Jenkins (2019) were able to report statistically significant positive improvements in SWB based on the duration of a person's visit. Schulz et al. (2017) also found that simply engaging in

leisure activities is sufficient to induce benefits to SWB regardless of whether the particular action matches their interests or not. They found potential synergistic effects on SWB when a person's recreational activities match their particular interests. However, the authors were unable to determine if interests drive participation or whether engaging in multiple activities fosters interest. Yet, their findings do suggest that the more someone's leisure interests align with their engagement, the stronger the beneficial effects.

From the above literature, there is evidence to support an association between engaging in leisure activities and improvements in subjective well-being that considers multiple influences, like personality and physical environment. However, it is important to acknowledge that a single domain, such as leisure, is only one of the many aspects that can affect a person's SWB (Diener et al., 1999). Yet, positive experiences derived from recreation may also be beneficial for other reasons, such as developing place belonging.

Place, Belonging, and Leisure

Belonging and place are two interrelated concepts developed through daily experiences in different ways, like through social interactions (Metro-Rolland, 2018), activities (Tuan, 1975), and memories (Bennett, 2014), all set within the context of people's surroundings (Sampson & Goodrich, 2009). 'Belonging' is something that is commonly understood, but can be challenging to define in a theoretical way (Mee & Wright, 2009). Similarly, 'place' is freely used, but carries the subjective tone of meaning as described by Tuan (1975). The daily rhetoric of these two terms may not contain the conceptual complexity of the words, however, they are important elements of a person's life. This is evident when considering the effects of recreational activities on both the creation of place meaning and sense of belonging.

Leisure participation provides an opportunity for people to develop meaning thereby distinguishing a place from a space (Tuan, 1975). This can happen in multiple ways, from cultivating a sense of community (Sampson & Goodrich, 2009), to developing place bonding (Hammitt, Backlund, & Bixler, 2006), or by making memories, among others. As part of this, Tuan (1975) identifies both active and passive experiences as critical to meaning creation. He eloquently writes:

Place is a centre of meaning constructed by experience. Place is known not only through the eyes and minds but also through the more passive and direct modes of experience, which resist objectification. To know a place fully means both to understand it in an abstract way and to know it as one person knows another (p. 152)

This represents an experiential perspective on place meaning creation. As such, daily habits, including leisure activities, culminate over time influencing a person's understanding of places. Therefore, recreation may have a significant role in activating different senses that past experiences become tied to. For example, consider someone that likes taking walks in their neighbourhood before going to work. The different scents the along the route or sounds accompanying the changing seasons can be considered passive experiences, while the action of walking itself represents the direct experience of the activity. According to Tuan's (1975) perspective, both are contributing to meaning creation that transforms the person's perception of the neighbourhood from an objective area to a subjective place. Considering this, Tuan also describes that there are different scales in which place can be known, such as within the home to the nation-state, and people can ascribe different meanings at each. The larger the area, the more difficult it is

to fully know, and is thus more understood through shared experiences or symbols.

Therefore, when experiences can be aggregated at the community level and beyond, place can be ascribed to these larger scales, which is something Sampson and Goodrich (2009) discovered in their study.

Focusing on the West Coast of the South Island in New Zealand, Sampson and Goodrich (2009) interviewed stakeholders and residents in two phases to better understand how community and physical surroundings can influence identity and place attachment. One of the motifs in their interviews was that active involvement allows newcomers to become part of the community. They found that taking effort to embody some of the local characteristics and being positively engaged in the region, enables newcomers to share in common experiences. This aggregation allows people to develop a sense of belonging within the community, which aligns with Tuan's (1975) idea of knowing a place like a person. This may be true because of the role recreation can have in inducing the development of social capital, which Putnam (2000) describes as the "connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them" (p. 19).

Putnam's (2000) *Bowling Alone* highlights the significant role social capital has on a well-functioning society because of its ability to cultivate respect and understanding between people. However, there are different types of social capital – bonding and bridging – both of which he suggests are important. Bonding signifies relationships within a certain group, whereas bridging indicates the connections across groups, but they are not mutually exclusive. Instead, he suggests that they be viewed as part of the same spectrum in terms of 'more' or 'less'. If considering leisure activities, it is possible to

imagine how participating in different pastimes can facilitate both types of social capital.

While *Bowling Alone* is not explicitly about meaning creation, if placed in the context of Sampson and Goodrich (2009), when newcomers participated in the community, like through leisure activities, it fostered both bonding and bridging social capital, leading to acceptance of the incoming residents. In this case, the shared experiences that contribute to place meaning evolved to include both locals and incomers, signifying that as people and experiences change, so do the meanings ascribed to spaces (Tuan, 1975).

However, another important element of the research by Sampson and Goodrich (2009), is that they establish the role of the physical setting in the generation of identity and meaning. They observed that residents found the unique environment and isolation of the West Coast region as contributing to their feelings of community. Thus signifying the combination of residents' actions and the surroundings as influential factors. This supports the tri-pole model of place meaning creation developed by Gustafson (2001) which was based on themes derived from interview responses of 14 residents of Western Sweden. From these, he developed a model containing the interconnected relationship between aspects of self, others, and the environment. Self represents the subjective nature of place, one that considers things like life path and leisure activities, whereas others indicates the connections between people – either specifically (social relationships) or generally (us versus them mentalities – known as othering). The environment is the third component of the model that describes the role of the physical setting – like the built form or natural landscape. Collectively, Gustafson (2001) suggests that these broad themes can be used as a foundation for exploring how place meaning is developed. It is important to note that often experiences are thought of as positive, but

they may also be negative denoting an undesirable association with a place (Hammitt, Backlund, & Bixler, 2006).

Based on these theories, it is possible to connect participation in leisure activities with the development of place meaning. Abstractly, as an individual partakes in a recreational activity, either alone or with others, and within a specific environment – including the home –they are forming a relationship with place. Adding Tuan’s (1975) perspective, engaging in leisure can also include the dimensions of passive and direct experiences that he believes shapes place meaning. Consider the example of visiting the park area in front of the Rijksmuseum in Amsterdam on a hot summer day. The act of socializing, with friends, in a specific location, in addition to passive experiential elements like feeling the warm weather, and hearing the sounds of laughter or birds, may progress the leisurely activity from an afternoon outing to a pathway for developing place meaning.

Furthermore, as Sampson and Goodrich (2009) suggest, if activities are done as part of a group or community, or they reflect the identity of people in a locale, the actions may also contribute to a sense of belonging.



Figure 2. Group of people sitting by the fountain in front of the Rijksmuseum

In their introduction to a special issue, Mee and Wright (2009) describe various complexities associated with belonging as a concept, such as the different scales in which it can occur (family vs nation-state for example), its connection with exclusion (belonging to one group could exclude you from another, like citizenship), and its dimension of affect

(like wanting or fear). Tomaney (2015) adds that “a sense of belonging can be expressed individually or collectively...[but] is formed in an intersectional context, along multiple, mutually constitutive axes of difference, of which geography is only one” (p. 508).

However, Bennett (2014) affirms that belonging is rooted in place, suggesting that meanings attributed to spaces are also significant to developing a sense of belonging.

In her research Bennet (2014) views place as a gift, symbolizing the constant transition of place between previous and future caretakers and users over time. Based on the construct that belonging is influenced by history, people and place, she suggests that “belonging is inherent in the daily actions undertaken by people who have inalienable connections to the places they inhabit” (p. 669). Using a phenomenological approach, she interviewed five family groups in Wigan, United Kingdom, while in addition, some participants also maintained a photo diary. The interviewees highlighted that it was their interactions with the city that shaped their sense of belonging to Wigan. However, this can present a challenge as not all users of a space may share those memories, thus possibly excluding people from developing a shared sense of belonging or leading to conflict between groups. Yet, Metro-Rolland (2018) suggests in her study among international students in the United States, that the opportunity to engage with people beyond typical identities (gender or nationality for example) can foster feelings of acceptance and sense of belonging. Referring to examples like connecting with people over food or leisure interests, Metro-Rolland (2018) suggests that it is possible to accept and understand people of different backgrounds when identities are not a barrier of entry to participate. This implies that if people are open to developing a new sense of belonging, or welcoming newcomers, it can be mediated through shared experiences, such as leisure engagement.

An example of this is a program that pairs refugees and asylum seekers with locals willing to be informal support for the newcomers in Newcastle, United Kingdom. Based on a participatory approach, Askins (2014) reports on the success of the befriending scheme on both parties. The author notes that those enrolled in the program seek a person to connect with in their new city, and to engage with the local community developing a sense of belonging through shared experiences. Askins (2014) implies that this can progress not only through organized activities like cooking together or visiting museums, but also smaller actions like visiting a café. However, as Yuen and Johnson (2017) suggest, this is not simply because of the act of visiting a recreational place, but also the interactions, and feelings derived from the activities done at that place. This sentiment was echoed by Sandstrom and Dunn (2014) who observed that weak ties are also important for feelings of belonging. Putnam (2000) differentiates between strong and weak ties as a continuum representing how well the people within a social network are known, from friend or family, to acquaintance, to stranger. In their study of university students, Sandstrom and Dunn (2014) found that the more frequently a student interacted with another person they identified as weak tie, they tended to report a stronger sense of belonging. This implies that engaging with people, either those close or unknown, can improve feelings of belongingness.

Therefore, it is possible that by participating in leisure activities, a person has the opportunity to develop place meaning which can lead to a sense of belonging. Through a person's experiences, and by interacting with others within a particular location over time, people can develop an affiliation with a place. This was found by Hammitt et al. (2006) who developed a model that considered five possible factors determining a

person's bond with recreational places, of which, place belongingness was shown to be a reliable predictor. Based on this, leisure engagement may be an important influence on a person's sense of belonging in a place. Similarly, as discussed previously, actively participating in recreation is also suggested to improve subjective well-being. Therefore, leisure may influence both the place belonging and SWB of a person.

Despite the findings presented above, one area where understanding may be limited is determining what may enable or restrict a person's ability to participate in leisure activities and thus the development of experiences, positive affect and satisfaction contributing SWB and place belonging. One attempt to theorize the possible limitations on leisure is a framework developed by Lachowycz and Jones (2013) who sought to better understand the relationship between greenspace and health benefits. It consists of exposure (access), moderating factors (demographic, living context, characteristics of greenspace, and climate), mechanisms of moderation (opportunity to use, personal drivers to use, and ease of use), potential mediators (perceptions of living environment, aesthetics, and use of space), and outcomes (physical health benefits and psychological benefits). However, as suggested by Lu and Hu (2005), personality may be an influence on the benefits of leisure on SWB. Beyond that, the framework also depicts access as a limiting factor, however since it only considers greenspaces, it may be that the role of accessibility is different when considering other leisure opportunities. For this reason, it is worthwhile to explore how locational advantages or disadvantages and personality may influence leisure participation.

Locational Opportunities and Restrictions on Leisure Participation

To better understand the types of spatial limitations people may experience when pursuing leisure, it is useful to consider Hägerstrand's (1970) time-space concept.

Hägerstrand proposed the idea that locations have both spatial and temporal coordinates. He explained this through three broad categories of constraints that can influence decisions: capability, coupling, and authority constraints. Capability refers to the biological restrictions people must abide by for a healthy life, like eating and resting, which means people normally need to start from and return to, a home. Therefore, the places a person can visit are limited by their relative distance in time and space from the home. Coupling constraints are those that arise from people needing or seeking the support of other people, by considering how well activities fit within each other's schedules. For example, someone could live near a market, but is unable to make use of it since the opening time conflicts with the person's regular work hours or commuting time. Thus, when activities are done with other people, timelines need to overlap to allow participation. Authority constraints are those that are influenced by dominant power structures of society, like citizenship or other laws. An example could be a policy that does not allow certain land uses to exist in particular areas, in turn impacting the ability of a person to partake in some activities. By considering these different constraints, Hägerstrand (1970) highlights that within the fixed duration of a day, the distance a person can cover to perform various activities is limited in a multi-dimensional way, which impacts the choices they make.

However, Hägerstrand's theory only focuses on the limitations of the time-space coordinates of places, but it may also be beneficial to interpret them as being enabling as well. Hägerstrand proposed, "it may well be that the low rate of participation in cultural

activities by large groups of people has less to do with the lack of interest than the prohibitive time-space locations of dwelling, work, and cultural activities” (1970, p. 17).

From a theoretical perspective, Giddens (1984) contrasts this perspective by suggesting that constraint and enablement are a paired concept. A common motif in his work is that when circumstances prohibit one set of possibilities, they empower others. To illustrate this, Giddens (1984) describes how language operates in this way:

Since any language constrains thought (and action) in the sense that it presumes a range of framed, rule-governed properties, the process of language learning sets certain limits to cognition and activity. But by the very same token the learning of a language greatly expands the cognitive and practical capacities of the individual (p. 170).

If the coupled relationship of enablement and constraint is applied in conjunction with Hägerstrand’s (1970) time-space concept, it is conceivable that the areas people have access to influences their ability to engage in recreational activities, as either facilitating or restraining them.

If considering locational differences as a factor shaping leisure participation, it is possible to evaluate whether certain areas in a city are advantageous or detrimental to live in for recreation. This can be interpreted as spatial inequity. This is analogous to Witten, Exeter, and Field (2003) who explored levels of deprivation as it relates to the availability of health-promoting resources in residential areas. They contend that by mapping the social and physical features of a city that provide opportunities to improve or harm health, it is possible to understand the disparities in an area, influencing peoples’ self-reported health. To do this, they developed an accessibility index that compared

locational access to community resources. However, Witten et al. (2003) found that living near an amenity, does not reflect its utility. They indicate that other factors influence a person's use of community resources, like knowledge of available facilities or that other places may be more convenient to visit (like near a workplace). Similar observations have been made in the body of research exploring the relationship between proximity to green space and potential health benefits. Despite findings that indicate a positive association, Lee and Maheswaran (2011) suggest that causation is difficult to establish because of the many determinants influencing green space usage (ex. safety) and positive health benefits (ex. age). Collectively, these authors do not dismiss the notion that locational context influences individuals, but their studies suggest that physical proximity of an amenity, may not be the only factor determining whether they are used by residents.

One possible explanation for this is from an Italian study considering the presence of amenities and disamenities as influences on perceptions of quality of life (QoL). Biagi, Ladu, and Meleddu propose that "it is not simply the quantity [of amenities] that matters, but also the actual possibilities people have to enjoy those amenities or to partake in social interactions" (2018, p. 140). Therefore, having opportunities for social and cultural activities is important, but that being able to, and choosing to participate may also be critical to understanding the potential benefits of leisure. This requires looking at factors beyond location, which was part of the scope of a study by Broberg, Kyttä, and Fagerholm (2013) who evaluated the child-friendliness of neighbourhoods. To do this, they compared the number of opportunities children have for leisure activities and their degree of independent mobility in an area. However, the researchers suggest that simply having a place to play is not the only determinant of a child-friendly neighbourhood. Importantly

the authors explore the dichotomy of affordances available, whether different neighbourhoods offer more or less places to do activities, and actualized affordances, whether children utilized what was offered to them. This highlights that there may be discrepancies between opportunity and usage determined by the individual or contextual factors (in this case, independent mobility). This could mean that areas are deprived for some, while beneficial for others, or that external circumstances influence a persons' ability to make use of the opportunities near them – like working during market hours the example from earlier.

This highlights the value in evaluating the actual leisure activities people pursue. One way to this is by analyzing a person's activity space (AS), which denotes the actual locations a person visits in an area (Hasanzadeh, 2019). A person's activity space may be valuable in indicating what types of spatial patterns or barriers may exist, preventing or enabling them to participate in leisure. For example, in Helsinki, Finland, Hasanzadeh (2019) found that suburban residents were more likely to have multiple areas where they perform their activities compared to those living in more dense and central locations. However, Broberg et al. (2013) observed that in their study, participants indicated many types of affordances, including spending time at a computer. The authors commented that the areas of focus in similar research are typically on the built or outdoor environment, but they suggest that this narrow scope may not capture the reality of people's actions, including doing activities while remaining in the home. Therefore, since people may have different ideal types of amenities or recreation (Newman et al., 2014), it may be worthwhile to consider activities as defined by individual participants.

Collectively, it is possible that locational (dis)advantages implicates the types of pastimes people pursue in accordance with the constraints and enablement concepts of Hägerstrand (1970) and Giddens' (1984). However, simply having opportunities nearby may not reflect whether they are actively used. To develop these theories further, it may be beneficial to consider the utilization of opportunities, which could be influenced by individual preferences or personality (Diener et al., 1999).

Personal Preferences as Enabling and Constraining Leisure Participation

Comparing leisure possibilities with realization could reveal that some people live in locations that are a mismatch for their preferred leisure activities. This is exemplified by Allen (2015) who interviewed residents living in medium density housing in Auckland, New Zealand about their preferences for dwelling type. She found that the participants' desirability of a particular lifestyle was used to justify their housing preferences. For instance, some sought larger forms of housing to accommodate features like having space for a garden, whereas other participants were content with their existing situation as it enabled them to utilize the types of urban amenities they desired. Therefore, while possibilities for leisure participation are important, those that are available could misalign with an individual's priorities and circumstances, and be less valuable to them.

In a comparison study of Chilean municipalities, Ahumada, Iturra, and Sarrias (2019) suggest that personal preferences may influence what types of amenities different people find more important. To understand this, the authors approximated compensation values that would indicate if a change in amenity altered subjective well-being. This would suggest the significance a person places on living in the presence of (dis)amenities. Through their analysis, the authors found that some people will value the same city-

specific characteristics in different ways, while other features are perceived more uniformly. For instance, they found that the presence of a park may be viewed as an amenity or disamenity based on an individual's priorities, whereas living in proximity to occurrences of robberies was consistently valued negatively. This idea is corroborated by Diener et al. (1999) who indicate that "people react differently to the same circumstances, and they evaluate conditions based on their unique expectations, values, and previous experiences" (p. 277). Thus, in the case of Ahumada et al. (2019), the varying compensation estimates for each possible (dis)amenity implies that there is heterogeneity in people's preferences.

Conversely, in a study about the impacts of a large scale redevelopment in Berlin, Germany, Ahlfeldt (2011) observed that opposition to the project was more likely to stem from the perceived loss of cultural amenities than from fears of displacement. The author suggests this signifies the important value of leisure places and intangible neighbourhood qualities to local residents, even if residents may not always make use of them. This may be related to place meaning, belonging and memories as suggested by Bennett (2014) and Tuan (1975). Even if people do not make use of all opportunities, or visit them frequently, they may still be the sites where meaning has developed and from which people can derive a sense of belonging. When these locations become subject to redevelopment, as was the case in Berlin, the heterogeneity of people's leisure preferences may not be as significant.

One potential way to explore this, is by considering how personality influences spatial behaviour. Using cellphone data and a personality survey from residents in Switzerland and Denmark, Alessandretti, Lehmann, and Baronchelli, (2018) find

correlations between some personality attributes, like agreeableness, and whether people have a tendency to explore more or return to the same locations. For example, those that are more extroverted tended to also visit more new locations each week. Their results indicate that personality traits partially influence the spatial decisions people make. Based on their evidence, propensities for exploring or returning may be tied to personality, suggesting a spectrum exists whereby “individuals balance the trade-off between exploring new opportunities and exploiting known options in a distinctive and persistent manner” (Alessandretti et al., 2018, p. 11).

Considering this, it is possible to conceive that availability of leisure opportunities contributes partially to their usage and value, yet focusing only on presence alone does not encapsulate individual preferences. As suggested by Alessandretti et al. (2018), a person balances finding new opportunities while also returning to known favourites. Therefore, it is possible that leisure engagement is influenced both by physical context, as well as individual characteristics. This poses a challenge because a person may not be able to live or work in a location that suits their priorities, thus implicating their ability to partake in leisure. Consequently, it could then become a factor in influencing both their place belonging and subjective well-being. These relationships are the areas of focus for this study.

Conceptual Model

Based on this previous research, a theoretical model (figure 3 below) has been developed highlighting possible relationships between leisure participation, locational advantages and disadvantages, personality, place belonging and subjective well-being. The model is split into two halves with leisure participation in the centre, signifying two

possible processes, however, it is not meant to preclude interaction between features.

The first considers two factors, locational advantages and disadvantages, and personal preferences, acting on leisure participation, either enabling or constraining (Giddens, 1984) a person's ability to partake in recreation. The second is based on leisure participation influencing a person's subjective well-being and place belonging. The lines of the model indicate the paths of the effect, however it is possible that feedback between these characteristics occurs, making it challenging to decipher cause and effect, as suggested by Lee and Maheswaran (2011) and Schulz et al. (2017). For example, it is possible that a person may choose their residential location based on the opportunities it provides for recreation (Lee & Maheswaran, 2011), or that a person with a stronger sense of belonging may choose to participate in leisure more often as they feel part of the community. Therefore, the aim of this study is to explore these potential relationships, however understanding the direction of the effect would require a different research design, such as a longitudinal study that considers changes over time.



Figure 3. Conceptual model showing the interactions between subjective well-being, place belonging, leisure participation, locational advantages and disadvantages and personality

Important to note, this model is a simplification that includes two possible sets of factors that influence a person's leisure. Other socio-demographic factors, such as income, and family dynamics contribute to recreational behaviour and will be considered in the analysis, however they are not the primary focus of this research. Similarly, as Newman et al. (2014) suggest, recreation is only one domain that influences SWB, which may also be true for place belonging. The arrow on the right of the model represents one reading of the potential relationships. It is hypothesized that the enabling and constraining features (location and personality) will affect leisure participation, thus influencing a person's subjective well-being and place belonging. To explore this, a case study is presented based on Amsterdam, the capital of the Netherlands.

Case Study

Amsterdam is the largest city in the Netherlands, offers many opportunities for leisure, and is regarded as a highly desirable place to live and visit (PwC, 2016). Furthermore, Savini et al. (2016) suggest that Amsterdam is often viewed positively for its urban planning initiatives and progressive policy. It has a long history, spanning almost 750 years (Coalition Agreement Groenlinks/D66/PVDA/SP, 2018), and is home to nearly 900,000 people. As evaluated by PwC (2016), based on a variety of indicators including quality of life, Amsterdam is a top five city in terms of global economic and cultural competitiveness. Yet, despite its high quality of life, Amsterdam has a spatial divide within its boundaries. As Savini et al. (2016) describe, the city is trending in different directions with gentrification and investment largely confined to areas within the A10 ring road. Acting as a dividing line, the highway is used to demarcate pre-war and post-war urban development. The authors suggest that the pre-war areas are those that are seeing the

effects of gentrification and growth, such as neighbourhoods like de Pijp, whereas the areas at the periphery are thought to be downgrading. Despite this, the authors acknowledge that Amsterdam maintains a high level of social and ethnic mixing. Part of the reason for this may be the significant amount of housing stock that is comprised of private or public rentals (Savini et al., 2016). This suggests that many neighbourhoods may be more accessible to a variety of people as prices are not necessarily dependent on full market value. These characteristics suggest that there may be locational advantages and disadvantages with regards to accessing leisure activities, but that compared to other major cities, Amsterdam may be a case whereby the relationship between opportunity for leisure participation is less significant. This could align with Witten et al. (2003) who suggest that other factors implicate a person's choice to use an amenity. This dynamic signifies the reason Amsterdam was chosen as a case study.

Methods

To explore the model introduced above in an empirical way, different methods were considered before a quantitative approach was preferred. Each strategy would have contributed to the research in different ways, however two fundamental challenges arose amongst all options. The first contends with methodological obstacles, and the second with physical time and space conflicts.

An interactive qualitative research approach was considered for its potential to facilitate an understanding of subjective interpretations of leisure through more direct communication with participants. For instance, a walking interview such as in Lager, Van Hoven, & Huigen, (2016), could highlight the participant's perception of leisure, as well as possible benefits derived from them. However, one of the limitations with qualitative

research methods is that while the findings may be transferrable to other contexts (Baxter, 2016), they are tied to the unique experiences of the participants. In the context of locational advantages and disadvantages, the individual circumstances of a small sample of participants partaking in the research would not aggregate well to the city scale. In addition, possible language, scheduling and sampling challenges prevented this option from being pursued further. Considering this, and the overall aim of the research, it was thought that a more general approach would be more appropriate.

Mixed methods were also explored, which would enable searching for general trends while also maintaining individual experiences as central to the research (Winchester & Rofe, 2016). A two phase process was considered, with the first stage being a focus group to discuss and learn about ways leisure participation could influence subjective well-being and place belonging. The themes from the discussions would inform questionnaires aiming to uncover spatial factors associated with leisure participation. Distributing the surveys would allow the relationships found in the focus group to be examined across a broader sample of people. However, from a feasibility perspective, coordinating both elements were thought to be too difficult given the financial, time and spatial constraints of the research. Considering this, a quantitative approach was chosen as the best option.

An online survey was developed using the platform Maptionnaire, a form of public participation geographic information system (PPGIS), that allowed participants to answer geographically referenced questions (Hasanzadeh et al., 2018). While quantitative in approach, the mapping aspect enabled participants to engage with the research in a more interactive manner and permitted participants to indicate the actual locations they visit

for leisure. This was beneficial as responses reflected the lived experience of participants in a way that a standard questionnaire does not. From an analytical perspective, the response data could be reviewed both spatially and quantitatively, allowing for the comparison across different locational contexts. The survey consisted of six parts, including two that were mapping based, and three about the perceptions of life satisfaction, leisure, personality and place belonging. The final section asked participants about their individual socio-demographic characteristics. The survey was intended to take between five to ten minutes to complete, and could be done on a phone, tablet or a computer. Prior to being made available to residents in Amsterdam, the questionnaire was previewed for its suitability for use by people of different technological ability and subject matter understanding.

Sampling Method

For one month, the survey was shared and distributed and made available in multiple ways, each problematic, to the residents of Amsterdam. The survey medium inherits data collection limitations as the questionnaire requires on participants to have a device with a suitable internet connection and technological competence (Hasanzadeh et al., 2018). This led to a three-stage sampling method to find participants: utilizing the social media platform Reddit, posting flyers in community spaces like libraries and third spaces such as cafes, and through word of mouth. There were drawbacks to each of these methods, like introducing bias into the research by not reaching a representative sample of Amsterdam residents. Attempts were made to reach a broader audience, yet they were ultimately unsuccessful. For example, the municipality of Amsterdam was contacted, as were multiple organizations with influential networks like IAMSTERDAM (a tourism and

economic development organization), expatriate groups, and the OBA (Amsterdam public library) among others, in hopes of reaching residents. Only one organization, IWC Amsterdam (a non-profit social club of international residents in Amsterdam) agreed to share the link to the survey. To try to find more participants, posting the link on Facebook was another option attempted. There are many active community and housing groups on the social media platform, but most did not allow the distribution of surveys or private advertising. Thus, creating flyers, posting on Reddit and word of mouth became the most cost and time effective ways to gather data.

Reddit is an online forum consisting of different communities focused on specific topics called subreddits (Shatz, 2017). It has not been widely used as a data collection method, but as Shatz (2017) notes, it may be a valuable resource for researchers in the future. The author suggests that part of the benefit of using Reddit is that it allows the researcher to target a specific group of people when a subreddit exists for the requisite audience. Additionally, because of the community nature of Reddit, it permits interaction between the researcher and posters. Therefore, questions and dialogue can be exchanged, and direct communication exists between the researcher and the participants. For example, when the post for this research was created, commenters were able to ask questions, including a number that were curious about the motivations for the research. In one case, a commenter wanted to participate, but after asking questions did not feel comfortable inputting the location of their home and workplaces. This highlights the potential of Reddit as a means of data collection while fostering interaction between researcher and participant, therefore increasing the transparency of the research and adding to its robustness (Stratford & Bradshaw, 2016, and Shatz, 2017).

There is a reasonably active subreddit for the city of Amsterdam, consisting of approximately 38,300 subscribers consisting of both residents and visitors. A post asking members to complete the survey was live for one week in the subreddit, and contributed significantly to the number of submitted questionnaires. Unfortunately, Reddit is a more specific form of social media that tends not to have as wide of a reach as other platforms like Facebook and Twitter (Shatz, 2017). For example, comparing the number of subscribers to the Amsterdam subreddit (38,300) with the number of members of the Amsterdam Facebook page (459,500) or City of Amsterdam followers on Twitter (408,000), it becomes obvious that the distributive reach of the platform is much smaller, and likely less representative of the population. To help share the link to the survey other methods were applied, namely posting flyers and by sharing information through word of mouth.

Over the course of three weeks, flyers were designed and distributed in different locations throughout the city. They included a link to the survey as well as an introduction in both Dutch and English, and were posted in at least one library location in each of the seven districts of Amsterdam. Libraries offer a public space, and often contained information about other community events. Additionally, when different cafes or third-spaces had community postings, and staff permitted, flyers were also displayed. The intent was to reach participants in multiple areas of the city as comparing the locational advantages/disadvantages was a central theme of the research. However, not every library accepted non-community-based flyers, like the Central branch, while some staff in third-spaces were not always authorized to allow flyers to be posted. From a functional aspect, this was not an ideal method for distributing the link to the survey because it required willing participants to enter the link into their browser from a physical sheet of

paper, and it was not possible to post a flyer in all locations of the city, limiting the opportunity for residents to participate. However, this signifies one of the limitations of using an online survey.

Other considerations with the research method was maintaining the anonymity and safety of the participants. By asking people quite specific and personal questions, particularly the locations of their homes and where they routinely visit, there were ethical standards that had to be upheld. Maptionnaire is a service licensed by the University of Groningen and has been used by many public and private organizations as a research tool, including Hasanzadeh et al. (2018). Nonetheless, ensuring that participants were aware of the scope, intentions and risks of completing the survey was made a priority. Before starting the questionnaire, respondents had to agree to participate, and were informed that their participation was anonymous and optional, and were provided contact information for questions or concerns. A second consideration was that no personal identifiers like name or contact information were collected in the survey. Finally, at the conclusion of the survey, participants were invited to ask any questions or make further comments, and were given contact information for follow-up. In addition, on the specific mapping questions, participants were reminded to indicate only the approximate locations of their activity sites. While this would lead to some analytical inaccuracies, maintaining anonymity of the participants was of greater importance.

Data Analysis

Based on the model above, the two main outcomes of interest were subjective well-being and place belonging. However, directly measuring these types of complex, subjective feelings and perceptions can be challenging (Diener, 1984). In an effort to keep

the survey manageable for participants and following Winters and Li (2017), a single general life satisfaction question was used as a proxy for overall subjective well-being. Participants were asked the question: “In general, how satisfied are you with your life?” Five options were available: *very unsatisfied, unsatisfied, neutral, satisfied, and very satisfied*. A similar method was used by Sandstrom and Dunn (2014) in their study about the impact of weak ties on belonging. Based on this, respondents were asked whether they agreed to the statement: I feel like I belong in Amsterdam. Responses ranged from *strongly disagree* to *strongly agree*, using the same scale as life satisfaction. This approach was also applied for questions about recreational engagement from a broader perspective.

One of the questions presented by (Hamermesh, 2014), was that if people had more free time, how would they spend it? To develop an understanding of this, participants were asked whether they were satisfied with both the amount of free time they have, and how they spend it. Furthermore, respondents were asked whether they were able to spend their free time doing leisure activities, and whether they were happiest while doing them. However, as discussed by Newman et al. (2014), measuring leisure can vary depending on the approach from either structural or subjective perspectives. To account for these differences, multiple measures were included in the questionnaire. In the interactive mapping sections of the survey, participants indicated on the map the approximate locations of their homes, their workplaces (including studying, volunteering or free-lance work), and the sites where they partake in leisure. Participants were also asked to report how often, and for how long to reflect the variation in leisure measures. However, based on (Broberg et al., 2013), the survey also included leisure activities they

within the home, and how much time is spent on them. Collectively, these questions were necessary for understanding the first research question: does leisure participation influence subjective well-being and place belonging? However, if relationships existed, it was important to also explore how locational advantages/disadvantages and personality could enable or constrain them. To explore this second aspect of the theoretical model, more primary and secondary data would be required.

In previous studies, personality has been explored based on the big five predictors (openness, conscientiousness, extraversion, agreeableness, neuroticism), such as in (Lu & Hu, 2005). Yet, as suggested by Alessandretti et al. (2018), personality can be linked to spatial behaviour, which could be associated with their leisure participation. Considering this, participants were asked to specify if they felt more like a returner (someone who prefers to go back to the same places) or an explorer (someone who prefers visiting new locations – associated with extraversion (Alessandretti, Lehmann, & Baronchelli, 2018)). The question was posed on a slider that asked users to drag an indicator to the desired position along a scale with returner on one end, and explorer on the other. A neutral position could also be indicated by leaving the slider in the middle location. Using the same format, participants were also asked about their propensity to partake in leisure alone or with others. Collectively, these questions would be used to explore a possible relationship between personality and leisure participation.

In the context of this research, locational advantages and disadvantages were conceived as the proximity of leisure opportunities. This would be evaluated in two ways: activity space area, and the number and density of leisure opportunities near the home. Using the leisure locations as indicated by participants, each person's activity space could

be created using ArcMap by joining each point, creating a polygon. The area of the activity space would reflect the actual range of places a person in Amsterdam routinely visited for work and leisure, possibly shaping their participation in recreation (Hagerstrand 1970). The second method for exploring locational advantages and disadvantages pertains to leisure opportunities. To explore this, land use composition data from the City of Amsterdam was required.

Data Analysis

To understand survey responses, the first step was using GIS software (ArcMap v.10.5.1) to prepare the data and to explore possible spatial patterns amongst the leisure locations. The second step was using statistical software (SPSS v25) to model the data, highlighting potential relationships.

The spatial analysis for the research questions necessitated developing two variables: participant activity space area and indicators of locational advantages and disadvantages. There are many methods for determining a person's activity space, such as the complexity model proposed by Li and Tong (2016) or the centrality approach by Hasanzadeh (2019). However, in these cases, activity spaces were analyzed to better understand travel behaviour (Li and Tong, 2016) and how residential location may influence the spatial clustering of activities (Hasanzadeh, 2019). In this research, the activity space was conceived as a way to measure a relationship between locational advantages and disadvantages on leisure participation. Considering the time-space constraints suggested by Hagerstrand (1970), the larger a participant's activity space, the less time they would have for leisure participation, signifying a possible locational disadvantage as their activities are further from their home (see figure 4 as an example).

Based on this, the minimum convex polygon (MCP) approach was used to estimate the typical area a participant covers in a given month based on the locations of their homes, workplaces and leisure locations. The MCP method joins the different points to create a polygon that can be used for spatial calculations like area, but is



Figure 4. Examples of different activity space conceptualizations

less nuanced than the models developed by Li and Tong (2016) or Hasanzadeh (2019). To create the activity space for each participant, the minimum bounding geometry tool was used, followed by the field calculator to determine the area in kilometres square. This was then used as an explanatory variable in the statistical analysis below.

The second aspect of the spatial analysis was determining the locational advantages and disadvantages surrounding the participants' homes. This was determined in two ways, the density of leisure opportunities, and the number of opportunities within 500m, 800m, 1000m, and 1200m (Witten et al., 2003). To determine leisure opportunities, City of Amsterdam land use and function data were used. These fine-grained GIS layers indicate the purpose of each parcel of land in the city. The two layers contain different function classifications, such as retail or park areas, which were selected as the basis of leisure opportunities. The types of land uses considered for leisure were based on the categories available in the dataset that aligned best with those used by Schulz et al. (2017), signifying a structural approach to leisure as described by Newman et al. (2014).

Examples of functions that were not included: office spaces, care facilities, residential functions, industrial sites, etc. Once leisure opportunities were identified, network analysis was performed for each participant's home. This is a spatial analysis tool that can be used to determine the area around a point based on specified distances, constrained by the road network (MacDonald, Kearns, & Ellaway, 2013). It offers a more realistic representation of the area a person experiences as the area is defined by navigable land – which was particularly important in Amsterdam given its many waterbodies. Using the Network Analyst toolset in ArcMap, service areas (area around a point based on the road network) were determined for each participant. Following this, spatial joins were used to determine the number of leisure opportunities that intersected the service areas, representing one indicator of the locational advantages or disadvantages of the participants homes.

The second indicator was determined by the density of the leisure opportunities within each of the service areas identified in the network analysis. This allowed for a more standardized representation of opportunities because each participant's service area varied. For example, one participant's area at a distance of 500m was 0.16km², compared with another who's area was 0.45km² (see Appendix A) The densities were calculated by dividing the number of leisure opportunities by the area of each distance. These were then utilized in the statistical analysis below as the second indicator of locational advantages and disadvantages. A similar approach was also used to highlight differences in both leisure opportunities and leisure realizations between the different districts of Amsterdam. While not part of the theoretical model above, this secondary analysis was useful for interpreting the statistical analysis below.

The second stage in data analysis was based on ordinal regression. For many of the questions in the online survey, participants were asked to respond to a statement or question and record their answers as one entry in ordered progression from least to most – like strongly disagree to strongly agree. This type of data can be useful for measuring variables that are not easily confined to a number, such as happiness. Since the two outcome variables, subjective well-being and place belonging, were measured in this way, two common methods of statistical analysis are logistic regression or ordinal logistic regression, such as in Yuen and Jenkins (2019). While both can be applied in instances like this, upon reviewing the distribution of responses, ordinal regression was the preferred option. The small sample size limited the number of participants in certain categories, therefore splitting the sample into a dichotomous variable, as is necessary for logistic regression, was not useful. In addition, the intent of the research was to understand how leisure may influence SWB and place belonging, therefore maintaining the different categories of responses was important.

To understand possible associations between life satisfaction and the different elements of leisure, multiple stages of analysis were necessary. The first step was exploring responses to broader contextual questions about participants perceptions of, and engagement in recreation relative to life satisfaction. To do this, bivariate analysis was undertaken to examine possible interactive patterns between variables. Once patterns were observed, the variables that reflected an association were added to the ordinal regression models. An ordinal regression model allows researchers to predict the odds of an outcome based on different explanatory variables. In this case, what the odds were for different life satisfaction and place belonging evaluations, based on leisure

participation. If there was a relationship between the elements, further explanatory factors were added to the model, locational advantages and personality indicators to determine if they influence SWB. To do this, multiple models were developed using the ordinal regression analysis function of IBM SPSS v25.

Results

Over the span of one month 166 people attempted the survey, but only 86 completed it to a sufficient level, some with unanswered questions. The average age of the participants was 31 years old, with the youngest at 18 and oldest at 57. The majority of respondents were between the ages of 20 and 34, while 29 participants identified as female, 57 as male, and one as other. 15 participants had children, while 50 of the 86 participants indicated having a partner. The average monthly income was 2274 euros, furthermore, 80 participants indicated that they were working in some manner – either as studying, employed, volunteering or a combination of the three. Every district in Amsterdam was represented (see figure 5 below), however most participants were from Oost (22), Centrum (17), West (17), and Zuid (17).

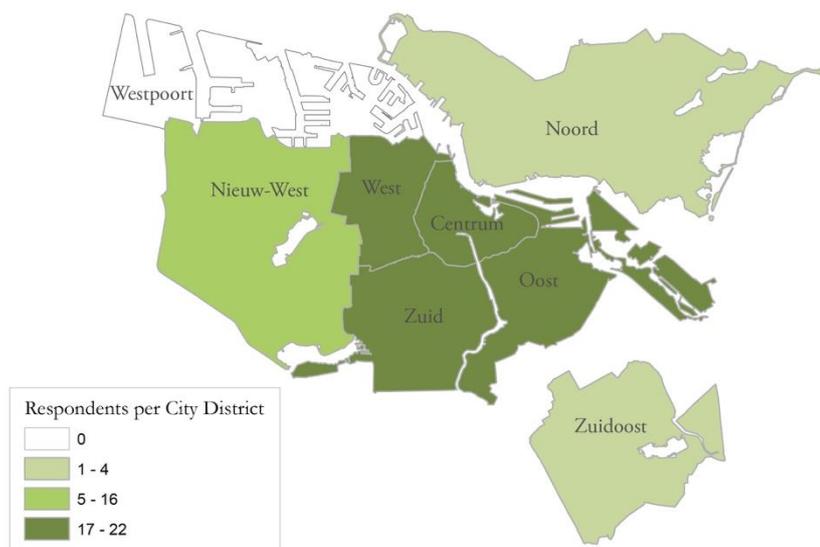
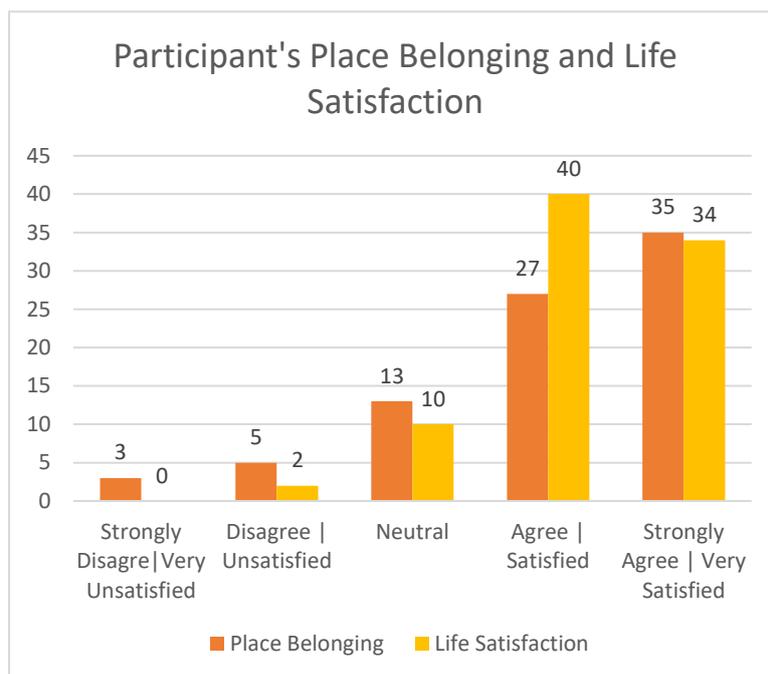


Figure 5. Map indicating the number of respondents per city district

The two main outcome variables of the research were life satisfaction and place belonging. Respondents were asked to select an option based on the question or statement – “I feel like I belong in Amsterdam” (agreement) and



“in general, how satisfied are you with your life?” Most participants indicated positive feelings of life satisfaction (86%) and place belonging (75%), reflecting positively on the city of Amsterdam (see figure 6). To understand possible explanations for the positive feelings, different measures of leisure were reviewed.

In a typical month, a participant’s average total length of time partaking in leisure activities inside their home was approximately 81 hours, whereas 44 hours were spent on leisure outside of the home. However, the spread of participant’s number of leisure activities differs between those inside (up to 9) and outside the home (up to 12). Additionally, 50% of participants indicated doing between 3 to 5 activities within their home, whereas outside the home, 50% of people partook in 2-6 activities (see figure 6). This suggests more variance in the number of activities participants engage in outside the home, despite on average, cumulatively spending less time partaking in them. Conversely,

participants tend to participate in a similar number of pastimes inside the home, but over longer amounts of time.

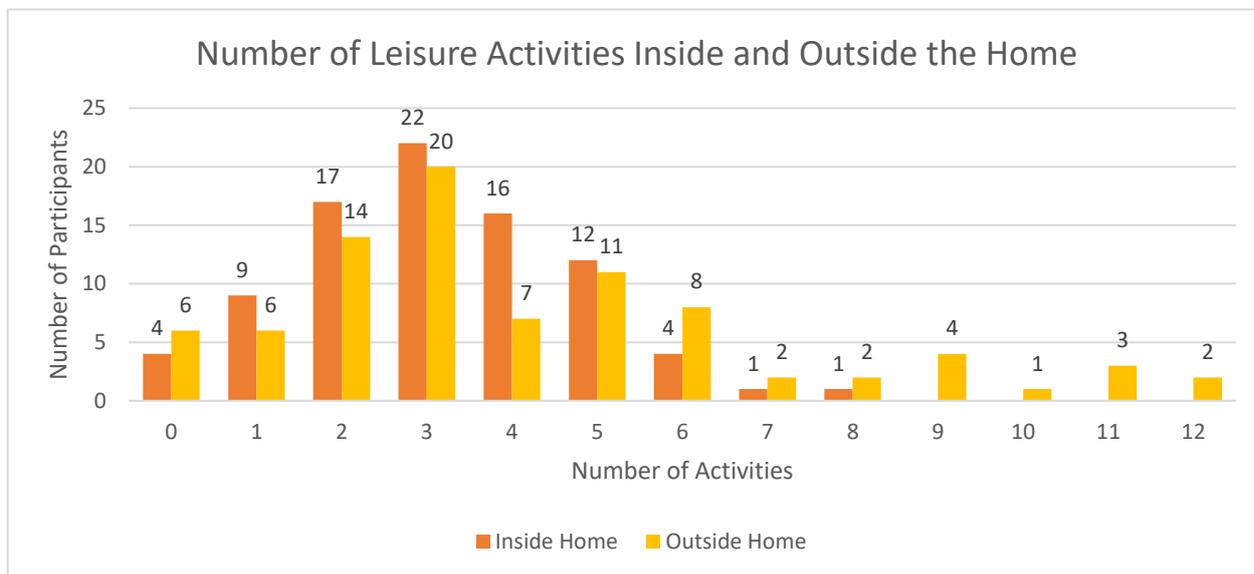


Figure 7. Number of Leisure Activities Inside and Outside the Home. This figure indicates the distribution of the number of activities inside and outside a participant's home

The questionnaire also asked respondents to indicate how many times in a month that they visit each leisure location. When summed, the average participant made 18 recreational visits in a typical month, representing about one activity outside their home every other day. One participant estimated visiting leisure locations 60 times in a typical month, whereas 7 participants do not partake in recreational activities outside their home. This may represent an error in the survey completion, or it could indicate participants' preferences or life circumstances influences their leisure habits. For instance, two respondents commented in an open question about what would allow them to engage more in leisure was that the age of their children was limiting their abilities to partake in recreation. Additionally, when participants were asked if they prefer leisure activities they can do inside their home, 26 of 82 (32%) participants agreed. However, 55 of the 82 respondents were either neutral or disagreed with the statement.

To develop two overall indicators of leisure participation, the total number of and hours spent doing leisure activities inside and outside the home were reviewed. The average participant partakes in approximately 8 activities in a month (see figure 8), spending nearly 125 hours on them (see figure 9). To develop a better understanding of respondents' perceptions of their free time and leisure habits, further evaluative questions were asked. These were about the satisfaction with how much free time participants have, their satisfaction with how they spend their free time, whether they are able to spend their free time doing leisure activities, if they are happiest when participating in leisure activities, and whether they like to try new leisure activities.

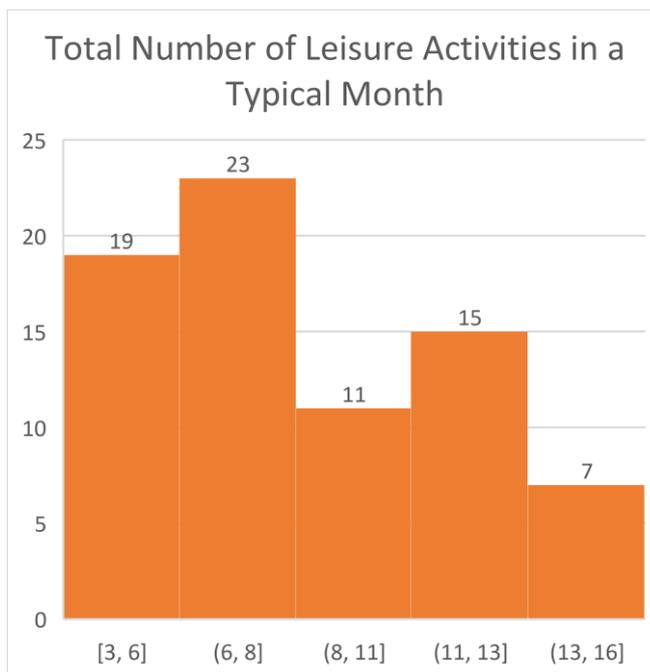


Figure 8. Total Number of Leisure Activities in a Typical Month. This figure illustrates the total number of leisure activities a participant partakes in a month

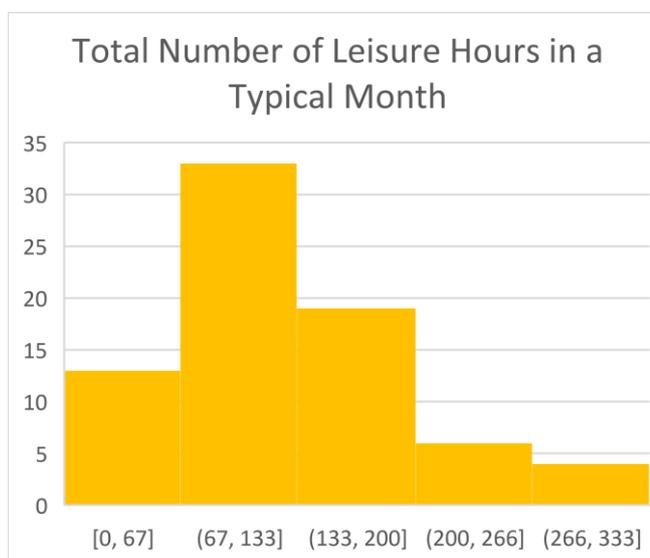


Figure 9. Total Number of Leisure Hours in a Typical Month. This figure highlights a global indicator of leisure hours in a typical month – including those inside and outside the home.

EXPLORING THE INFLUENCE OF LEISURE PARTICIPATION ON SUBJECTIVE WELL-BEING AND PLACE BELONGING 45

59 of 85 participants indicated that they were satisfied or very satisfied with the amount of free time they have, while 46 of 86 participants indicated being satisfied or very satisfied with how they are spending their free time. In addition, 73 of 86 participants agreed or strongly agreed that they are able to spend their free time doing leisure activities. Furthermore, 65 of 85 participants agreed or strongly agreed that they are happiest when doing leisure activities. However, not all participants were interested in trying new leisure activities as 34 respondents were either neutral or in disagreement the idea.

The personality indicators were based on a scale where 0 represented one option, and 100 the opposite. With regards to preferences for exploring new or returning to familiar places, many participants displayed a deference for returning to previous locations. However, it is possible to notice three groups, one clustered in the middle ranges (between 30-60), with the other more towards the periphery of the spectrum (see figure 10). The mean was 47.22, suggesting participants may be content with the places they know, while still being interested in seeking new locations.

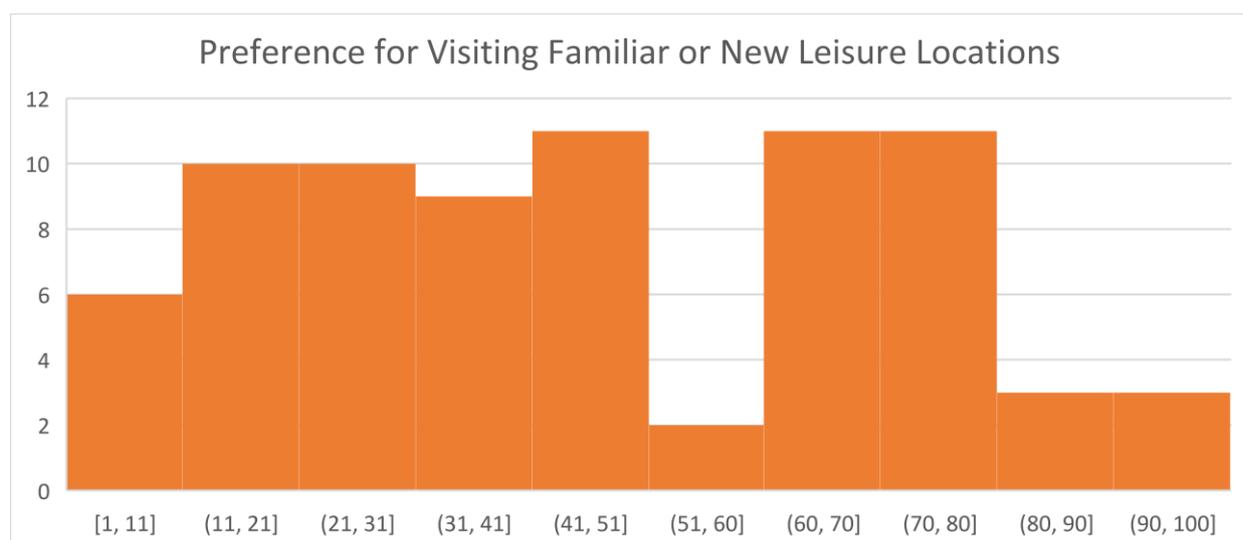


Figure 10. Preference for Visiting Familiar or New Locations. This figure signifies whether a person is more likely to be a returner or an explorer. Returner being a score closer to 0, explorer closer to 100.

In a similar way, participants were asked to respond to whether they prefer to do leisure activities alone or with others (see figure 11). However, there tended to be more agreement towards the right end of the scale, indicating a propensity to participate in leisure with others, yet the average was 57 (50 = neutral).

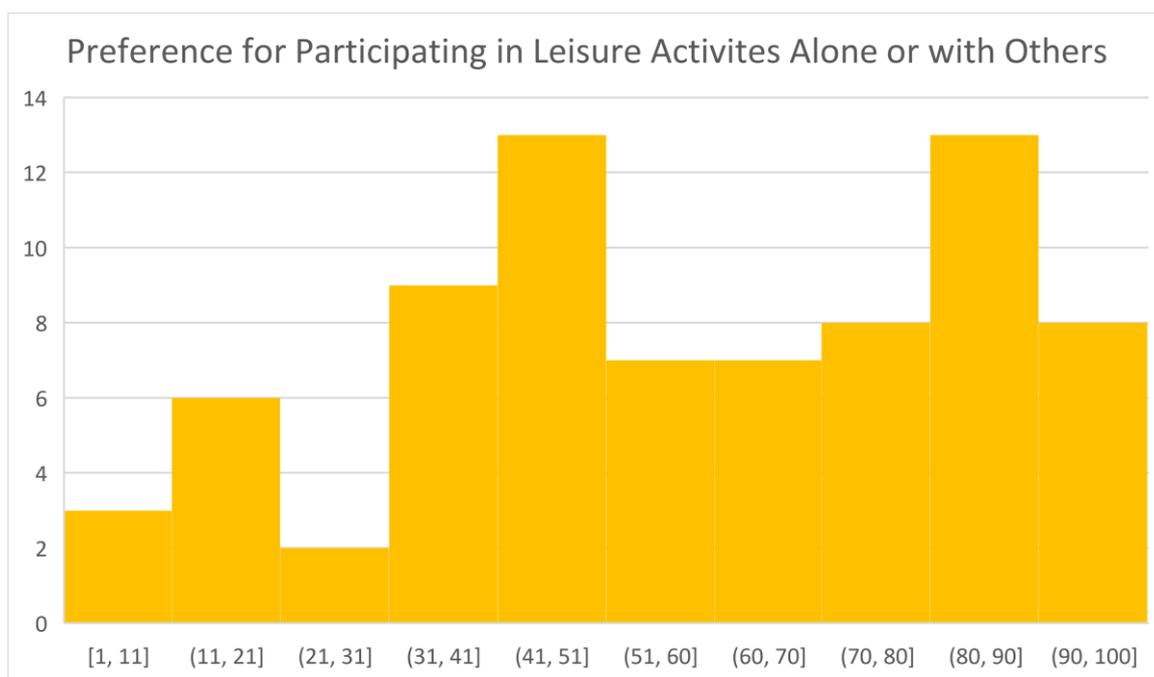


Figure 11. Preference for Participating in Leisure Activities Alone or with Others. This figure illustrates whether participants like to do leisure with others or alone. A score of 0 indicates alone, whereas 100 indicates with others.

Participants were also asked to indicate what would enable them to participate more in leisure activities. The most common response was working less hours (50/85), followed by having the financial ability (41/85), knowing more people with similar interests (30/85), living closer to leisure (18/85), having better access to information about leisure (15/85), and lastly having better access to facilities (14/85). Five participants indicated other limitations – two referred to having more structure in how they spend their time, while two others made comments about their children being young, and one participant mentioned needing more time. Additionally, in the comment section at the

conclusion of the survey, some participants offered insight into other possible factors influencing recreation engagement, like transportation impediments, and the stress due to high costs of living. Collectively, the responses to these questions shaped the following regression analyses.

Model 1: Life Satisfaction and Leisure

Based on the bivariate analysis, *preference for leisure activities inside the home* and *interest in trying new leisure activities* did not appear to accord with life satisfaction in an obvious way. Conversely, feelings of being *happiest when doing leisure activities*, being *able to spend free time doing leisure activities*, being *satisfied with how much free time* and *how free time is being spent* do appear associated with life satisfaction. The crosstabulation tables (see table 1 for an example) suggest these as possible factors to include in the ordinal regression analysis.

Table 1. Crosstabulation Table: Satisfaction with How Free Time is Spent and Leisure Satisfaction.

Crosstabulation Table: Satisfaction with How Free Time is Spent and Leisure Satisfaction						
		Life Satisfaction				Total
		Unsatisfied	Neutral	Satisfied	Very Satisfied	
How satisfied are you with how you spend your free time?	Very Unsatisfied	1	1	1	0	3
	Unsatisfied	0	5	7	1	13
	Neutral	1	2	15	6	24
	Satisfied	0	2	12	21	35
	Very Satisfied	0	0	5	6	11
Total		2	10	40	34	86

Based on the participants’ indication that working less hours would enable them to spend more time partaking in leisure, the first model *included satisfaction with the amount of free time a participant has*, as an explanatory variable for the outcome variable

life satisfaction. The model as a whole was not statistically significantly better than using marginal probabilities alone to predict life satisfaction, at the 95% confidence interval, and the model only explained 5% of the variation in the outcome variable. However, the more satisfied a participant was with the amount of free time they have increased the odds of a person being more satisfied with their life.

Building from this iteration of the model, *satisfaction with how free time is spent* was added as an explanatory variable. With this factor included, the model has a better fit with the data, based on the significant -2Log Likelihood statistic (67.707, sig $p < .000$), and the predictive ability of the model improved to 25.5% based on the Nagelkerke pseudo R square.

Table 2. Model 1: Life Satisfaction, Amount of Free Time, and How Time is Spent. This table shows the regression coefficients based on the first iterations of the ordinal regression model.

Model 1: Life Satisfaction, Amount of Free Time, and How Free Time is Spent								
		Estimate	Std. Error	Wald	df	Sig	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	Life Satisfaction: Unsatisfied	-.412	1.090	.143	1	.705	-2.548	1.724
	Life Satisfaction: Neutral	1.628	.942	2.987	1	.084	-.218	3.473
	Life Satisfaction: Satisfied	4.469	1.066	17.561	1	.000	2.379	6.559
Location	Satisfaction with the amount of free time	.109	.220	.246	1	.620	-.322	.540
	Satisfaction with how free time is spent	1.019	.261	15.209	1	.000	.507	1.531

However, while the overall model improves, *satisfaction with the amount of free time* does not remain significant ($p = .620$). Conversely, *satisfaction with how free time is spent* is statistically significant ($p < .000$) (see table 2). However, to check if leisure participation influences this, *being able to spend my free time doing leisure activities* was added to the model. The model remains a better fit than the intercept only, however the predictive ability remains mostly the same at 25.6% based on the Nagelkerke pseudo R square value, suggesting no improvement in the model's ability to explain the variance in life satisfaction. The model also indicated that *being able to spend free time participating in leisure activities* is not statistically significant ($p = .568$). A similar result occurred when responses to *I am happiest when I am doing leisure activities* were included in the model ($p = .923$).

Based on this iteration of the model, to determine if leisure engagement improves predictability of the model, variables representing the lived experiences of participants were added. Since the average monthly amount of leisure time is greater within the home, the first experiential variables added to the model were those associated with leisure at home. When *leisure hours inside the home* and *number of leisure activities inside the home* were added to the model, the predictive ability improves to 30.6% (Nagelkerke pseudo R square), while remaining a statistically significantly better model than marginal probabilities alone ($-2LL 148.531$ $p < .000$).

The variable *leisure hours inside the home* was not statistically significant ($p = .650$), however the *number of leisure activities inside the home* was ($p = .030$), and the logit estimate indicated a negative influence ($\hat{\beta} = -.300$). Therefore, for an increase in the number of leisure activities inside the home, the odds of participants having positive life

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satisfaction decreases by 0.74 (table 3). If partaking in less leisure inside the home

improves the odds of positive life satisfaction, would the opposite effect occur for leisure

participation outside the home?

Table 3. Model 1: Life Satisfaction, How Free Time is Spent, How Much Free Time, Hours of Leisure Inside the Home, Number of Leisure Activities Inside the Home. This table indicates the two significant variables *satisfaction with how free time is spent* and *number of leisure activities inside the home*.

Model 1: Life Satisfaction, How Free Time is Spent, How Much Free Time, Hours of Leisure Inside the Home, Number of Leisure Activities Inside the Home								
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	Life Satisfaction: Unsatisfied	-1.708	1.275	1.795	1	.180	-4.206	.791
	Life Satisfaction: Neutral	.361	1.140	.100	1	.751	-1.873	2.596
	Life Satisfaction: Satisfied	3.367	1.221	7.606	1	.006	.974	5.759
Location	Satisfaction with How Free Time is Spent	1.117	.272	16.829	1	.000	.584	1.651
	Satisfaction with Amount of Free Time	.073	.223	.109	1	.742	-.363	.510
	Leisure Hours Inside the Home	-.002	.004	.205	1	.650	-.010	.006
	Number of Leisure Activities Inside the Home	-.300	.138	4.704	1	.030	-.571	-.029

To test this, the *number of leisure activities outside the home* was added to the model. It did not improve its predictive ability, and the extra explanatory variable was not statistically significant ($p = .696$). The same was true for *leisure hours outside the home* ($p = .221$), and *total number of leisure visits in a month* ($p = .211$). However, it is possible that global changes in *total hours of leisure participation* and the *total number of leisure activities* may influence the participant's life satisfaction evaluations. When added to the model, neither were statistically significant, nor did the predictive ability improve.

One of the goals of this research was to determine if locational advantage and disadvantages influence leisure participation and thus subjective well-being. So far, the model had shown that being more satisfied with how free time is spent improves the odds of positive life satisfaction, while doing more leisure activities inside the home decreases the odds. To explore the possible relationship between these factors further, locational advantages and disadvantages were added to the ordinal regression. The density of leisure opportunities (number of opportunities/area within 500m, 800m, 1000m, 1200m) surrounding the home did not statistically significantly improve the model at any distance. The same effect was true for the number of opportunities within those areas. Another measure of locational advantages and disadvantages was added to the model, activity space area, but was not statistically significant either ($p = .626$).

The next iteration of the model was to consider the influence of personality. When the variables for *returner or explorer* and participating in leisure activities *alone or with others* were added to the model, neither were statistically significant. Missing from the model to this point, is the role of socio-demographic characteristics, like gender, age and income. When added to the model, age, the number of children, gender, and average

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monthly income of participants were not statistically significant. However, not having a partner is significant ($p = .011$), decreases the odds of having positive life satisfaction by 0.24. In other words, the odds that participants with a partner would indicate positive life satisfaction was 4.2 times greater than those without a partner.

Table 4. Model 1: Life Satisfaction Including Socio-Demographic Data. In this table, females and with partner were the reference category.

Model 1: Life Satisfaction Including Socio-Demographic Data								
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	Life Satisfaction: Unsatisfied	-2.301	1.636	1.979	1	.160	-5.508	.905
	Life Satisfaction: Neutral	-.119	1.498	.006	1	.937	-3.055	2.817
	Life Satisfaction: Satisfied	3.065	1.555	3.883	1	.049	.017	6.113
Location	Satisfaction with How Free Time is Spent	1.103	.270	16.690	1	.000	.574	1.633
	Number of Leisure Activities Inside the Home	-.347	.142	5.934	1	.015	-.625	-.068
	Age	.010	.036	.083	1	.773	-.060	.080
	Number of Children	.131	.452	.083	1	.773	-.756	1.017
	Average Monthly Income	-7.059E-6	.000	.002	1	.961	.000	.000
	Male	.319	.573	.310	1	.578	-.803	1.441
	Female	0 ^a	.	.	0	.	.	.
	No Partner	-1.426	.564	6.395	1	.011	-2.531	-.321
	Partner	0 ^a	.	.	0	.	.	.

Therefore, based on the ordinal regression model developed above, for the participants in this study, the odds of having a positive life satisfaction improve with being more satisfied with how free time is spent, participating in fewer leisure activities inside the home, and having a partner (see table 5). When controlling for hours working, average monthly income, and gender, the model is a better predictor of life satisfaction than the intercept only model (cumulative probabilities) based on the -2LL statistic (132.678, $p < .000$), can explain 41.5% of the variance in life satisfaction (Nagelkerke pseudo R square), and meets the assumption of proportional odds. However, it should be noted that the small sample size indicates that these results should be interpreted with caution as some combinations of explanatory variables did not occur in the sample.

Model 2: Place Belonging and Leisure

The same process was undertaken to determine if place belonging and leisure were related. Bivariate analysis suggested that the variables *living near leisure is important to me*, *being able to spend free time doing leisure activities*, *satisfaction with how free time is spent*, and *satisfaction with amount of free time* could be associated with increases in feelings of place belonging. The other categorical variables *I prefer leisure activities inside the home*, and *I like to try new leisure activities* do not show obvious patterns linking them to place belonging. Based on these indicators, an ordinal regression model was prepared to better explore these relationships and to consider how the factors may be influenced by locational advantages and disadvantages, and personality.

Based on Tuan (1975), meaning creation develops through experiences. Considering this, the first factor to be considered in association with place belonging was *satisfaction with how free time is spent* (see table 5). When added to the model, it is a

better predictor than the marginal probabilities alone (-2LL statistic 48.208, $p < .000$), and is able to predict 21.1% of the variance in feelings of place belonging (Nagelkerke pseudo R square). Being more satisfied with how time is spent is statistically significant ($p < .000$), and the odds of indicating strong agreement with feelings of belonging in Amsterdam improve by 2.56 for increases in satisfaction with how free time is spent ($\text{Exp}(.940) = 2.56$).

Table 5. Model 2: Place Belonging and Satisfaction with How Free Time is Spent

Model 2: Place Belonging and Satisfaction with How Free Time is Spent								
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	Belonging in Amsterdam: Strongly Disagree	-.561	.867	.419	1	.518	-2.260	1.138
	Belonging in Amsterdam: Disagree	.635	.748	.722	1	.396	-.830	2.101
	Belonging in Amsterdam: Neutral	2.041	.754	7.322	1	.007	.563	3.519
	Belonging in Amsterdam: Agree	3.670	.831	19.517	1	.000	2.042	5.298
Location	satisfaction with how free time is spent	.940	.225	17.443	1	.000	.499	1.381
Link function: Logit.								

However, as suggested by a majority of participants, working fewer hours was thought to enable further leisure participation. Therefore, *satisfaction with the amount of free time* was added as an explanatory variable. Yet, once included in the model, its predictive ability reduces, and *satisfaction with the amount of free time* is not statistically significant ($p = .670$). A similar result occurs when *being able to spend free time doing leisure*

is added to the model ($p=.384$). However, when *living near leisure activities is important to me* is added as an explanatory variable, the model remains a better predictor than marginal probabilities alone ($-2LL\ 101.597, p<.000$), and improves its predictive ability to 28.2%. *Living near leisure activities is important to me* is statistically significant ($p=.007$), and has a positive estimate ($\hat{\beta} = .631$). This signifies that the odds of having a positive feeling of belonging in Amsterdam improve by 1.88 ($\exp(.631)$) when participants indicated living near leisure activities was important to them.

This suggests that leisure may influence place belonging, therefore to explore this further variables that reflect the experiences of participants were added to model. As in Model 1 above, *hours spent doing leisure inside and the home the number of activities inside the home*, were added first. The model remains more effective than marginal probabilities alone ($-2LL\ 187.422, p<.000$), but the two new variables were not statistically significant ($p = .643$ and $p=.574$ respectively) indicating that place belonging may not be associated with leisure in the home. However, when the *number of leisure activities outside the home* was added to the model, its predictive ability increased to explain 33.8% in the variance of place belonging (Nagelkerke pseudo R square), and the new variable is statistically significant ($p = .019$). The estimate ($\hat{\beta} = .198$) indicates that the more leisure activities a person does outside the home, the odds of a participant having a stronger sense of place belonging increased by 1.21 ($\exp(.198)$)

Yet, when the amount of time a person spends doing these activities and number of visits to the locations were added to the model, the extra explanatory variables were not statistically significant. Similarly, to determine if there were associations between leisure participation in general, *total leisure hours* and *total leisure activities* were added to

the model. Neither improved the model's predictive ability, nor were they statistically significantly associated with place belonging. Therefore, based on the above preliminary analysis above, the ordinal regression model suggests that having greater satisfaction with how free time is spent, stronger valuation of living near leisure activities, and an increase in leisure activities outside the home improve the odds of having a stronger sense of belonging. To understand these relationships further, in the same approach as in the first model, locational advantages and disadvantages, and personality variables were added to the model.

As indicators of locational context, the density and number of leisure opportunities near the home at different distances were added to the model. At 500m, the density of leisure activities improved the model's predictive ability (35.7% from 33.8% previously), but the added variable was not statistically significant ($p=.852$). The same was true for the number of leisure opportunities and densities at further distances.

The second method for exploring the influence of locational advantages was by adding *activity space area* to the model. When this is added, the model's predictive ability increases to 36.1%, and remains better than using marginal probabilities alone (-2LL 183.435 $p<.000$). *Activity space area* is not statistically significant at the 95% confidence interval, however it is at the 90% confidence interval. Additionally, when this variable was included in the model, the effect of *living near leisure activities is important to me* becomes less statistically significant ($p=.058$). When preference for living near leisure activities is removed from the model, *activity space area* becomes statistically significant ($p=.016$) and decreases the odds of stronger feelings of place belonging ($\hat{\beta} = -.009$). This suggests that the larger a person's activity space, the odds of a participant indicating strong feelings of

belonging in Amsterdam decreases slightly, however, the effect is quite small (see table 6).

Therefore, while the model improves, and *activity space area* influences the odds of place

belonging, the effect is not large.

Table 6. Model 2: Place Belonging, Satisfaction with How Free Time is Spent, Number of Leisure Activities Outside the Home, and Activity Space Area. This table highlights the small effect on the model that activity space area has.

Model 2: Place Belonging, Satisfaction with How Free Time is Spent, Number of Leisure Activities Outside the Home, and Activity Space Area.								
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	Belonging in Amsterdam: Strongly Disagree	-.008	.958	.000	1	.993	-1.886	1.869
	Belonging in Amsterdam: Disagree	1.246	.850	2.149	1	.143	-.420	2.913
	Belonging in Amsterdam: Neutral	2.824	.862	10.739	1	.001	1.135	4.512
	Belonging in Amsterdam: Agree	4.637	.950	23.836	1	.000	2.776	6.499
Location	Satisfaction with how Free Time is Spent	.992	.234	17.948	1	.000	.533	1.451
	Number of Leisure Activities Outside the Home	.237	.087	7.435	1	.006	.067	.407
	Activity Space Area	-.009	.004	5.856	1	.016	-.017	-.002

The next step considered the influence of personality on place belonging and

leisure participation. To do this, variables for being *a returner or explorer*, and *propensity*

for partaking in leisure alone or with others were added to the model. When *being a returner or explorer* is added, the model improves its predictive ability to 38.9% (Nagelkerke pseudo R square), and *being a returner or explorer* is statistically significant ($p = .014$). The more of an explorer a person is, the lower the odds of them having a strong sense of belonging decreases ($\hat{\beta} = -.021$). However, when *propensity of partaking in leisure alone or with others* is added to the model, it is not a statistically significant explanatory variable ($p = .721$).

As with model 1, it was important to consider the impact of socio-demographic factors on place belonging. The model suggests that *average monthly income* is not a statistically significant factor, nor is age, number of children, having a partner, or gender. Years spent living in the current location is not statistically significant at the 95% confidence interval. However, when *years spent living in the current location* and *gender* are added as control variables, *being a returner or explorer*, *the number of leisure activities outside the home*, *satisfaction with how free time is spent* and *activity space area* all remain statistically significant (see table 7). This model is a better predictor of place belonging than marginal probabilities alone (-2LL 176.020, $p < .000$), can explain 42.3% of the variance in place belonging (Nagelkerke pseudo R square), and meets the ordinal regression assumptions.

Between the two models above, *satisfaction with how free time is spent* and *the number of leisure activities inside and outside the home* appear common. Therefore, both models indicate there may be relationships between leisure and subjective well-being and place belonging. However, neither explained more than 43% of the variance in the

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outcome variables. This indicates that while leisure may be a factor in place belonging and subjective well-being, other factors contribute as well.

Table 7. Model 2: Place Belonging, Satisfaction with How Free Time is Spent, Leisure Activities Outside the Home, Returner or Explorer, Activity Space Area, with control variables. This table indicates the final iteration of the model.

Model 2: Place Belonging, Satisfaction with How Free Time is Spent, Leisure Activities Outside the Home, Returner or Explorer, Activity Space Area, with control variables								
		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	Belonging in Amsterdam: Strongly Disagree	-.993	1.201	.684	1	.408	-3.348	1.361
	Belonging in Amsterdam: Disagree	.375	1.120	.112	1	.738	-1.820	2.569
	Belonging in Amsterdam: Neutral	2.110	1.132	3.476	1	.062	-.108	4.328
	Belonging in Amsterdam: Agree	4.111	1.186	12.004	1	.001	1.785	6.436
Location	Satisfaction with How Free Time is Spent	1.083	.247	19.164	1	.000	.598	1.567
	Number of Leisure Activities Outside the Home	.262	.092	8.039	1	.005	.081	.443
	Returner or Explorer	-.022	.009	6.111	1	.013	-.039	-.005
	Activity Space Area	-.011	.004	7.634	1	.006	-.019	-.003
	Years Spent in Current Location	.083	.045	3.434	1	.064	-.005	.170
	Male	-.353	.500	.498	1	.480	-1.333	.627
	Female	0 ^a	.	.	0	.	.	.

Discussion

The results from the ordinal regression analyses indicate partial agreement with the conceptual model described above, yet also highlight conflicting relationships, complicating the understanding of the associations between leisure participation and place belonging and subjective well-being. When considering the top half of the model, most indicators of recreational engagement were not statistically significant influences on either place belonging nor subjective well-being.

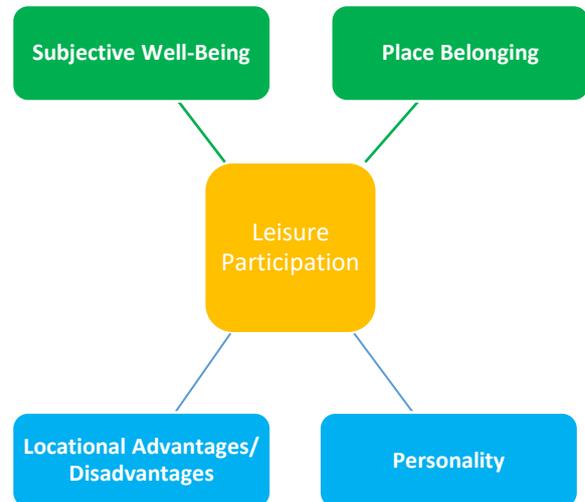


Figure 12. Proposed Conceptual Model

Conversely, the number of activities done in the home was statistically significant for subjective well-being, while the number of activities outside the home was statistically significant for place belonging. One possible reason for this is that the location where recreation occurs is a valuable characteristic of leisure participation itself.

Considering Yuen and Jenkins (2019) who observed improvements in SWB following park visits and light physical activity, it is possible that the positive influence of recreation is derived from the synergistic effects of location and activity. This may be true for two reasons, the increased likelihood of weak tie interactions, and positive effects derived from certain locations. For instance in their study, Yuen and Jenkins (2019) suggest that being in greenspaces can enable stress recovery, thus improving subjective well-being by improving positive affect and reducing negative affect. Similarly, Newman et

al. (2014) highlight detachment from work as a possible mechanism in which leisure influences subjective well-being. This theory suggests that people choose to participate in leisure activities that allow them to use different skills and resources than what they need for their work. Therefore, it is possible that when participants partake in fewer recreational activities inside their home, they may be able to recover more from the stress or negative effects from their jobs or other life pressures as they are in an external setting. However Newman et al. (2014) note that different types of leisure activities may be better suited for different people based on their job characteristics.

A second possibility is that when leisure activities are performed outside the home, there are more opportunities for interaction with other people. This would align with Sandstrom and Dunn (2014) who suggest that increases in weak tie interactions are associated with positive feelings of belonging and subjective well-being. For example, in his book *Life Between Buildings* Jan Gehl (2011) describes the range of roles a person can take in social contact, from being a main actor to a more passive observer. He uses the example of a person sitting on a park bench, who has the opportunity to talk with a neighbour or a dog walker, or simply watch as people carry on with their days, all of which Gehl suggests are forms of social contact. By being outside of the home, in public or semi-public places, people have more chances to engage with others in high-intensity or low-intensity ways. These interactions may be associated with the psychological mechanism of affiliation (Newman et al., 2014), improving subjective well-being, but also forming connections between people and spaces contributing to stronger senses of place belonging (Gustafson, 2001).

Yet, based on these theories, one would expect that as leisure activities outside the home increase, the odds of greater life satisfaction would also increase. However, in this study, that was not the case. One explanation for this was the reliance on recollection and estimation in the survey. Participants were asked to indicate the number of times and for how long they partake in a leisure activity in a typical week (in the home) or month (outside the home). It is possible that participants under or over estimated the number of leisure activities they do, and the duration of time they spend on them. Furthermore, there is spontaneity in life that does not always accord with recreational schedules. While there are activities like playing football or taking classes that can be recurring and easily recorded, there may be other types and instances of leisure activities that were unaccounted for or over represented. For instance, one participant noted that they consider playing with their son as a leisure activity within their home, but it would be hard to demarcate for how long or how often that actually occurs in a week. One way to remedy this would be to use data that reflects actual leisure behaviour of participants. An approach similar to Alessandretti et al. (2018) who used cellphone data to develop activity spaces provides one option, whereas utilizing a travel/recreation diary could also be beneficial for capturing feelings of affect prior to and after the leisure activity. These two methods could help verify and/or explain further the relationships found in this study.

However, another explanation could be that the data from this research suggest that neither the number of leisure activities, nor the length of time devoted to them were as strong of an influence as the satisfaction with how free time is spent on the odds of both a stronger sense of place belonging and positive subjective well-being. This finding supports the model of Newman et al. (2014) as it suggests that leisure satisfaction is one

domain nested under a global subjective well-being. The ordinal regression model with three explanatory variables and two control variables was only able to predict 41.5% of the variance in participants' subjective well-being, indicating that other factors are simultaneously contributing. This corroborates Diener et al. (1999), who also conclude that there are interactions between different elements shaping a person's happiness and life satisfaction. For instance, personal goals, health status, or job satisfaction were not included in the survey, and could also influence SWB. Yet, the results signify that being satisfied with how time is spent may be one domain, contributing to improved SWB.

Similarly, people are able to create memories and bonds with places beyond leisure participation. Consider the attachment people have with their places of birth, the sites of milestone events or their schools. Furthermore, Tuan (1975) suggests that passive and active experiences, and time influence place meaning. While length of residency was not statistically significant in the models above, passive and active measures of place meaning were not observable as part of the survey, nor were the reasons people felt like they belonged or not. An alternative for future research could be through participatory methods whereby the researcher and participant partake in the same activities or conduct a walking interview. These approaches to data collection could help with identifying the nuances of the interaction between people and their surroundings that cannot be learned in numeric form, while also being able to understand the subjective definition of both leisure, and feelings of belonging.

Nonetheless, the findings above reflect the value in being able to generate enjoyment from life through leisure activities. There were many factors that participants indicated would enable them to participate more in leisure activities. Time was the most

common response, but other factors like financial ability, and knowing more people with similar interests were also common. This suggests that if other obstacles to greater recreational engagement are too difficult to overcome, it is important to be able to generate satisfaction with how free time is spent to derive the benefits of leisure activities. This implies that simply having leisure amenities objectively available does not mean that all people will benefit from them or even make use of them.

This highlights the limited effect of locational advantages and disadvantages in this study. Considering that activity space area was the only locational factor that had a statistically significant influence on either outcome variable indicates that living around leisure opportunities may not be a significant influence on leisure participation. There are different possible reasons for this, in particular, the definition of locational advantages and disadvantages only considered three characteristics – the number of opportunities, the density of opportunities, and activity space area. For instance, safety of the area around the home was not considered (Lee & Maheswaran, 2011), neither were aggregated area characteristics like costs of living or demographic characteristics, or personal evaluations of their proximity or access to leisure (MacDonald et al., 2013). Therefore, the definition of locational characteristics in this study may have been too limited to understand the spatial opportunities and constraints on leisure participation. However, it does highlight a potential policy misnomer as presented in Vanderleeuw and Sides (2016). They surveyed city managers in Texas about whether amenities were thought to be contributing to economic objectives. They found that participants view consumption amenities as being able to lead to economic benefits, meaning “there may be acceptance of the general parameters of the creative class thesis—that the provision of amenities

attracts businesses that will employ an educated work force” (2016, p. 272). Yet, as was shown above, leisure opportunities, by extension consumption amenities, did not influence leisure participation, nor subjective well-being or place belonging. However, this is aggregated at the city level. When comparing the different network areas of the participants, a distance of 1200m from home already covers a significant area of Amsterdam. In addition, the distances used in this study were set based on conventions for walking speeds (MacDonald, Kearns, & Ellaway, 2013), but in the context of Amsterdam which offers metro, tram, bus and ferry services, and a city whereby cycling is so common (PwC, 2016), the effective area a person can cover may be larger than in other contexts (see Appendix B and Appendix C for maps illustrating the coverage of service areas).

Furthermore, when a participant has the whole of Amsterdam to choose from for certain leisure opportunities, the nearness to their home may not be as important for every activity at the same scales. Witten et al. (2003) suggest that some places may be more important regionally compared with others that are relied on at the local level. An example from this study is the Johan Crujff Arena, where the Amsterdam football club Ajax plays. A participant indicated this as one of their leisure locations in the survey, but it is a single facility for residents of Amsterdam, and people and fans in general. Yet, living near the stadium may be less of a priority than being nearby to a community garden or music classes. This suggests that a more nuanced understanding of leisure opportunities is necessary, one that considers more than simply the physical presence of recreational sites alone. For example, other barriers such as cost, language, or cultural norms could influence the participants' leisure choices.

Similarly, another factor that could influence the utilization of leisure opportunities is knowing which activities are on offer in a given municipality or neighbourhood. While this partly depends on the creativity and willingness of the individual, MacDonald et al. (2013) suggest that people may not know about what is available to them. In their study, they found that residents who recently moved to a neighbourhood, within two years, had a better sense of where different neighbourhood amenities were located. This could indicate that despite having leisure opportunities nearby, people may not be able to make use of them because they are unaware of their offerings. Furthermore, MacDonald et al. (2013) and Witten et al. (2003) suggest that quality of the amenities can also influence how often they are used. Adding these layers of complexity into understanding the relationship between leisure opportunities and participation would be beneficial for future research.

Another interesting finding from this research was that a propensity for being a returner was statistically significant for place belonging, but was not influential for life satisfaction. This may be due to developing a connection with places through time and experience as suggested by Tuan (1975). When revisiting the same leisure locations more often, people may become more familiar with them, building memories and feelings of comfort leading to affective feelings towards the place over time. Yet, frequency of visits was not a statistically significant contribution to either place belonging or subjective well-being. This conflicts with the notion that a greater number of visits would foster stronger positive feelings. A possible explanation for this in the study was that frequency of visits were aggregated at a global level to allow for comparison between participants. This may have masked the effects of returning to specific leisure locations, limiting the

resourcefulness of the variable. Future studies could isolate certain leisure experiences, like the effects of being a regular customer at a café, to get a better understanding of the influence of being a returner and thus increased contact with leisure activities on place belonging and subjective well-being.

Another possibility is that how often or for how long a participant visited a location was less influential than the feelings derived from partaking in the activity. Since satisfaction with how free time was spent was significant in both models, it suggests that even if opportunities for leisure are uncommon, there are benefits from pursuing them. Continuing with the Ajax football example from above, being able to see a match in person may not be a regular occurrence for some people, but when they are, the positive feelings associated with the activity outweigh the infrequency of them happening. Consequently, people are still able to develop a bond with the stadium, the team, and the city despite not being able to attend matches often. Yet this does reflect the association between being a returner or an explorer on life satisfaction. This may be related to the different ways life satisfaction and place belonging are measured. Developing a strong sense of belonging may rely more on past experiences, levels of comfort and importance of connection with locations than life satisfaction. Further study could expand this further using a qualitative approach to uncover the how a person values being a returner or explorer. A focus group may be an appropriate setting for this as it would allow participants to discuss between themselves, highlighting differences in opinions (Winchester & Rofe, 2016).

While this research produced statistically significant results, there were limitations that should be considered when interpreting the findings. The small sample size, one that

was skewed to positive evaluations of life satisfaction and place belonging may not reflect typical Amsterdam resident, nor the general population. This is likely the result of the sampling methods and researcher positionality.

As an outsider – both as an international and person studying in Friesland – asking participants in Amsterdam to complete a survey served to be both beneficial and harmful. For instance, noticing the commonalities of life in Amsterdam was more apparent as a foreigner than may have been for a local (Kearns, 2016). However, it was important to be respectful of residents, including translating the materials and questionnaire into Dutch, and also to recognize that their participation was optional. However, despite the best intentions, resident participation was limited. It is unknown whether this is due to being an international or for other reasons, but one of the negatives of being an outsider as a researcher is the unfamiliarity with daily norms. In particular, soliciting people to complete a survey was found to be an annoyance to residents, and an impediment to the research process. It was revealed by peers that Dutch people can be inundated with surveys, decreasing their likelihood to participate in the questionnaire, especially with language barriers. To overcome this, partnering with the municipality or an organization in the city could have been beneficial for finding participants, as well as signifying the potential positive outcomes for respondents taking part in the research.

Furthermore, the sampling approach was a significant limitation of the research. Focusing on online distribution, and largely relying on others to connect residents with the survey, limited the opportunity for underrepresented or diverse communities in Amsterdam to partake in the study. Differences in cultural backgrounds and race were not known in the survey, and could have influenced the results as people from different

circumstances value aspects of life in different ways (Diener et al., 1999). Future research could consider stratified sampling as an opportunity to better compare social, cultural, and economic differences, as well as being able to better isolate possible locational advantage and disadvantages. Another option would be to pursue mixed methods research, while including participatory approaches, allowing the researcher to more directly observe and experience the effects of leisure on subjective well-being and/or place belonging.

Conclusion

This research set out to better understand possible relationships between leisure, place belonging and subjective well-being. A model was developed to consider the potential effects of locational advantages and disadvantages and personality as enabling or constraining leisure participation. By using public participation GIS, residents of Amsterdam were able to indicate the locations of their leisure activities, and reflect on their life satisfaction and their place belonging. Ordinal regression analyses were undertaken to explore the relationships in the conceptual model. As indicated by results presented above, an increase in the number of leisure activities inside the home decreases the odds of positive life satisfaction, while the number of leisure activities outside the home increases the odds of stronger feelings of place belonging. However, neither variable were as strong of an influence as satisfaction with how free time is spent. Furthermore, activity space area was a marginal, yet statistically significant, indicator of locational advantages and disadvantages for place belonging, however the density and number of leisure opportunities near the participants' places of residence were not statistically significant for both life satisfaction and place belonging. Similarly, when

respondents indicated being more of a returner than an explorer, the odds of a stronger feeling of place belonging increases, but the effect is not a factor for subjective well-being. Additionally, preference for participating in leisure alone or with others was not a factor in either model. Having a partner was also a statistically significant positive influence on improving the odds of greater life satisfaction.

The research suggests that the frequency and duration of leisure activities may not be a significant predictor life satisfaction nor place belonging. This could mean that the quality of and satisfaction derived from leisure participation is more important than their frequency or duration. The locational differences explored in this research may have been too narrowly defined to capture the variation in effects, however it is also possible that an objective measure of leisure opportunities does not reflect the subjective nature of a person's lived experiences. Additionally, the role of personality was considered as an explanatory variable, however this was done via a proxy of being an explorer or returner, or preference for partaking in leisure activities alone or with others. Future study could consider the effects of personality more directly, however considering whether people like to visit the same locations or new ones may still be a worthwhile factor to consider when exploring how people experience and develop meaning in their communities.

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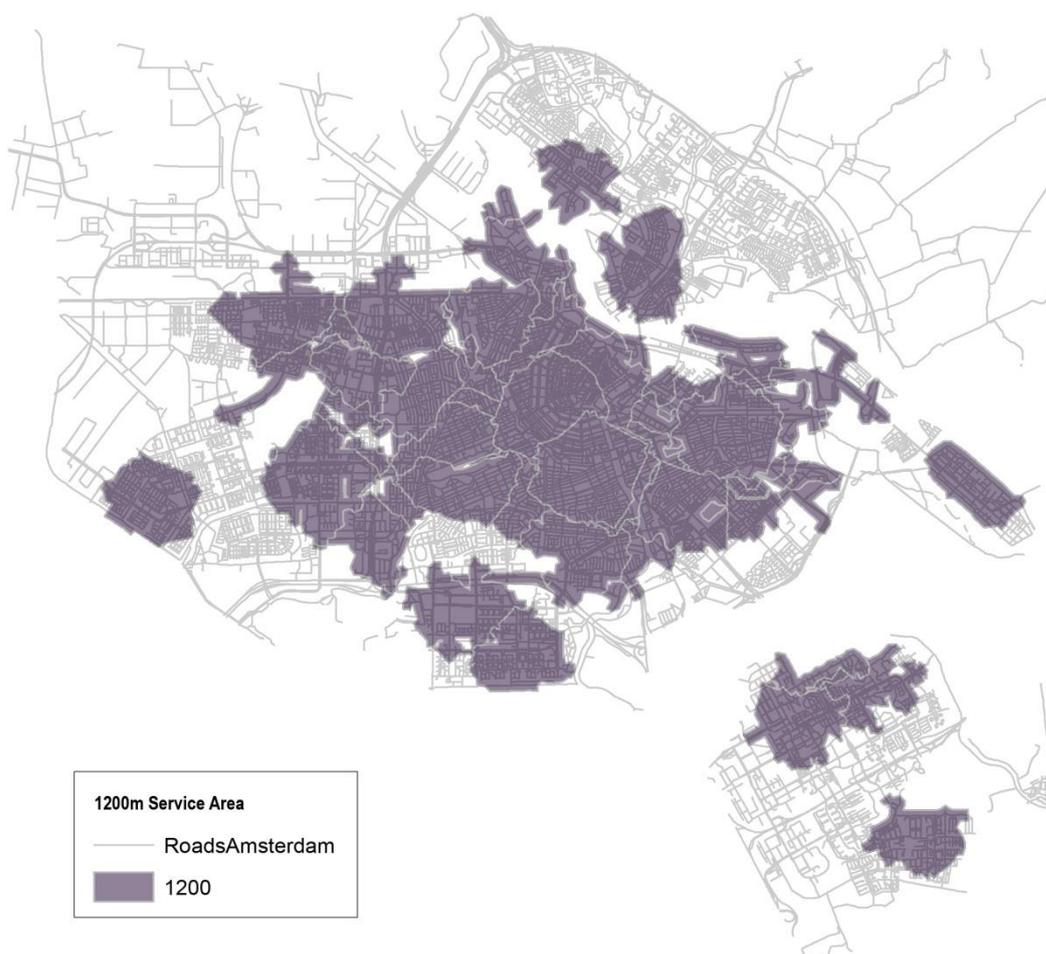
Appendix A: Comparison of Service Areas at same 500m

This map highlights the differences in areas across four different service areas. Based on this, it was necessary to calculate leisure opportunity density.



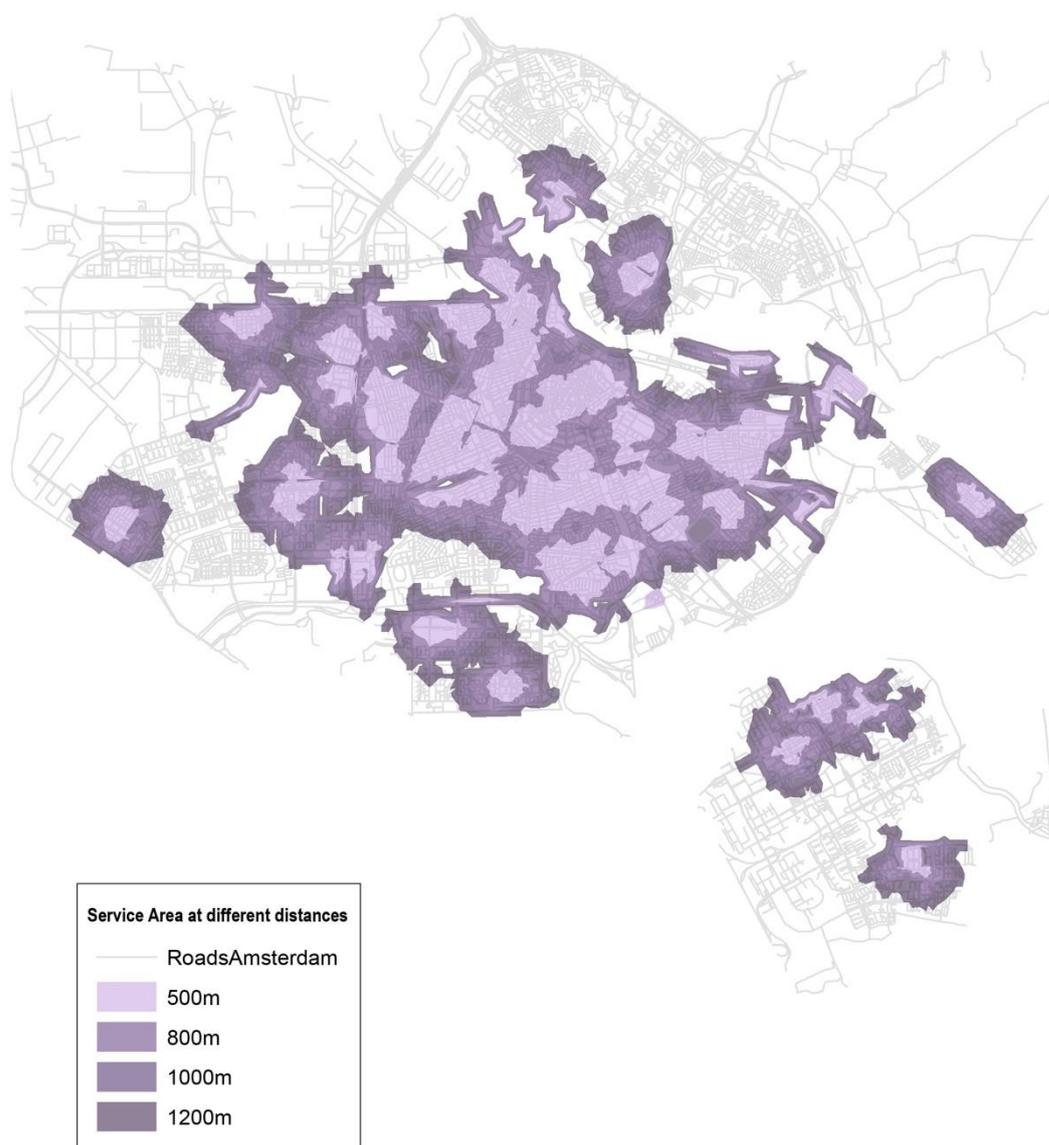
Appendix B: Service Area at 1200m

This map illustrates the sizable area at 1200m from which to identify leisure opportunities



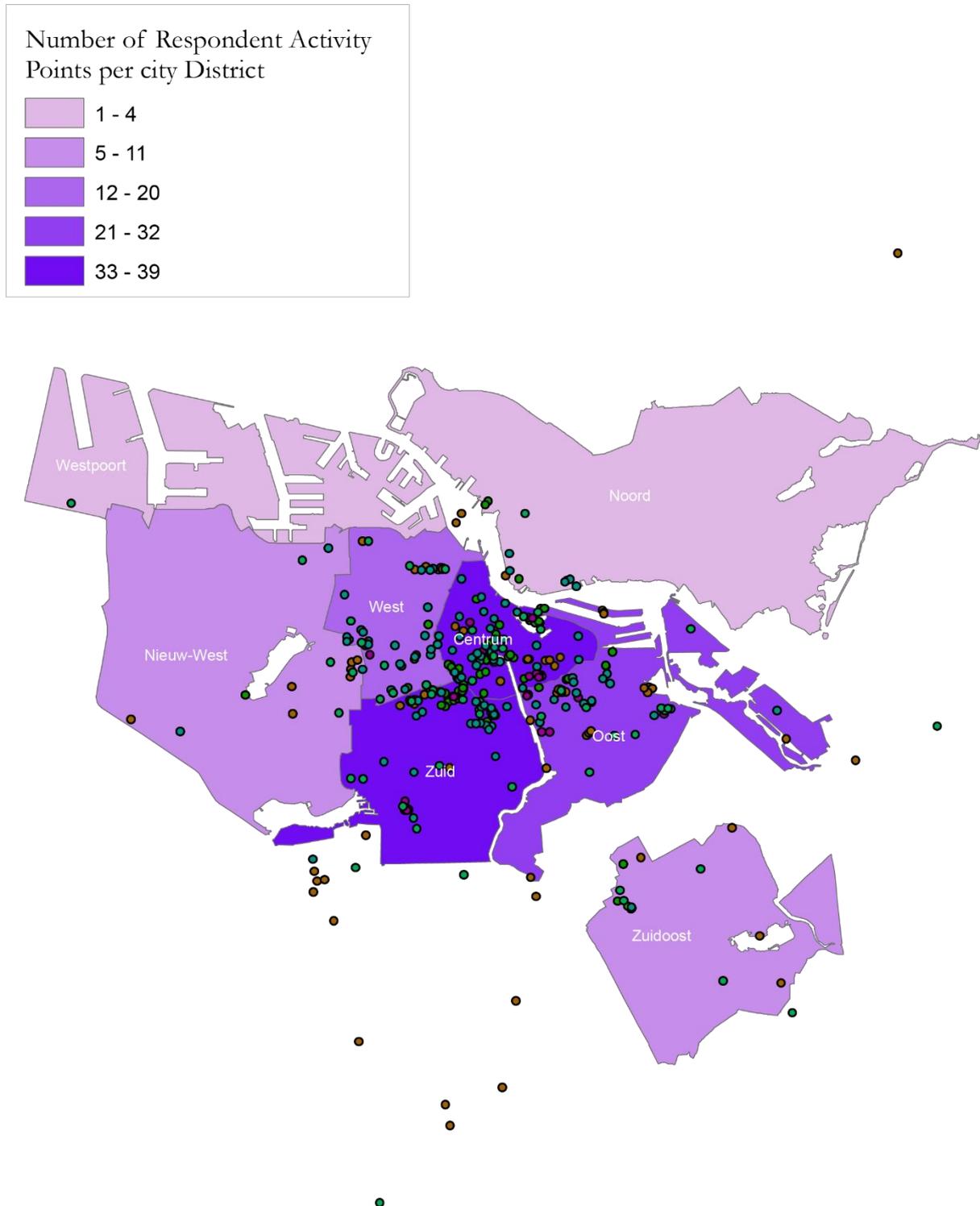
Appendix C: All Service Areas

This map illustrates the service areas at each distance, 500, 800, 1000, 1200m



Appendix D:

Map of Number of Respondent Activity Places per City District



Appendix E:

Leisure Opportunities per District, per standard deviation, and an overlay of two activity spaces

