Loneliness: In the Middle of Everywhere

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Abstract

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The world is urbanizing and its population is aging. These two simultaneous changes will likely cause the loneliness epidemic, as recognized by the U.S. Surgeon General and officials of other nations, to worsen dramatically in the coming years. Despite living in a time where the world feels smaller than ever, people across the world are reporting worse loneliness and social isolation, as well as declining trust in their neighbors and worsening mental health. Amidst the worsening loneliness crisis and closely connected mental health crisis, the time is ripe for urban planning to step up and turn cities from mentally perilous landscapes into assets in the fight against loneliness. Following recommendations from the field of environmental psychology, cities can better utilize their public spaces to provide the best gathering spaces for urban residents to come together.

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Contents

Introduction

Today's cities are suffering from an overlooked crisis—Increasing loneliness. As the urban share of the global population increases and the population ages as worldwide population growth slows, people are more predisposed to loneliness than ever before. According to a 2023 Surgeon General's report, in which Surgeon General Vivek Murthy declared loneliness an "Epidemic," public trust between American citizens fell from 45% in 1972 to 30% by 2016 (hhs.gov). Social isolation, or the minutes per day spent alone, increased from 285 minutes per day to 309 minutes per day between 2003 and 2019, and jumped even further to 333 minutes per day during 2020 (Kannan & Veazie, 2023). Along the urban-rural divide, a study of rural and urban areas in Washington State found that suburban residents suffered less loneliness than urban residents, at 40.8% compared to 54.3%. Although "Large Rural" areas had the highest percentage of residents experiencing loneliness at 59%, "Small Rural" communities also scored below urban areas with 50.7% of residents experiencing loneliness (Abshire et al., 2022). Although loneliness has been studied for centuries, the impact of rapidly increasing city sizes and developments in transportation and densification have not been researched as heavily as the purely psychological implications. On a parallel path, urbanists have decried the rise of the automobile, the proliferation of suburbs, and the mass exodus from the central cities. However, the decrease of density is not necessarily responsible for the rise of loneliness. In order to assess planners' considerations of loneliness and find opportunities in planning documents to address it more directly, there must be a middle ground between the study of urbanism and that of psychology. As loneliness itself is seldom mentioned in planning texts, the tenets of environmental psychology, such as greenery, water, environmental quality, and the amenities provided by parks are used to qualify places that are more likely to break people out of their

shells and enjoy public life. The purpose of this research is to advocate for the psychology-based design of public spaces that appeal to a city's residents, specifically for the alleviation of loneliness through design policy that gives people more chances for physical and social activity.

This research into urban forms with positive and negative impacts on people's mental health and willingness to engage in public life was applied to the Seattle Comprehensive Plan. Pre-existing markers of positive change, as well as opportunities to insert language directly referencing loneliness mitigation efforts, were identified. Although this thesis exists in an underdeveloped area between the fields of urban planning and psychology, it highlights the important issue of loneliness and its lack of representation in urban planning.

Literature Review

This literature review consists of sources from psychology on the social needs of people, and literature specifically on people's needs in public places. It begins by exploring the psychology of loneliness itself, and reviews several studies of the effects of loneliness on young adults and senior citizens. It also highlights other concerns, such as Robert Putnam's, about the decline of social capital and public trust in American society before and after the release of his famous book, *Bowling Alone* (Sander & Putnam, 2010). It delves into case studies of specific cities and their unique issues, including innovative planning interventions. It finishes by exploring works that suggest specific planning interventions that make parks and plazas more inviting and exciting to people.

Loneliness and Isolation

The modern phenomenon of loneliness is often described as "the unpleasant experience that occurs when there is a perceived discrepancy between desired and available social connections" (Ma et al 2020). It has also been defined as "a distressing feeling that accompanies the perception that one's social needs are not being met by the quantity or especially the quality of one's social relationships" (Hawkley and Cacioppo, 2010). Psychologists have struggled with producing a universally accepted classification of loneliness. Axel Seeman's 2022 paper presents 3 dimensions of loneliness: Phenomenal, Social, and Normative/Cognitive. It also presents the difference between subjective and objective social isolation, while stating that both can be at the root of loneliness. Loneliness can arise in many situations, ranging from the death of a loved one to attending a party full of unfamiliar people. For the purpose of my research, I will be more heavily considering subjective social isolation, due to the constant presence of other people in urban residents' lives. Overall, loneliness remains poorly understood, as there are "very few

conceptually well-worked-out accounts of loneliness." Seemann clarifies that his paper presents only "cursory sketches of possible avenues for further work." (2022)

According to Hawkley and Cacioppo, perceptions of loneliness and social isolation "increase vigilance for threat and heighten feelings of vulnerability" due to humans depending on a "safe, secure social surround" (2010). Hawkley and Cacioppo agree with my position on loneliness being a result of perceived social isolation, rather than objective social isolation. Being alone or in solitude is not the cause of loneliness, and neither is aggressively pursuing constant socialization a cure for loneliness. Social isolation can be seen as a fear response to the perceived danger of social isolation, which can unfortunately cause a "self-reinforcing loop of distress and paranoia that is related to emotions of hostility, stress, pessimism, anxiety, and low self-esteem." A "diminished capacity for self-regulation" leads to both mental and physical health risks, as well as a profound impact on quality of sleep and daytime energy levels (Hawkley & Cacioppo, 2010).

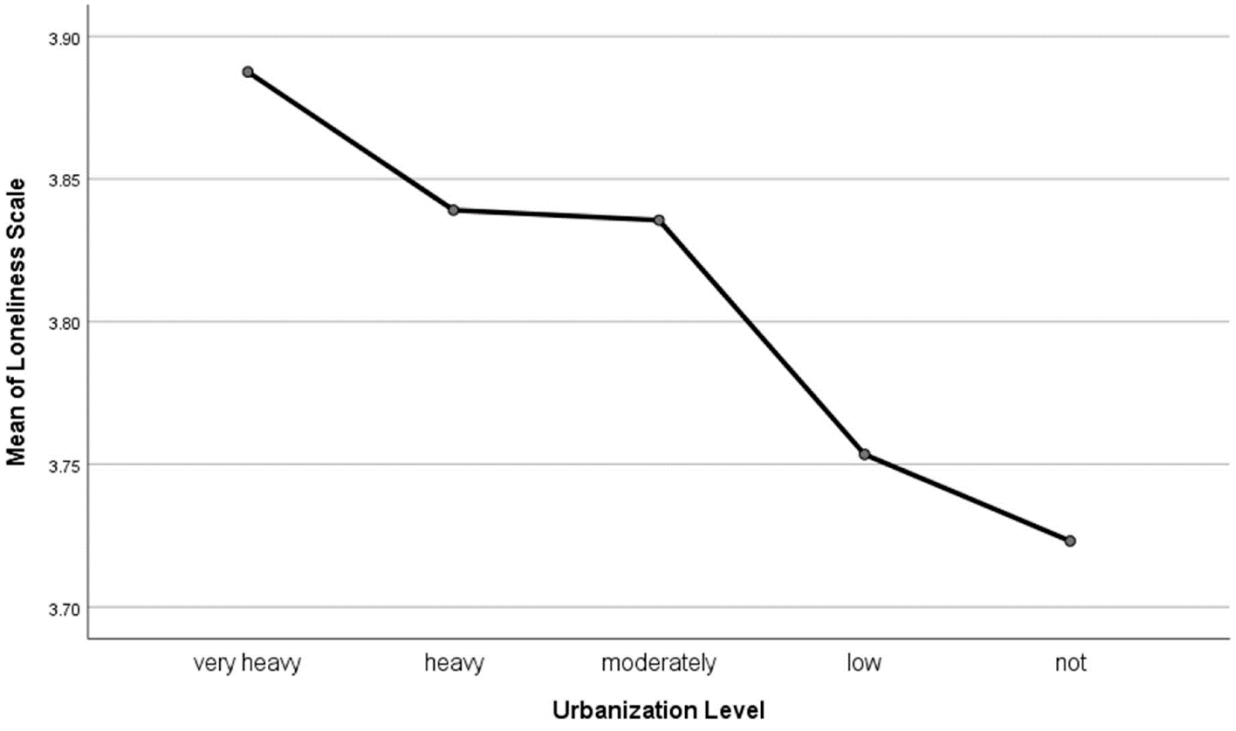
Ma et al describe loneliness as "the unpleasant experience that occurs when there is a perceived discrepancy between desired and available social connections." This paper sheds light on the drastically worse rates of loneliness among people with mental health problems. It not only shows loneliness as a detriment but presents socialization as a multifaceted benefit (2020). Roberts and Krueger describe loneliness as "the absence of a social good" and "an emotion of absence." They draw comparisons to homesickness and unrequited love, with the feeling of pain in both examples derived from the unattainability of what is desired (going home, or having romantic feelings for someone not interested in return). Nostalgia and social anxiety also present people with feelings of helplessness directed at past or present social opportunities respectively.

Excitingly, Roberts and Krueger's paper mentions loneliness in the midst of a crowded city, specifically in a context where a person's social interactions consist entirely of brief, impersonal and professional contact with others. The "richer social goods" such as humor, empathy, compassion, and vulnerability are out of reach to that person. "Chronic loneliness" refers to a person who has been lonely for so long that they no longer seek or desire to seek social contact. Roberts and Krueger caution that this does not imply that this person is cured of loneliness, or not lonely anymore. They conclude that "A lonely person is an individual for whom social goods seem out of reach or impossible to obtain" (2021).

The previous articles show that loneliness, despite being the subject of many studies, is still difficult to define conclusively. The difference between social and emotional loneliness is widely accepted, as is the belief that seeking constant socialization is not a cure for all types of loneliness. Furthermore, loneliness can result from a lack of meaningful social connection, despite urban residents ceaselessly interacting with countless people in impersonal ways. For the purpose of this study, loneliness will be defined as a lack of meaningful connections and opportunities to form those connections, or having fewer meaningful connections than each individual prefers.

Visits to public parks are linked to an improvement in health metrics such as anxiety, paranoia, and happiness. The results of Aaron Schwartz's study specifically praise parks with natural features, but public squares and plazas are also shown to be mentally beneficial to their visitors. This data was gathered from Tweets posted by visitors to the varying types of parks in question. Meeting friends along the way, anticipating a more fun location after work, and enjoying the natural beauty and events (shown by the word "festival") (Schwartz, 2019) are all topics already suggested to be positive by other articles in this literature review.

The United Kingdom appointed a Minister for Loneliness in 2018. Around the world, anxiety, depression, and suicidal ideation are increasingly relevant mental health concerns. Loneliness has been associated with physical health concerns such as heart problems, difficulty sleeping, and lower subjective health ratings. Kristi MacDonald's 2020 study focused on people's living arrangements and their use of leisure time. Leisure activities that require determination or physical activity are considered beneficial to personal and social growth, while leisure activities that are sedentary and feel purposeless, or are done alone, can lead to worsening loneliness. The study separated areas of the Netherlands into five categories, from fully urban to fully rural. Urban areas report greater loneliness than rural areas, potentially because rural residents have a higher chance that their extended family lives nearby.



(Macdonald et al, 2020).

Although urban areas provide a plethora of options for active use of leisure time, mental health in urban areas still suffers. Computer and Internet usage were heavily associated with increases in loneliness. Watching TV and listening to music can be done both solitarily and with friends, and these results were inconclusive. Reading did not contribute to loneliness. The study acknowledges that lonely individuals are more likely to struggle with social anxiety, and may avoid social opportunities. The study also identified a "U-curve" of loneliness across age groups, with the youth and the elderly experiencing the worst loneliness (Macdonald et al, 2020).

Tara Milbrandt and Ondine Park, of Alberta and British Columbia, set out to understand loneliness in relation to "Three Core Features of Contemporary Societies," which they identified as "Expanding and Deepening Technological Mediation," "Urbanization," and "Neoliberal Individualism." "Urbanization" is most pertinent to this thesis. They note that today, people live in a more deeply connected and interdependent world than ever, although loneliness, both in their homeland of Canada and abroad, has increased sharply. They quoted a key line that has been cited many times, that experiencing chronic loneliness is "Equivalent to smoking 15 cigarettes a day." During the COVID-19 Pandemic, loneliness became a "Parallel Pandemic." (2023) They also noted that Japan had appointed a "Minister of Loneliness" in 2021. They cited the de Jong-Gierveld Loneliness Scale, Weiss's 1973 framework for social and emotional loneliness, and the UCLA Loneliness Scale. They found, similarly to Di Masso's work which will be discussed later, that public spaces within neighborhoods are important to people's informal social interaction, as well as feeling like they belong in a neighborhood. People may become lonely if they feel unsafe in their local public places. Inclusivity of the places themselves, as well as their accessibility through transit and pedestrian and bicycle trails, are important to the success of a public place (Milbrandt & Park 2023). Successful public places will

be better-utilized by their nearby populations, giving people more resources to counteract feelings of loneliness.

Social Psychology

"Wellbeing" can be defined as a balance point between an individual's resources and their hardships. A student's wellbeing at school can impact their educational success and their ability to function within their peer group. Based on Finnish sociologist Erik Allardt's concept of wellbeing, there are four "Categories" of student wellbeing: The school's conditions, interpersonal relationships, means of self-realization, and students' health (Konu et al, 2002). Allardt also refers to "Three Dimensions": Having, Loving, and Being (1993). "Having" refers to one's material conditions, "Loving" refers to one's family, friends, and community, and "Being" represents both psychological wellbeing and one's relationship with oneself (Lukasik, 2021). A school is a small community in and of itself, where student wellbeing is important for their success. Cities themselves do not have as robust a commitment to individual wellbeing, and such a commitment could be useful for counteracting loneliness. This thesis is most interested in "Loving," due to the importance of social relationships, although "Being," with its implications for mental health and self-image, is also vital.

In 1987, Jenny de Jong-Gierveld published the first of several papers on the development of a model to measure and test loneliness. She begins by citing several theories used to explain the feeling of loneliness in the past, such as "the number of available relationships" and the role of "personal conceptions of the quantity and quality of relationships within the network." She set out to develop a theoretical framework concerning loneliness, empirically test the theoretical framework, and construct a concept of loneliness accounting for its subjective nature between individuals.

Loneliness itself, she argues, is always negative. “Aloneness,” however, is neither positive nor negative, as it refers merely to being alone, not a feeling of deficiency or lack of one’s need to socialize being met. She settled upon the definition of loneliness, also called “subjective social isolation,” as “A situation experienced by the participant as one where there is an unpleasant or inadmissible lack of (the quality of) certain social relationships” (de Jong-Gierveld, 1987).

De Jong-Gierveld found that marriage increases happiness and decreases loneliness among her respondents. Being single and living without a partner, such as living in a single person household, increases a person’s risk of loneliness. One’s personality is also an important predictor of loneliness, due to individual variation in their desired level of social contact. Low self-esteem, anxiety and shyness can cause people to forego social opportunities and cause difficulty establishing and keeping relationships (de Jong-Gierveld, 1987). Of the original 26 items of the model de Jong-Gierveld created, Item 4: Types of Housing, Item 5: Community Size, Item 6: Geographic Mobility, Item 22: “People in Neighborhood Aren’t Friendly,” and Item 23: “No Close Contacts in Neighborhood,” are the most relevant to understanding how the built environment can impact residents’ loneliness.

Over the years, the de Jong-Gierveld Loneliness Scale has been shortened, accompanied by rigorous proof that the scale is still accurate in its shortened form. Her 2006 paper also makes use of the dichotomy between “Social” and “Emotional” loneliness, with Social Loneliness referring to a lack of a broader network of friends, coworkers and neighbors, and Emotional Loneliness referring to missing a romantic partner or one’s close friends and family. The shortened 11-item loneliness scale can be split into two parts; one focuses on emotional loneliness and the other focuses on social loneliness. (Gierveld and Tilburg, 2006).

Unfortunately, the items directly related to the built environment were removed, although the remaining metrics still highlight the importance of living in a cohesive community. De Jong-Gierveld's work affirms the difference between loneliness and "aloneness" or solitude, with aspects of the "Social" loneliness scale most relevant to the public built environment. This illustrates the importance of facilitating social interaction through urban design.

Human Needs in Public Spaces

Recent social psychology research has highlighted the importance of public space and environmental factors to social interaction, with a particular focus on the "Political significance of people's psychological representations of space" (Di Masso, 2012) being important to shape people's ideas of belonging. Public places have a "micropolitical significance," (Di Masso, 2012) and people's use of public space represents the expression of the right to the city and freedom of action in the public space. Safety regulations, privatization and cultural norms impose limits on the use of public space. Thus, a tension between liberty and control exists in these spaces. They can also devolve into segregation and centering of middle-class citizens' uses of public space, especially in areas that are gentrifying (Di Masso, 2012).

Public space is psychologically significant since it has many-layered significance to each resident, from social venues to the location of "profound existential experiences." Environmental psychology has also informed how these attachments form between people and places. "Urban Place Identity" is a part of oneself that develops due to socializing in urban areas, and includes social attributes, skills, methods of problem solving, and a structure of social roles. People's senses of self can also derive from identifying with a certain group of people who inhabit the area. Public spaces can be seen as territory, and this can lead to feelings of both inclusion and exclusion based on who controls their use. For example, if a public space is the only available

location for two separate activities, this can lead to aggression. This may eventually lead to political violence, especially if certain groups are disenfranchised from the justice system (Di Masso, 2012). The feeling of attachment and belonging in nearby public spaces is important to people's sense of belonging and their connections with their neighbors, thus, in order to prevent loneliness and isolation, residents should feel a part of their community's decision making and planning.

Of particular note is the Barcelona "Hole of Shame" struggle. Residents feared the gentrification of the Santa Caterina area through allowing it to fall into disrepair and suddenly redeveloping when prices dropped. Suspicious and critical of urban renewal, the residents occupied a vacant lot left over from a building demolition, erecting a park with vegetation and furnishings. This example shows the importance the community places on having good public meeting spaces. They nicknamed this park the "Hole of Shame" to embarrass the city's neglect of the neighborhood. A multi-year power struggle, including the demolition of the original Hole of Shame, ensued. This story shows how hotly contested the right to public space can be. The planners are faced with a dilemma: Preserve spaces for all, or grant priority to nearby residents at the expense of inclusion? (Di Masso, 2012) This case shows how planners' efforts must align with residents' wants and needs. Especially when there is risk of gentrification, incorporating residents' input is essential, as it both connects them to their public places in a beneficial way and prevents their displacement and isolation from their former communities.

The streets are also an important part of a city's public social life. Hooman Hemetian and Ehsan Ranjibar argue that a city's streets are an important form of public space, and that their impact on mental health has not been studied in the depth they deserve. As the world's urban population is expected to hit 68% by 2050, urban form will only increase in importance as an

aspect of mental health research. Their article attempts to view the relationship between public space and mental health more holistically, by focusing on both "Social and Classical Stressors." The shift from the dominance of vehicles to the encouragement of walking as active transportation is also important. Physical activity provides great physical, mental and psychological health benefits. Walking also provides additional opportunities for social interactions. Hematian and Ranjibar's article focuses on pedestrian urban streets as a planning intervention that can improve residents' mental health. General mental health can be a predictor of the health of a person's social life, as shown in Roberts and Krueger's text (2021).

The study area consisted of one car-heavy street and one pedestrian street in Tehran, Iran. Their three-part questionnaire collected general information, responses to environmental factors, and positive indicators of mental health, including "Have Been Feeling Close to Other People," which is the most closely related criterion to loneliness. Factors that proved significantly correlated with good mental health in this study included mixed use development, density, public transportation, attractiveness, quality of the pedestrian path, green space, soundscape, and pollution. Motor vehicle traffic reduces the potential health benefits derived from walking in the urban environment (Hematian & Ranjibar, 2022).

Although most research has focused on the quantity of urban space available to residents, their quality is also important. Zhu et al (2021) identify four attributes of quality public space: Activity, Environmental Quality, Amenities, and Safety. Public spaces take many forms, but they are well-associated with improvement of mental health. They have various functions such as providing a place to relax and serving as visual amenities. A wide range of public spaces were studied, in a range of different neighborhoods in China. Activity and Environmental Quality proved the most important factors. They acknowledged that comparable studies in the West

found the other factors, Safety and Amenities, more important, most likely due to social and cultural differences (Zhu et al, 2021).

Loneliness in Students

Loneliness has been shown to be a key aspect of student wellbeing. Lonely students experience more stress, do poorer on exams, and are less actively involved in their studies. It can also affect immune function and cardiovascular health, and lead to premature death, fatigue, depression, and anxiety. Loneliness and burnout are both associated with negative psychological health. A student's sense of belonging, or the comfort and safety associated with being part of an organization or community, is also important to student mental health, and students with a strong sense of belonging are more motivated, report fewer study issues, and have higher likelihood of continuing their studies. Loneliness predicts emotional exhaustion, and sense of belonging predicts burnout symptoms (Dopmeijer et al, 2022).

Discussion of the COVID-19 Pandemic will be inescapable when discussing loneliness among students. Students who felt more lonely during the pandemic, especially those who were female, those who perceived higher levels of social support preceding the Pandemic, and those who were more concerned with the Pandemic's social impacts reported the worst change in loneliness during the Pandemic. The change in loneliness accounted for much of the increase among depression also measured in respondents (Lee et al, 2020).

Loneliness in the Elderly

Loneliness is also a significant health concern among the elderly population. Population aging in Europe and worldwide led to dire predictions for population health from a loneliness perspective. Surviving one's spouse, growing old in a migration background or minority

community, and living with financial difficulties contribute to loneliness among the elderly. Fierloos et al refer to the same 1973 Weiss distinction between social and emotional loneliness, and their study used the de Jong-Gierveld Loneliness scale. Older age, living without a partner, and low level of education were independently associated with increased emotional loneliness. Older age and low education level were also associated with higher social loneliness. Lower education level also predicts that respondents live in disadvantaged areas, and this leads to a lack of social opportunities and lower quality of social relations, as well as chronic stress. The study is unfortunately unclear about what can be done to aid the lonely elderly population (Fierloos et al, 2021).

The COVID-19 Pandemic also negatively impacted senior citizens. Amanda Shi's thesis studied how differences in COVID-19 response policy affected the mental wellbeing of the senior populations of five different states. The study used the Duke Social Support Index-10, the Patient Reported Outcomes Measurement Information System—Social Isolation or PROMIS-SI, and the UCLA 3-Item Loneliness Scale. These are various scales, alongside the de Jong-Gierveld Loneliness Scale, that attempt to quantify loneliness. The study uncovered a marked increase in suicidality in Washington, Maryland, and Florida. Feelings of being a failure or a letdown, as well as habits such as fidgeting and feelings of restlessness, were also widely reported. Sheltering in place negatively impacted the mental health of senior citizens across the board (Shi & Dugan, 2022). This research highlights that mobility and community are very important to seniors, and that they should be represented in research into the efficacy of public spaces.

Immigration background can also cause older adults to feel loneliness. In a Dutch study of Moroccan and Turkish elderly adults, loneliness was found to be higher than among the native Dutch. This study also used the de Jong-Gierveld Loneliness Scale, with emphasis placed on

finding community as a minority in the Netherlands. They found that low skill, low pay, and low education contributed to loneliness and preclusion from social activities. The language barrier also contributes, not only to loneliness, but to the inability to access public services and healthcare. Cultural expectations regarding individualism may also cause greater loneliness in immigrants originating from more collectivist societies (van Tilburg & Fokkema, 2021).

The quality and quantity of available public space can dramatically affect the ability residents to create and nurture connections. Gentrification and its resulting displacement can rip communities apart, and urban renewal programs that are not supported and developed from the ground up can cause people to feel disconnected from their local urban environments. Loneliness is more strongly felt among the elderly and young adults, and among immigrant and minority communities in cities, especially those whose culture is significantly different from the city's dominant culture.

Social Capital

On a societal level, traditional expressions of community cohesion such as bowling leagues, social clubs, friendly dinner parties, and game nights have experienced remarkable decline. Trust between fellow citizens in the United States has decreased sharply, from over half expressing trust in their fellow citizens during the 1960s, to less than a third expressing trust in their fellow citizens by the new millennium (Sander & Putnam, 2010). Americans also reported a drop in their number of close friendships, or loss of them entirely, between the 1980s and the 2000s. This research dates to about a year after the 9/11 attacks, to a time when civic participation spiked sharply among young adults. Activities such as voting and political discussions rose. This rise in civic engagement by young people is encouraging and may lead to the gradual reversal of the "civic decline" documented in Robert Putnam's *Bowling Alone*

(Sander & Putnam, 2010). A study in the American Sociological Review found that the size of Americans' "Discussion Networks" or the close friends and family with which they discuss important topics, has plummeted from a mode of 3 to a mode of 0, and 43.6 percent of study participants report being able to confide in either only one, or no people in their lives (MacPherson et al, 2006). However, several years later, a gap among class and racial lines was observed, with wealthier white youth engaging more in communities such as religion, family, and civics, while poorer whites and minorities disengaged. Increasing civic engagement among all races and classes is essential to avoid "becoming two nations" and entering a "new caste system" (Sander & Putnam, 2010).

Case Studies of Cities

Research adjacent to loneliness, mental health, and residents' ability to find and engage in community has been conducted in cities worldwide. These examples cover rapid urbanization, informal interactions between residents, and physical and cultural obstacles to forming community. Urban form is an important unifying factor in these studies, ranging from the ability to walk and bike to the heights of buildings and the availability of natural environmental features.

In various Chinese cities, rapid urbanization raises concerns about rapid societal change. Urbanization of the population has increased tremendously, from 17.9% in 1978 to 59.6% in 2018, as worldwide urbanization trends shift to developing countries. China's rapid urbanization, as it will affect such a large population, is important to study. This study by Juan Chen and Lin Gong began with the understanding that urban residents are at a higher risk of loneliness than rural residents, as they also cited the MacDonald study (2020). Family and community ties were predicted to weaken as urbanization increases due to people moving away from each other, and

the loosening of the family and "village" ties present in smaller communities. The study drew upon data from the 2018 Urbanization and Quality of Life Survey from 40 locales that were undergoing rapid urbanization and took inspiration from the De Jong-Gierveld Loneliness Scale. Urbanization was associated more strongly with emotional loneliness than with social loneliness, indicating that although there were more opportunities to socialize, people felt a lack of deep, meaningful connections with others upon their move to the city. However, they found that Chinese top-down urbanization is not free of benefits: It has avoided the proliferation of slums that other rapidly-urbanizing countries such as Brazil and India have experienced. The researchers highlight the need to reinforce the traditional "village" relationships in new urban construction in order to prevent loneliness as cities expand (Chen & Gong, 2022).

Jane Jacobs identified the importance of 4 urban form conditions: Mixed-use development, short blocks, aged buildings, and density, as being key to "urban vitality" and "exuberant diversity." Tall buildings were considered a negative. Jacobs' work, though popular, has been criticized as the well-articulated result of observation rather than the rigorous testing of theories. Previous attempts to study Jacobs' tenets of urbanization in the modern area have yielded mixed results. Huang et al justified their study as the first to incorporate social media, point-of-interest, and other geospatial data. The study area, Hong Kong, is an extremely dense city with over 7 million inhabitants. Overall, they found strong evidence that "Short Blocks" and "Density" were positively associated with urban vitality. Aged buildings were associated with "walking vitality" likely due to the retail establishments on the ground floor of older buildings. "Mixed Use" yielded mixed results, and entirely contrary to Jacobs' observations, Building Height was positively related to city vitality (Huang et al, 2023). This study is important as Jane Jacobs' work, especially the "Walking Commute" and importance of interaction in the urban

environment, is very influential. Although new methods have disproven some of her views, such as her negative view of taller buildings, a good level of density, a proper grid of city blocks, and mixed use buildings support vibrant cities that encourage interactions between people. Cities that help residents form and nurture interpersonal connections will create a better sense of community and do more to alleviate loneliness.

The city of Abu Dhabi has rapidly urbanized over the past half-century, and it offers a unique opportunity to observe residents' uses of public space. Car dependency and public space privatization are still rife within the new metropolis, as well as extremely tight surveillance and security. The main goal of the study was to answer questions related to social informality, or the ability of residents of differing backgrounds to interact without consequence; the consequences of zoning decisions, and interconnectivity. The researchers consider informality "an indicator of urban health, in terms of social cohesion, urban planning, public space design and management," and the three most important factors in an urban space for encouraging this social cohesion are "Openness, Democracy, and Inclusivity" (Kyriazis et al, 2019). Both formal and informal places were observed, one of each in seven determined areas of the city, for a total of fourteen observation locations. The study used photography to capture these important informal interactions, including conflicts, that make an ethnically diverse and socially diverse public place successful. Extreme weather conditions and the Islamic holy month of Ramadan mandated nocturnal observations. They concluded that Abu Dhabi has done fairly well at ensuring that informality is not criminalized, as it is very important for the inclusivity and openness of the city (Kyriazis et al, 2019). The possibility and encouragement of people from various cultures to interact in a positive manner will be essential for community cohesion in diverse cities, and important for minority populations to feel connected to the city as a whole.

Jacob Leman's thesis paid special attention to young people's uses of "Third Places" in High Wycombe, a city in the United Kingdom. A "Third Place" based on Ray Oldenburg's definition, is a space separate from home, or the "first place," and work or school, or the "second place." This study also cites Putnam's decrying the lack of public trust in modern society, and shows the correlation between the decline of public trust to the decline in the number of free, accessible public places to socialize. Leman argues that diverse phenomena, from the mental health crisis to populist uprising, can be explained by modern societies' abandonment of third places. Extant public places also have higher cost or transportation barriers to entry than they did previously. Leman's study hopes to fill the research gap of the decline of third place usage by teenage students. His study population consisted of the students at an upper-class boys' grammar school in High Wycombe. They were largely upper-class and white, and rarely had chances or reason to interact with those outside their social group. Cost and transportation issues such as missing buses were reported as barriers to young peoples' access to public spaces, especially when the cost of a bus ticket caused them to save up for larger trips further afield, rather than partake in regular, localized third place activity. Those who were old enough to enter the pub listed it as their only place to socialize, and those not yet 18, but who felt too old to go to an arcade, felt that there were no places that fit them (Leman, 2023). This study shows the importance of robust public places that do not have a cost barrier, do not require them to drink alcohol or make any other purchase to enter, and do not impose a transit cost barrier. These spaces are important for young people's mental health and for their ability to form connections with others outside of school and at home.

Another study from Hong Kong found built environment factors very important for the elderly (above 70 years of age), especially for suicide prevention. "Healthy City Development"

can reduce mental health complaints such as suicidality, anxiety, and depression among the elderly population. They praised the encouragement of biking and walking, as both improve one's physical and mental health. Developing new, evidence-based planning strategies is important for improvement of both mental and physical health in a dense urban environment (Wang et al, 2020).

A 2022 study from Rotterdam, the Netherlands, corroborates previous research that loneliness will worsen as the population ages. This study also drew upon the 1973 Weiss work on social and emotional loneliness. Men reported higher levels of social loneliness, while women reported more emotional loneliness. Most jarring is the combined statistic: 66% of the respondents identified as moderately or severely lonely (Wolfers et al, 2022).

Cai Gandong and Cai Mingjie acknowledge the lack of focus on mental health in research on urban form. Their article on the "Tokyo Loneliness Tree Hole Plan" showcases a remarkable solution for depathologizing loneliness and allowing residents of a bustling, crowded city to experience a private moment in nature. These reservable, private micro-parks, dubbed "Tree Holes," can be built in many different places such as empty retail stalls or skybridges between buildings, and function as refuges for those with social anxiety who utilize traditional public spaces the least. Indeed, lonely individuals are a "minority of public space users and a majority of Tokyo's population," and current interventions have done little to prevent Tokyo's loneliness crisis (Gandong & Mingjie, 2020).

The connection between loneliness and urban form has been explored in some ways, but a deeper connection between the two, especially as it relates to land-use planning and how it can be informed by psychology, must be developed. Most research focuses on specific mental health

or societal challenges, such as depression or interactions between demographics, rather than on general loneliness and the potential for planning to alleviate it. The above studies reaffirm the importance of urban form for young adults and the elderly to find community, as well as the importance of good public places for everyone. This literature review has explored an unmet need for many populations across the spectrums from youth to elders, and from rapidly-urbanizing to well-established locales. Our urbanizing society needs a new generation of public spaces that are not privatized, commercialized, or segregated, and most importantly, are designed with a solid psychological backing to be enjoyable and provide a variety of activities in a safe, beautiful, and green location.

Proper Urban Form Creates Sense of Community

In *Creating sense of community: The role of public space,* Francis et al associate public space with feelings of belonging, civic responsibility and participation, and enhanced feelings of safety and security. All of these are factors that can counteract a city's residents' feelings of loneliness. Today, geographical places near one's residence do not have the monopolies on person-to-person interaction they once did, due to social media and long-distance travel. However, they're still unique in the opportunities they provide, in terms of security in numbers, ease of access for people with limited mobility, the ability to rely on neighbors in times of trouble, and most importantly, the daily informal interactions with neighbors that can arise. This article by Jacinta Francis et al identifies sprawling single-family neighborhoods and their associated issues, such as low density and long car-dependent commute times, as factors that weaken the sense of community and may therefore increase levels of loneliness. Positive factors of the built environment that strengthen the sense of community, and may lead to a reduction in loneliness, include reduced surface parking, higher levels of commercial floor space to land area

ratios, lower levels of land use mix, and "safe and interesting" perceptions of the neighborhood of one's residence. Vehicular traffic and parking also "negatively affected perceptions of helpfulness and area friendliness and safety," which in turn can lead to more loneliness. On the other hand, public spaces such as parks and piazzas are important because they can "foster a sense of community by facilitating chance encounters between neighbors" (Francis et al, 2012). Such encounters can reduce residents' feelings of loneliness. Urban planners and sociologists such as Jane Jacobs, William Whyte, and Kevin Lynch have long studied the use of public space for social interaction. Beyond physical aspects such as furnishings and activities, and aspects of the environment such as traffic calming and good walking access, they all call for first defining the park as a social space, rather than a purely physical or natural place. This study, conducted in Perth, Australia, controls for other factors that cause people to feel a higher sense of community: "Married or de-facto, had children less than 18 years at home, were employed in home duties and were not in the workforce" (Francis et al, 2012).

There were 7 "physical environmental factors" considered in the study. Being closer to schools and parks, and higher quality of shops, parks, community centers, and schools, as well as a lower rate of "incivilities" such as graffiti and litter, were significant factors in peoples' positive sense of community. Although higher crime rates have been observed to diminish the sense of community of participants in many other studies, it is also possible that people with a weaker sense of community perceive more crime, making this association circular. The frequency of visits to public places seems to have a smaller impact than the presence of the spaces themselves. Even those who do not use an available public space frequently can still benefit from the view of it, and infrequent visitors still feel a sense of community resulting from their fewer visits to a space (Francis et al, 2012).

Urban and rural landscapes have usually been subject to a dichotomy in studies, and rural landscapes have repeatedly been shown to be more positive for mental health than urban ones. Velarde et al's study seeks to quantify the positive parts of these rural landscapes in order to design places that benefit human health. The article acknowledges that society is experiencing an explosion in stress-related conditions, and that our open spaces are an important part of stress mitigation. There are great historical records of early cities in different cultures recognizing the importance of natural features in landscaping, however, it has only reemerged as a topic of discussion in modern research recently (Velarde et al, 2007).

"Healing Gardens" are touted as positive since a pleasant view from a hospital window may impact a patient's recovery. Natural environments positively impact people with mental fatigue. "Attention Restoration" is defined as "the process of renewing physical, psychological and social capabilities diminished in ongoing efforts to meet adaptive demands." Natural environments are touted as possessing "key factors in achieving restoration." "Therapeutic Landscapes" are linked to the idea of place identity (Velarde et al, 2007), which is important to this thesis. It corroborates Francis et al on the importance of the view of a place, even if accessing the place is not possible or common.

This study reviewed more than 100 articles, focusing on 31 that described evidence of health effects of varying landscape views. Of these, Kuo et al's 1998 work mentions "Stronger social ties," Kuo and Sullivan's mentions "less aggressive behaviour, fewer crimes reported… than in areas without greenery" (2001). Kuo's 2001 work mentions "lower mental fatigue: residents with nearby nature were more likely to be able to deal with the major issues of their lives" (Kuo, 2001). Maas et al's 2006 work mentions "Better perceived general health – Higher amount of green space" (Maas et al, 2006). Although only one mentions social ties specifically,

the other articles mention factors adjacent to loneliness as seen elsewhere in this literature review: Crime, antisocial behavior and safety, general mental health, and relief of mental fatigue. The study acknowledges the crudeness of the urban space/rural space dichotomy. It also admits the lack of data on specific elements of a space that make it the most restorative (types and amount of tree or plant cover, furnishings, etc.) This speaks to the complexity of the issue and the need for further study and observation of public spaces perceived as beneficial and restorative (Velarde et al, 2007).

In their 1998 article "Fertile Ground for Community: Inner City Neighborhood Common Spaces," Kuo et al define Neighborhood Social Ties, or NSTs, as relationships between neighbors that form from repeated informal interactions, and claim that they are more likely to form among people who share a similarity in socioeconomic status or ethnicity. Having children at home, having lived in the area for a longer period of time, or being lower income are also factors that encourage residents to seek and develop NSTs. However, NSTs are not only dictated by the people themselves, but the features of the built environment around the neighborhood. NSTs are "the glue which makes a collection of unrelated neighbors into a neighborhood." They promote organization, a sense of social support and community, and the ability to defend against crime and organize politically (Kuo et al, 1998).

Two neighbors are most likely to form a connection if they use the same "semi public access paths" within the neighborhood, making the development of these sorts of public spaces for interaction especially important. Crowding is a detriment to proper socialization, leading to poor social relations in many different cultures (Kuo et al, 1998). This shows that in order to promote healthy social relations in modern cities, density should be managed responsibly and not seen as the end-all be-all of city design. The article also corroborates Francis' claims that

concern over crime and safety, as well as noise, can impact people's willingness to participate socially.

Noise in particular leaves people unresponsive to subtle social cues and less likely to help others; crime and perception of lack of safety causes residents to stay at home, and overcrowding is linked to residents' likelihood of withdrawing socially. Inner-city public spaces all too often consist of barren, vacant lots, while one of the most important features of public spaces is vegetation such as trees and grass. Furthermore, the addition of trees and grass is often enough to completely change the perception of a public space from negative to positive. The central hypothesis of this study is that greener public spaces gave rise to increased neighborhood social ties (NSTs). The study also explores mental fatigue, stress, and mood as effects of greener public spaces (Kuo et al, 1998).

The study was performed at an inner-city housing development in Chicago, in which some buildings had readily accessible views of nature, and some did not.

Greener public spaces turned out to be more important than the possible mediating factors (stress, mental fatigue, and mood) in predicting the level of neighborhood social ties. When compared to residents living without nearby vegetation, these residents knew more of their neighbors, had a stronger sense of belonging, and more sense of community between neighbors. The researchers acknowledge that inner-city neighborhoods such as the one in the study are already high in other inhibiting factors for neighborhood social ties, such as crime, noise levels, and crowding. The positive effects of public space improvements may, therefore, be less prominent in other areas with more positive factors, such as lower crime, less noise, and lower density. Other neighborhoods may be less likely to form NSTs due to the characteristics of the population, as this study was conducted in a low-income and minority neighborhood, both of

these factors promoting formation of NSTs. Although formation of NSTs have been researched less in wealthier neighborhoods, these urban green spaces are more important for the inner city, where there are fewer positive aspects of the neighborhoods that wealthy neighborhoods already enjoy, such as environmental quality and reduced noise (Kuo et al, 1998).

For decades, cities have been attempting to incentivize building public spaces on private skyscraper property, and this usually has taken the form of plazas. William Whyte's enduring 1980 work, "The Social Life of Small Urban Spaces," chronicles the observation of successful and unsuccessful plazas in New York City. He explains the phenomenon of "Self-Congestion:" What attracts people is often other people, despite people often claiming to want to "escape" or "get away from it all." Counterintuitively, people often break into smaller conversational groups very close to the main flow of traffic, rather than stepping further away to a secluded area. However, they like to station themselves near objects or boundaries, such as light poles, walls or hedges, not in the middle of a vast, barren space. The book also mentions a similar study that took place in Tokyo, in which the same dynamics were observed in a city with vast cultural differences. This reinforces the repeatability of this study in other places. As Whyte says, "given the basic elements of a center city–such as high pedestrian volumes, and concentration and mixture of activities–people in one place tend to act much like people in another" (p. 23)

Accessibility, nearness to traffic corridors, and lighting are important, but not everything. Sheer size and openness was also not essential; some level of enclosure also benefited the desirability of spaces. Sitting spaces are also important, and they should be both physically and "socially comfortable," which implies that people should be able to choose where they want to sit: "sitting up front, in back, to the side, in the sun, in the shade, in groups, off alone" (p. 28).

Often, in the New York plazas, some of the best sitting space was unexpected: People flocked to ledges (the ones that were not designed to discourage sitting) and on the steps. Although the humble ledge is overlooked as an excellent sitting space, the bench is far too common and does not work as well as expected. They are isolated from other benches, not customizable, and there are not many of them, providing very limited seating capacity and options.

Chairs, however, have the comfort of a bench, and the ability to be moved. Individuals and groups are free to arrange chairs however they want in an open space. Even if it is only by a few inches, people very often move chairs before sitting. This represents "a declaration of autonomy, to oneself, and rather satisfying" (p. 35). This lines up with several other sources in this literature review that emphasize the importance of a feeling of ownership over public space. If chairs are permanently fixed to the ground, the feeling of choice, ownership, and freedom evaporate. Fixed loveseats, stone blocks, and other seating that is permanently arranged loses the customizability that makes chairs popular. Building managers may object to the use of movable chairs on their plazas, citing concerns over theft and thus falling short of the agreed quota of provided seating. The Metropolitan Museum of Art provided a promising example with its 200 movable chairs, which were left out at all times. They were seldom stolen or vandalized, and the periodic replacements were a better value proposition than having the chairs gathered by security every night. It is easy to increase available sitting space with slight modifications to ledges and the addition of chairs (p. 37).

Natural sunlight, especially as observed in plazas with a southern exposure, was very important, but plazas with north-facing exposure were not a lost cause. Reflected sunlight from buildings benefited these spaces. People will usually seek the sun until the temperature becomes far hotter than the norm. Sun combined with wind protection on three sides makes spaces ideal

on chilly days. Breezes, however, are an asset during the warmer months or perpetually warm climates. Trees provide a sense of protection, temperature regulation, and a very pleasing mixture of shade and sunlight when people are able to sit beneath them. Groves of trees provide excellent areas for people to enjoy the in-between of shade and sun (p. 46-7).

Water features are pleasing to look at, touch, and be near. People like to splash their hands and feet in it, and even wade in it when possible. The sound of running water is also soothing in the setting of a park. Unfortunately, it has often been rendered inaccessible, which limits its value (p. 47-8).

Food vendors should be encouraged to sell in public spaces, as they create reasons for people to visit, stay, and come together in a space. Food "attracts people who attract more people" (p. 52). Business becomes increasingly good for each vendor as their numbers increase.

The critical design factor is a place's relationship with the street. On a busy corner, the social life is already there. One of the great tragedies is the replacement of ground-floor retail with sheer frontages of glass or stone on large buildings, rendering the outside and inside severed. The relationship between parks and the street is also important. A good entrance way or "foyer" supports its use as a meeting point and the eyes of passers-by are drawn to it, providing security on the street. If a park is blocked off from the street by walls or tall hedges, it becomes a more private, recessed, and dangerous place, lending itself to a lack of witnesses (p. 58).

Often, designers' efforts to combat "undesirables" using public space drive out "desirable" forms of use. This section of the book is reminiscent of the current day's "hostile architecture" debate: It describes spikes on ledges, benches that are designed to prevent sleeping and laying, and all manner of ways that places are built to discourage loitering. "[Making] a place attractive to everyone else," (p. 63) Whyte claims, is the best way to discourage

undesirable uses. Attempts to combat, for example, drug dealing, drive regular people out of the space, leaving drug deals to take place even more frequently with fewer witnesses. Desirable public places become self-policing, and vandalism and theft of the amenities, such as the movable seating, becomes rare. People who work nearby, such as security guards, but also food vendors or other stall operators, become a mediating force for the good of the space. Guards can do more to be ambassadors, rather than observers, in the plazas they are assigned to. Although stakeholders are also concerned about overloading of public spaces, the number of people in these spaces is largely self-regulating, and underuse has been the main problem, not overuse.

Whyte's book also provides guidelines for indoor spaces, and these are an encapsulation of the outdoor spaces' success factors, including sitting on movable chairs, food, other retail, and toilets. Whyte remains skeptical of widespread adoption of indoor spaces, decries the use of indoor spaces to create "fortresses," and laments that some American cities now have a "Regular city and visitor city." (p. 88) Many large buildings with indoor public spaces discourage pedestrian use by their very design, as their ground levels are dominated by a parking garage, and they create socially dead streets outside their walls. The book corroborates the excessive amount of street space given to vehicles, and advocates for more sidewalk space to be given back in order to improve the pedestrian environment (p. 89).

Things that draw people together, such as street bands or performers, public art, or even strange individuals, are referred to as "triangulation" (p. 94). These events or individuals, not even limited to official park events, give people even more reason to stop, watch, and even strike up conversations with strangers about the spectacle. Although Whyte's writing is dated in some places, its message shines through to today's unprecedented loneliness crisis. Good public places

are no longer solely a matter of good urbanism–they are becoming more important for our societal health.

Design patterns "happen over and over in the built environment." (Tyson, 1998, p. 43) Whyte's writing shows that these patterns can be both negative and positive, such as the difference between the successful parks and unsuccessful parks all over the nation. Studying patterns informed by environmental psychology will be important to propagating patterns that combat loneliness. Although Martha M. Tyson's text primarily covers the gardens and green spaces at nursing homes and other care facilities, several of the design patterns that she chooses are helpful to remember for use in landscapes that serve the general public.

"Pattern 114: Hierarchy of Open Space" calls for "at least one smaller space" as a part of each larger space, such as a park or courtyard. These smaller spaces will allow people to break off into smaller groups, and their "natural backs" such as hedges around the outside, will cause people to face the larger space as they fulfill the instinct to stand with their backs to the wall. This design pattern also calls for a variety of seating choices. (p. 45)

"Pattern 120: Paths and Goals" The book also covers paths. They should have points of interest at their endings, referred to as "goals."

"Pattern 124: Activity Pockets:" Similarly to Hierarchy of Open Space, it describes semi-enclosed spaces for activities in groups that are nevertheless inviting to enter (p. 48).

"Pattern 161: Sunny Place" agrees with Whyte on the importance of natural light (p. 51).

"Pattern 171: Tree Places" In agreement with Whyte, trees are an integral part of public space Tyson emphasizes the importance of community support in the development and approval, as well as the continued longevity, of a new public space (p. 175).

City planners can reduce loneliness through designing safe and engaging public spaces, following the principles laid out by William Whyte. Allowing people to come together and facilitating their socialization through these spaces has many benefits to the city, especially in the creation and nurturing of important interpersonal connections. The use of movable chairs to help people customize their desired seating arrangement, vendors to keep spaces active, and water and greenery to keep spaces inviting will all make these connections possible and work to alleviate loneliness. As well as the social benefits, Tyson advocates for the use of environmental psychology to design public places that are mentally restorative and stimulating. Instead of merely considering healing design around places where people are sick, these healing elements such as greenery, activity, and hierarchies of spaces also benefit the general public.

Conclusion

The fields of environmental psychology and urban design have existed independently for centuries, but attempting to combine them has turned up gaps where much more could be done to collaborate and serve the goals of each field. The opportunity is ripe in a world that is increasingly urbanized and experiencing rising rates of mental illness. Cities and universities all over the world have made efforts to understand how to create better urban environments, and psychologists have long studied the healing effects of natural landscapes and greenery, as well as many other factors influential in mental health, such as connections with local communities, level of physical activity, and overall environmental quality. Pointed efforts to understand loneliness, however, are rarer than one would think. If there is any certainty, it is that the lonely are not alone—there are increasing numbers of lonely people and increasing government scrutiny, as seen by countries' top medical officials declaring crises. In addition to this

awareness, city officials have the opportunity to plan for the future and transform cities from challenging landscapes into assets in the fight against the loneliness epidemic.

Methods

The Literature Review was used to compile a list of planning interventions that represented positive aspects of the Seattle Comprehensive Plan with regard to loneliness could be measured when analyzing the Seattle Comprehensive Plan. Due to a lack of mentions of loneliness in the Comprehensive Plan upon my first reading, and because the "Loneliness Epidemic" is a relatively new area of study, I included mentions of environmental quality goals, community building goals, and more well-known pedestrian-street strategies such as "Green Streets" and "Complete Streets," due to the observed positive effects of traffic-free or traffic-calmed, green, and multimodal streets. These streets encourage human interaction and socialization, which is key to preventing loneliness.

Upon reading the plan, I identified inductive codes for preexisting positive language surrounding environmental quality, community gathering spaces such as parks and community centers, community building, human development, housing, and safety, all of which were identified in the literature review as influencing mental health and loneliness. I coded the document for existing positives, and located opportunities to insert language into the plan regarding loneliness prevention, to determine how well planners are counteracting loneliness. I then selected several varying neighborhoods that stood out in terms of their positives or potential. Downtown, the densest part of the city, will likely have the hardest time supplying sufficient natural open space. Wallingford is largely single-family, and resistive of upzoning. Othello is a redeveloping area that should attempt to avoid gentrification and exclusion of its current residents. Fremont has a strong existing community identity, an important area to be

cultivated for loneliness prevention. Westwood was chosen due to its unique plan to create a "boulevard" around a natural waterway.

Below is a list of iterative, inductive codes identified during the literature review and my first reading of the Seattle Comprehensive Plan.

Element	**Function for Reducing Loneliness**
Active Transportation: Walkable and bikeable streets and trails	These encourage physical activity and socialization in a human-scaled environment. Both physical activity and socialization benefit general mental health and relief from loneliness.
Amenities: The permanent features of a public place, such as walkways, sports fields, seating and tables, or water features	Amenities increase the attractiveness of a public place, resulting in more use by residents and more opportunities for them to socialize.
Boulevard: In the City of Seattle Comprehensive Plan, "Boulevard" streets are wider, more pedestrian and retail friendly streets that are meant to serve as central thoroughfares.	Human-scaled environments, such as walkable and bikeable streets, as well as natural features, are beneficial for mental health and encourage socialization. Both improving mental health and increasing opportunities to socialize can alleviate loneliness.
Community Building/Human Development: In the City of Seattle Comprehensive Plan, these terms refer to a wide range of efforts including social service provision and the creation of community centers and organizations.	These efforts increase community cohesion and neighborhood organization, creating volunteer opportunities and the ability to reach out for community support and togetherness.
Complete Streets: Complete Streets include transit stops and bike lanes alongside lanes for cars and sidewalks.	Complete Streets make biking and walking possible, and these forms of transportation cause people to be less isolated than they are in a car.
Density: The number of residents living in a certain area.	Overcrowded urban environments can lead to loneliness as impersonal social interaction becomes necessary.
"Eyes on the Street": A concept written about by Jane Jacobs. Pedestrians or people in	Having others nearby makes places feel more safe and lived-in. Perception of safety is an

windows over mixed use streets provide informal security.	important predictor of the use of a public space.
Green Streets: Green Streets have vegetation, such as street trees and grassy medians. They are more inviting to pedestrians.	The natural elements and encouragement of pedestrian use create a better street environment for commuting, commerce, and enjoyment.
Healing Gardens: Landscaped spaces that are designed to provide a positive environment for long-term care patients. Elements of these designs may be beneficial in spaces designed for the general public, such as parks.	Well-landscaped gardens, parks, or other green spaces provide mental health benefits as well as encouragement to socialize in said spaces, both of which can reduce loneliness.
Housing Diversity: Housing options of varying types and prices encourage mixed-income and diverse neighborhoods.	Housing diversity allows people of varying household sizes and relationship statuses to live near each other. Diverse housing development can also alleviate gentrification, and the displacement of communities it can cause.
Loneliness/Subjective Social Isolation: A lack of meaningful connections and opportunities to form those connections, or having fewer meaningful connections than each individual prefers.	It is important to identify loneliness as a public health concern, and to plan explicitly for reducing loneliness.
Mixed-Use Development: Areas with housing and businesses in close proximity, such as apartment buildings with first-floor retail.	Mixed-use development is positive for walkable commutes and shopping, as well as for providing a sense of community and safety in proximity to other people.
Multimodal Transportation: Much like Active Transportation, Multimodal Transportation includes transit.	Multimodal Transportation breaks down the barriers of car ownership, reducing isolation of non-car-owners. It also enables pedestrian, cycling and transit travel for commuting and for pleasure, resulting in more socialization.
Natural Landscapes: Parks, mountains, waterfronts, and their views	Natural features, chiefly vegetation and water, are beneficial for mental health compared to urban environments, and areas like parks and waterfronts are prime for social gatherings.
Safety: Both real and perceived safety of residents from crime, accidents, and health factors	Real and perceived safety are important factors in people's decisions on socializing and trusting neighbors.

Sitting Space: Benches, ledges, chairs, and other areas both intended and not intended for use as seating	Seating in public parks and plazas encourage people to linger and socialize. Movable seating is best, allowing people to feel in control of their environment and how they group together.

Findings

The Seattle Comprehensive Plan consists of three sections: Citywide Planning, Neighborhood Plans, and Appendices, of which I have reviewed the first two. The first contains general guidelines and goals for the entire city, while the second contains neighborhood plans for all 33 Seattle neighborhoods. The neighborhood plans have "Goals" and "Policies," a structure outlined in the Citywide Planning section on the anatomy of neighborhood plans. Although these are not official pieces of legislation, it is important that loneliness, mental health, and environmental quality are represented in each neighborhood's list of goals and policies.

This review contains both examples of positive and negative pre-existing language, and examples of opportunities to insert more pointed language to combat loneliness. Negative language includes goals such as expanding parking lots, widening roads for car traffic, or converting natural land into new developments, as these go against the tenets of human-scaled urbanism explored in the Literature Review.

Citywide Planning

The first section of the plan, "Citywide Planning," has many mentions of terms adjacent to loneliness. It mentions community-related terms such as Community Building, Community Gathering Spaces, and Community Character and History. It also mentions Human Development related terms such as Education, Education Resources, Youth Activities, Religious Communities, and Community Activities.

Active Transportation is an important theme as it generates physical activity and leads to better environments for pedestrians and cyclists, who can spend more time in the fresh air and engaging in the local community. Green Streets, Mixed-Use Development, and "Complete

Streets" are important concepts mentioned in the plan, and their importance is shown in the Literature Review.

Housing diversity, affordability, density, and proximity are important in creating a busy neighborhood at an appropriate density. It is also important that these houses are connected by more than automobile roads.

Although the umbrella term "Safety" includes many types of efforts, the plan most commonly mentions police partnerships and community-based policing. More positive and more related to urban design is the Jacobsian concept of "eyes on the street" providing community self-policing due to active streets. The concept of "Safety" also covers traffic calming, reduction in car traffic on residential and mixed-use streets, and the creation of better sidewalks and bike paths.

There is little direct mention of general mental health or loneliness, although several opportunities to insert such language were identified. The Environmental Quality section can mention the importance of environmental quality for mental health and encouragement of outdoor socialization (p. 6). Perhaps the core tenet of this thesis, Community Building, has only a small, topical paragraph. Economic security is also important as change and loss of employment can cause severe mental health struggles (p. 7). Although the plan has many mentions of counteracting displacement, it does not mention the social consequences of displacement, which can include isolation from one's original community (p. 8).

The Urban Village strategy has the added benefit of creating walkable communities in more locations than the city center. It allows tightly knit communities to develop in many small, walkable environments, for a small-town feel in the big city. The plan also gives a passing mention to non-car transportation, which is less isolating than traveling by car (p. 10). The plan

recognizes the risk of displacement of preexisting communities in the expansion of the Urban Villages (p. 13), especially the risk to minority and immigrant populations (p. 16).

The structure of the Plan itself is composed largely of "Goals" and "Policies," (p. 17) but alleviating loneliness is not included as a goal. A potential policy to add that encapsulates this thesis would be "[Should] encourage the use of public spaces to foster community and provide gathering spaces," Or "Create Environments that Reduce Sense of Loneliness."

The Growth Strategy section contains numerous goals and policies with positive implications for loneliness relief, such as the preservation of beloved local landmarks, counteracting displacement and inequities, and supporting farmers' markets and community gardens, which are dually important for formation of communities and for food security (p. 24-6). Dense areas in the city center present an opportunity to challenge loneliness, as loneliness is more prevalent in the middle of crowded areas.

The beginning of the Urban Design section mentions some great positives for urban design: "well-defined and diverse mixed-use neighborhoods; compact, walkable scale; proximity to nature; and attractive parks, streets, and public spaces" (p. 32). Safeguarding Seattle's "Unique character and sense of place" (p. 33), as well as natural views and viewing areas, are also positives, as history and landmarks are important for residents' feelings of belonging, and natural areas are therapeutic and serve as great meeting spaces.

General Development Standards is another important section. The encouragement of natural light, and the density of new development itself, are important factors for creating good public places. LU 5.5, or Land Use Policy 5, Goal 5, provides communal space on development sites through establishing standards for public space such as rooftop decks, balconies, and ground-level open or enclosed spaces. The goal immediately afterwards, LU 5.6, is quoted

"…allow for adequate light, air, and ground-level open space, help provide privacy; promote compatibility with the existing development pattern…"(p. 47). This draws attention to the complex relationship between loneliness and a desire for privacy. Privacy is important for healthy solitude, as is the distinction between public space and private space.

The introduction to the Transportation section has several positive aspects: "generate economic and social activity," "adding to the city's overall health, prosperity and happiness," and "contribute to a more affordable city by providing high-quality and affordable transportation options that allow people to spend money on other things" (p. 72-3). Sidewalks are important to the walkability of streets, and their proper design ensures "vibrant pedestrian environments." Furthermore, tipping the balance in favor of walkability and transit over large volumes of automobile traffic will lead to better pedestrian environments for safety, cleanliness, and psychological positivity reasons, as shown by various studies. Some are dependent on transit, and others on vehicles, due to disability, financial status, or age. These concerns make serving all modes of transportation important even on inner-city streets. (p. 78). A more environmentally friendly transportation system is important for self-reinforcing reasons: Better air quality and less traffic congestion and noise encourage people to spend time outdoors and travel with friends, and more environmentally friendly transportation helps the environment and environmental quality. This will mainly take place along the "Last Mile" of walking, as a part of a longer journey by car or bus (p. 86).

The Housing section introduction begins with a lofty but important goal: "Our growing city does not force people from their homes; they are able to stay in their neighborhoods, with their established community resources and cultural institutions" (p. 96). Their reference to homelessness (p. 98) brings up an important point: If all homeless people were able to be

sheltered, this could sever their ties to their communities. On page 102, their Housing Affordability section says, “Research shows that investing in affordable housing for lower-income households yields positive social and economic outcomes, especially for families with children.” This area shows that affordable housing responsibly integrated into neighborhoods is important. Housing goal H G5 states that it should be possible for households of all income levels to live affordably in Seattle, and that the city should reduce unmet housing needs overtime (p. 104). Affordable housing should be integrated into a variety of neighborhoods to avoid neighborhood wealth inequality worsening.

Capital Facilities, such as libraries, city office space, and public places like Seattle Center are important community centers. Although the section calls for encouraging “the healthy physical, educational, and cultural development of children and adults; provide space for the city’s growing population to gather, connect, and build community” (p. 108), these goals can still be expanded, with added language to encourage people specifically suffering from social isolation to utilize these services.

The Economic Development section identifies urban centers and urban villages as some of the best areas in the city for job creation. Areas experiencing job growth attract new people, who may struggle with integration into local communities. Economic Development policy ED 1.2 states “Promote a comprehensive approach to strengthening neighborhood business districts through organization; marketing; business and retail development; and clean, safe, walkable, and attractive environments” (p. 125). This policy is very positive due to its emphasis on the factors listed in the literature review that are obstacles to using public spaces. It is important to ensure that the public places are safe, clean, and inviting as communities are built around new urban

village centers. As shown in Whyte's research on plazas, business success and community building can go hand in hand.

Seattle's environmental goals are also positive. Goal 1 simply states "Give residents across the city access to nature" (p. 133). Nature access is very therapeutic and is a great opportunity for people to both enjoy solitude and time with friends. In general, this section should add that planners should follow psychological recommendations on creating public spaces that are inviting and welcoming for both groups and individuals.

The introduction to the Parks and Open Space section acknowledges that parks and open spaces are beneficial to physical and mental health (p. 138). The city also claims to be looking for ways to improve the system, which is a positive signal for this type of research to be conducted. As stated in Goal 2 (p. 142), providing recreational opportunities is great, and even more can be done to provide special needs meetups and mental health awareness.

The Community Wellbeing section claims the importance of the "human and social infrastructure" of the city. It acknowledges "common values, arts and culture, ethnicity, education, family, and age groups" as structures that social relationships are formed around (p. 152). The accompanying policy section (p. 154) includes great goals, although loneliness prevention is ripe to be added as another explicit goal. Closely related is the Community Development section, in which the city's commitment to community involvement in decision-making will also aid people's sense of connection to place. The section outlines the considerations of community plans for the various neighborhoods in the city. Mental wellbeing and loneliness should be added to this list of considerations for a community plan or community plan update (p. 163-7). Despite its lack of mentions of loneliness, this section is very positive in advocating for the community's connections to the city's public spaces and its decision making.

Although the Community Wellbeing section is the most aligned section with loneliness prevention, other sections such as economic development, parks and open space, and infrastructure should also be used to address loneliness.

Common Themes in Reviews of Individual Neighborhoods

Many neighborhood plans include positive elements such as mixed-use development, walkability, bikeability, and active commuting. They also mention the four determinants of a successful public place: Activity, Environmental Quality, Amenities and Safety.

Mentions of counteracting subjective social isolation were entirely absent, despite many plans including “Community Building” and “Human Services” sections that contained great ideas for social programs and public spaces.

Many neighborhoods are intent on creating a “Boulevard” or multiple boulevards from iconic and wide streets that already exist (Aurora Avenue, Queen Anne Boulevard, Martin Luther King Jr. Way). Uniquely, the Westwood and Highland Park plan gives special focus to a central waterway, Longfellow Creek, which has the potential to create the greenest, healthiest central thoroughfare in the Comprehensive Plan. Boulevards, which are already valuable when amenable to walking, biking and mixed-use development, can be even more enjoyable and peaceful for social interaction if they are centered around a waterway instead of an automotive road. These central spaces will create opportunities for social interaction and thus help alleviate loneliness.

Glossary

The Citywide Planning section also contains a glossary of terms. Although it includes beneficial terms such as, Boulevard Network, Community Involvement, Complete Streets, Cultural Resources, Green Streets, Human-Scale Development, Mixed-Use, Open Space, Parklet, Pedestrian-Oriented Commercial Area, and Urban Forest, I propose the addition of the following terms and definitions to the Glossary and for use elsewhere in the plan:

- Active Transportation: Cycling and Walking, and to a lesser extent, transit, as opposed to driving in private vehicles.
- Mental Wellbeing/Mental Health: The general state of being healthy emotionally, psychologically, and socially. As it is very closely connected to a person's perception of themselves and their social network, I am counting all general mental health improvement efforts as positive and loneliness-alleviation-adjacent.
- Loneliness/Subjective Social Isolation: A painful state in which a person feels their existing social relationships are insufficient or lacking.

Selected Sites

Below are five neighborhood plans that I selected for deeper review.

Othello:

Othello, South of Downtown, is a currently redeveloping area. Redevelopment often leads to gentrification, which scatters community members who are priced out of the new developments. During these times, it is important to ensure that the community is protected from gentrification, both economically and culturally, with community events, walkable streets, green spaces, and housing that will stay affordable. These efforts counteract displacement of current residents, which can cause loneliness.

Othello's neighborhood plan begins with a strong, family-supportive and housing-diversity supportive section of Land Use and Housing Goals. It is commendable for encouraging both renting and owning housing, as well as varied types of housing, especially concentrated around the Light Rail station. It inserts a goal for parks straight into the Land Use section, calling for park programming, which will encourage more use of the area's parks. Overall, the section is very positive for its goals for a mixed-use, diverse neighborhood center, its creation of mortgage programs that should allow residents to stay in the neighborhood despite rising prices, and making the neighborhood's diverse eateries and other businesses a destination for people from other areas. It also mentions the use of lighting and landscaping to create open spaces that feel safe and inviting. The Economic Development section calls for a high level of street activity, which will lead to a safe and lived-in feeling through "Eyes on the Street." It also supports "family wage" jobs, that will allow people to stay in the neighborhood as they raise their families, providing a longer-lasting and generational connection to the area. In this manner, it repeatedly suggests policies that will help the area avoid gentrification. It has a good transportation section that also encourages active transportation and pedestrian improvements,

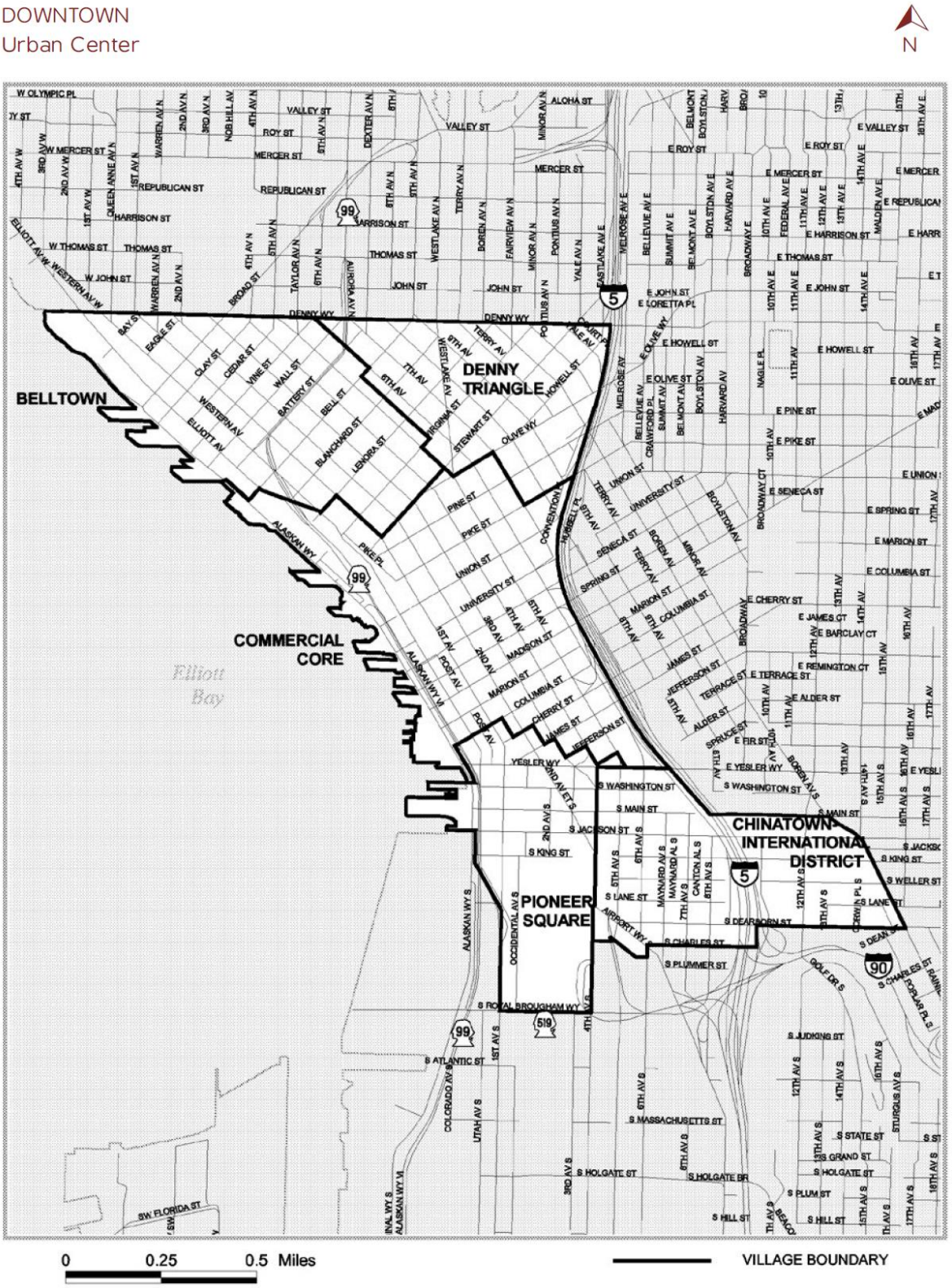
especially around the Light Rail station. It has a very positive Community Building section, especially “A tightly-knit community where people know how, and want, to get involved in community activities.” These close relationships will be very beneficial for the residents’ perception of the neighborhood, public trust, and feeling of belonging and connection.

The plan has no dedicated section for Parks and Open Space. It already has a solid goal buried in the Land Use section that advocates for “parks, recreational facilities, and open spaces that are designed and programmed to accommodate… and… allow for informal interactions of people from different cultures.” (p. 358) This can be expanded to create a more substantial parks section that expands on their vision for effective gathering spaces. The plan also does not mention mental health or loneliness by name, and it can benefit from affirming these concerns as important for both Community Building and Parks and Open Space. In order to truly address mental health, loneliness and isolation, it must directly mention it, and outline plans for helping those suffering from social anxiety and social isolation take part in the community.

Downtown

The Downtown Neighborhood Plan contains the neighborhoods of Belltown, Denny Triangle, the Commercial Core, Pioneer Square, and the International District/Chinatown. As the centrally-located, densest part of the city, it is expected to suffer the most from crowding and lack of green space, as well as high rent and cost of living brought on by gentrification. Downtown is poised to benefit the most from additional small green spaces and from plazas, as both community gathering spaces and places to find moments of solitude.

DOWNTOWN
Urban Center



Source: Seattle Comprehensive Plan, pg. 253

Downtown's Urban Form goal can do much more to encourage green spaces and therapeutic "urban escapes" for Seattle's densely populated core. Spaces like these will be especially important for those living in this high-density area of the city. Its transportation goal can be more supportive of traffic-calming and multimodal transportation, both to ensure safety and as a way to encourage connections along pedestrian routes. The public safety goal makes good use of "Eyes on the Street" and multi-use, 24-hour active urban areas. Downtown Office Core 2 (DOC 2) land use districts also reiterate the importance of keeping an area active at multiple times per day. In the Urban Design and Planning section of the Downtown Neighborhood Plan, Policy DT-UDP10 advocates for buildings to have a strong relationship with the streets, make streets enjoyable places to be, and limit the presence of blank street level walls to avoid a boxed-in or shady feel. The Open Space section compensates for what seemed to be missing from the Urban Form section, clarifying the area's goals for the creation of new and varied public spaces, including green streets and plazas on office and residential tower properties. The Human Services section robustly covers the need for childcare across all income levels, and commendably addresses the needs of low-income residents of Downtown, although more can be done to acknowledge and support the homeless population. It also supports pedestrian circulation, spot improvements for high-volume pedestrian locations such as transit stations, and waterfront linkages, as well as linkages over the I-5 corridor to restore severed neighborhood connections. Sidewalk widening is an important goal for emphasizing pedestrian connectivity. Universal bike access on downtown streets is another lofty goal, but one that will be very important for active transportation and the ability for people to commute healthily and enjoy the outdoors with friends. The Belltown neighborhood, which is part of the Downtown plan, hopes to "promote pedestrian activity through such methods as eliminating 'dead spots' of

street level activity." These spots may be the perfect places to create new activity centers. It also mentions in "Pedestrian Environment Goals" that residents should feel a sense of ownership of local public places. The neighborhood of Belltown also includes an "Alleys" section, which can add the use of alleys as smaller, more intimate social spaces as well as pedestrian and bike routes. Its Community Enrichment and Social Services section, much like the others, could use expansion into mental health and loneliness efforts.

The International District/Chinatown section also acknowledges and supports its strong pre-existing culture, recognized not only as Chinese, but also Japanese, Vietnamese, and Filipino, with Native and African American presences as well. It espouses many of the same goals to ensure that housing is diverse and affordable, as well as the use of parks for cultural celebrations, as well as advocating for "safe and dynamic public spaces." It is important to remember that in order to be dynamic, something must have difference and variation, implying that the parks will also have to support tranquility in certain areas. Both bustle and tranquility are useful for different individuals in the fight against loneliness, in the same way that both togetherness and solitude can both be positives. The neighborhood section also has accessibility goals involving a decrease in car dependency, traffic calming, and the expansion of bicycle facilities.

The Denny Triangle's Urban Form Policies are some of the most exacting and precise in the entire Comprehensive Plan. Alongside general calls for green streets and "neighborhood gateways," it also lays out precise, quantitative goals such as:

- One acre of Village Open Space per 1,000 households;
- All locations in the village must be within approximately one-eighth mile of Village Open Space;

- Dedicated open space must be at least 10,000 square feet in size, publicly accessible, and usable for recreation and social activities;
- There should be at least one usable open space of at least one acre in size where the existing and target households total 2,500 or more;
- One indoor, multiple-use recreation facility;
- One dedicated community garden for each 2,500 households in the village, with at least one dedicated garden site. (p. 291)

Although these goals are commendable in their explicit nature, they lack any clear wording on the content of these reserved public spaces. If combined with the recommendations of environmental psychologists to optimize their use, this section will create an immense amount of community capital. The parks should therefore be green, with a wide range of shrubs and trees, as well as good seating such as movable chairs. Connectivity is also key, both for easy access for the most people, and to avoid the parks becoming too secluded and therefore amenable to drug deals or other crime. Parks should also play host to small pop-up events or food trucks in order to fully utilize them.

The Pioneer Square section also includes Open Space policies, although vaguer than Denny Triangle's. They encourage the inclusion of artists in public-funded project designs, improving the maintenance of its existing facilities, and recognizing Occidental Corridor as a "neighborhood center." It also includes a rare Alleys goal, recognizing their potential as gathering spaces. Its Public Safety goal hopes to counteract safety concerns by improving the cleanliness of the area and calling for a "high level of civil behavior" (p. 292).

The Human Services section of the Downtown neighborhood plan, which mostly covers housing and childcare concerns, seems deeply underdeveloped for the area most likely to suffer

from loneliness, isolation, and sense of disconnect. It should add more language surrounding social and volunteer opportunities related to community building, as well as other mental health resources nearby. Belltown's transportation goal, focused on eliminating car dependency, could do more to expand its wording for active transportation and green streets. As the densest populated part of the city, Downtown's neighborhoods are the most likely to suffer from overcrowding, lack of public space, or disregard for public spaces that could become valuable private real estate. Although promoting more natural green space is key, more can be done to encourage plazas, ledges, and other gathering spaces on the ground floors of private towers.

Wallingford

Wallingford is an addition made specifically because its residents counter the planned densification and upzoning that has been done in surrounding neighborhoods, hoping to designate a portion of its single-family neighborhood as a historic preservation site (McNichols, 2022). Paradoxically, this does indicate a high level of community organization and functioning. Although Wallingford has a sizable single-family zone, its neighborhood goals discourage new single-family residential construction in favor of low-to-medium density townhomes and low-rise apartments, especially around the business district. This medium-density approach will hopefully ensure that the businesses are supported without causing the neighborhood to become densely populated and overcrowded. Wallingford could hit a "sweet spot" with enough people to support a bustling business district without becoming too crowded to counterintuitively create loneliness. Although the neighborhood hopes to encourage high rates of homeownership, it also seeks to create housing diversity. It affirms the importance of public spaces such as libraries and parks, and hopes to create more open spaces in "underserved areas." Its goal to "Encourage retention of a wide range of age groups" is a positive for families hoping to live near each other,

and the ability of all to continue living in the community, which will foster long-time connections to the place. It also encourages developing home businesses and ADUs, which are easy and manageable ways to create activity and connection in the single-family areas. Its transportation goal, alongside vouching for pedestrian improvements, explicitly mentions "Interactions between neighbors." The Community Building Goal states that the neighborhood should feel like "A small town in the big city." It also supports volunteering and resident involvement in future neighborhood planning, which are excellent avenues to building community.

The plan does not mention loneliness or mental health in any form. Although the Housing Policies section includes encouragement of public amenities such as parks, the mentions are topical compared to a dedicated section on Parks and Open Space, which the plan lacks. Wallingford's single-family stalwarts give the appearance of a solidified community that may not be welcoming of new residents, especially those in newer, denser structures built on upzoned land.

As the Wallingford plan already mentions community building efforts in many places, it should now concentrate on the addition of a deeper Parks and Open Space section. Alongside better public spaces, Wallingford should emphasize welcoming new residents in the densifying parts of the neighborhood, especially those who have moved from far away. Although mixed use and medium density development is the ideal compromise for economic and social reasons, the single-family areas are clearly a functional community within a short distance of services and public places, and should not be forcibly dismantled.

Fremont:

Fremont was chosen for the evidently very strong and distinct commitment to its neighborhood character. Fremont's Neighborhood Plan begins with the lofty goal of being "The Center of the Universe." The neighborhood does more realistically boast of its desire for "rich and varied" urban streetscapes, and the development of "unique recreational and aesthetic amenities" within its urban village. It also encourages public art and cultural amenities that will, if not the center of the universe, make central Fremont a sufficient neighborhood center. Its housing policies incentivize families to move in, as well as senior citizens and renters of varying income levels. Its Transportation goal calls for "Community-Compatible" transit. The rest of its Transportation section is strangely split over many different subheadings such as "Specific Identified Transportation Systems Issues Policies" and "Transit Service and Transportation Models Goals." It still espouses the standard goals of reducing car dependency through strong transit, walking and biking options, with the unique addition of car sharing programs to reduce the need for car ownership itself. It also goes more in depth into ensuring that the area's bicycle trails are connected to each other and have a higher level of safety. Connections between bicycle trails are important for expanding bicycle commuting and pleasure-riding. It also calls for traffic-calming measures which will improve bicycle and pedestrian environments on its vehicle streets. Fremont also supports its local identity and its artistic community, which are important to the sense of community and belonging.

Fremont does not mention loneliness specifically, nor does it have a human development, community development section, or a Parks and Open Space section. Although elements of these exist as part of Community Character and the many Transportation subsections, the plan should create these sections and delve deeper into community-building and open space improvement efforts, as well as develop strategies directly related to alleviating loneliness. A strong

community identity is important for community cohesion, but the neighborhood plan should get more serious about the basic building blocks of neighborhood design.

Westwood/Highland Park

Westwood/Highland Park makes a natural feature, Longfellow Creek, a central thoroughfare, rather than a street. This is a unique approach. They plan to utilize it as "central linkage promoting recreational, environmental, and historical themes." This approach of making a natural area central to a neighborhood instead of a road may make this the most promisingly beneficial "Boulevard Street" in the plan. The idea of a natural corridor for both travel and neighborhood history will make its users feel very deeply connected to the community and its history and environment. Elsewhere, the plan still advocates for a safe road network for car alternatives. Although it is historically low-density, the area also hopes to increase its mixed-use housing availability, hopefully hitting a sweet spot of density to surround its unique, stream-focused neighborhood core. It also hopes to acquire more land for small parks, and prevent crime through environmental design, referred to as CPTED, or Crime Prevention Through Environmental Design, throughout the neighborhood's cycling and pedestrian areas. This shows the recognition of the importance of the built environment in shaping societal interactions.

This plan, like the others, falls short of mentioning loneliness itself. Its Human Development and Public Safety section is small and vague, not mentioning the specifics of the needs of a "changing and diverse population." The Parks and Open Space section, though it has lofty goals, does not mention specific planning practices that will make the proposed trails and pocket parks especially desirable.

Minorities in diverse populations can suffer from higher rates of loneliness. A more robust and specific Human Development section, consisting of park programming, social service

availability, and other ideas for social inclusion in public spaces would ensure that the neighborhood remains cohesive as it grows. The Parks and Open Space section can go more in depth on interventions that will improve the park environment, such as improved tree cover, path width and destinations along the path, and specific plans to create trail-connected parks. The neighborhood can also benefit from community centers and plazas, and all three of these types of public venues should be programmed with events and other social opportunities.

Discussion

In preparing the literature review for this study, a tragic lack of connection between loneliness research and planning research was observed, highlighting the necessity of research in this vein as the world urbanizes. Although much of the plan shows what can be considered positives for easing loneliness, these instances are clearly for other purposes. What remains is to add specific goals to the plan regarding alleviating loneliness, as well as to support the uniquely positive efforts of certain neighborhoods, such as boulevard streets and specific open space goals such as Denny Triangle's, in other appropriate places.

As the population ages, a greater portion of the world population will be elderly, further exacerbating the crisis. Thus far, the research cited in this project lacks this connection between the growing loneliness epidemic and the way our urban design can either help or harm our sense of community and social support.

The citations are mostly either planning texts or psychological texts, with only a few falling under "environmental psychology." The planning texts typically cover positive or negative effects of various planning interventions (such as pocket parks in Tokyo, or pedestrian-dominated streets versus car-dominated streets in Tehran) or some extreme examples of mental health awareness, such as connecting various environmental factors with suicidality, depression, and anxiety. The psychological texts are focused on isolation and its effects on people themselves, and only tangentially related to the issues of urbanism, such as those chronicling the development of the De Jong-Gierveld Loneliness Scale. The scale originally consisted of 26 variables, of which 5 were related to neighborhood externalities or environmental quality. Even the environmental psychology texts hardly mentioned loneliness at all, the closest to a direct mention of loneliness being "Neighborhood Social Ties" in Kuo et al. 's 1998 study. Even texts

such as Robert Putnam's and William Whyte's talk about social isolation as a societal loss, not as a loss or lacking suffered by the individual. This leaves this study in a spot of isolation of its own, without much precedent despite the growing importance of the societal concerns in question.

One of the core limitations of this study is that there is little evidence that these efforts to improve public spaces will result in not only improved social ties among residents, but decreasing rates of loneliness in dense cities. At the end of the day, nobody can be forced to socialize, and forced, impersonal social interaction in the form of overcrowding is a factor that can induce loneliness. All that can be done is to give those suffering from loneliness the most potential remedies that urban form can afford, and to advocate for urban form as a solution worthy of exploration.

The study is also limited in its reach, where only one city comprehensive plan was analyzed, and in its depth, where no individual public places could receive focus or observation. The markers of a successful public place are varied, and even plans that appear successful on paper may not translate into successful public places that are well-utilized and well-maintained by the community. The definition of "success" itself is also subjective: Success could be judged by how enjoyable or desirable a space is, how popular or crowded it becomes, or purely on the amount of recommendations by professionals in planning and environmental psychology that were followed during its construction. This thesis advocates for the judgment of how well a place can reduce the loneliness of its surrounding community. The Comprehensive Plan, although it includes "policies," is also not a piece of legislation, and even the praiseworthy, precise calls for open space policies in Denny Triangle's Neighborhood Plan are not legally-binding resolutions.

It is a distinct possibility that a large portion of the goals and policies will be watered down or disposed of as zoning codes and land use proposals are considered and enacted.

Despite these limitations, this area of study can raise awareness of the importance of the role of planning in the loneliness crisis, encourage good urban design to encourage community cohesion, and improve parks, plazas, and streets across the board.

Conclusion

The cities of the future are already planning to add and increase many positive externalities such as parks, active transportation, and other community facilities such as beaches, public squares, trails, and increased tree cover. Alongside these plans, they should also make sure that their residents, who are growing in number, are supported socially through solid, environmental psychology-supported design. The positive effects of natural landscape and the importance of good urban design for residents' physical and mental health are both well-documented. Not as much research exists on how urban form may be used to directly alleviate the loneliness that residents of dense urban areas report feeling. This examination of the Seattle Comprehensive Plan provides an easily replicable method of evaluating a city's potential for alleviating loneliness, through markers of environmental quality and green space, multimodal transportation, and parks systems. As it is unexpected for cities to mention loneliness explicitly, it also provides examples of areas where language to counter loneliness can be added. Reducing loneliness has many positive effects ranging from better public trust and social cohesion to reduced crime and antisocial behavior. Furthermore, cities should be viewed as places where people can come together, not as places we go to disappear.

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