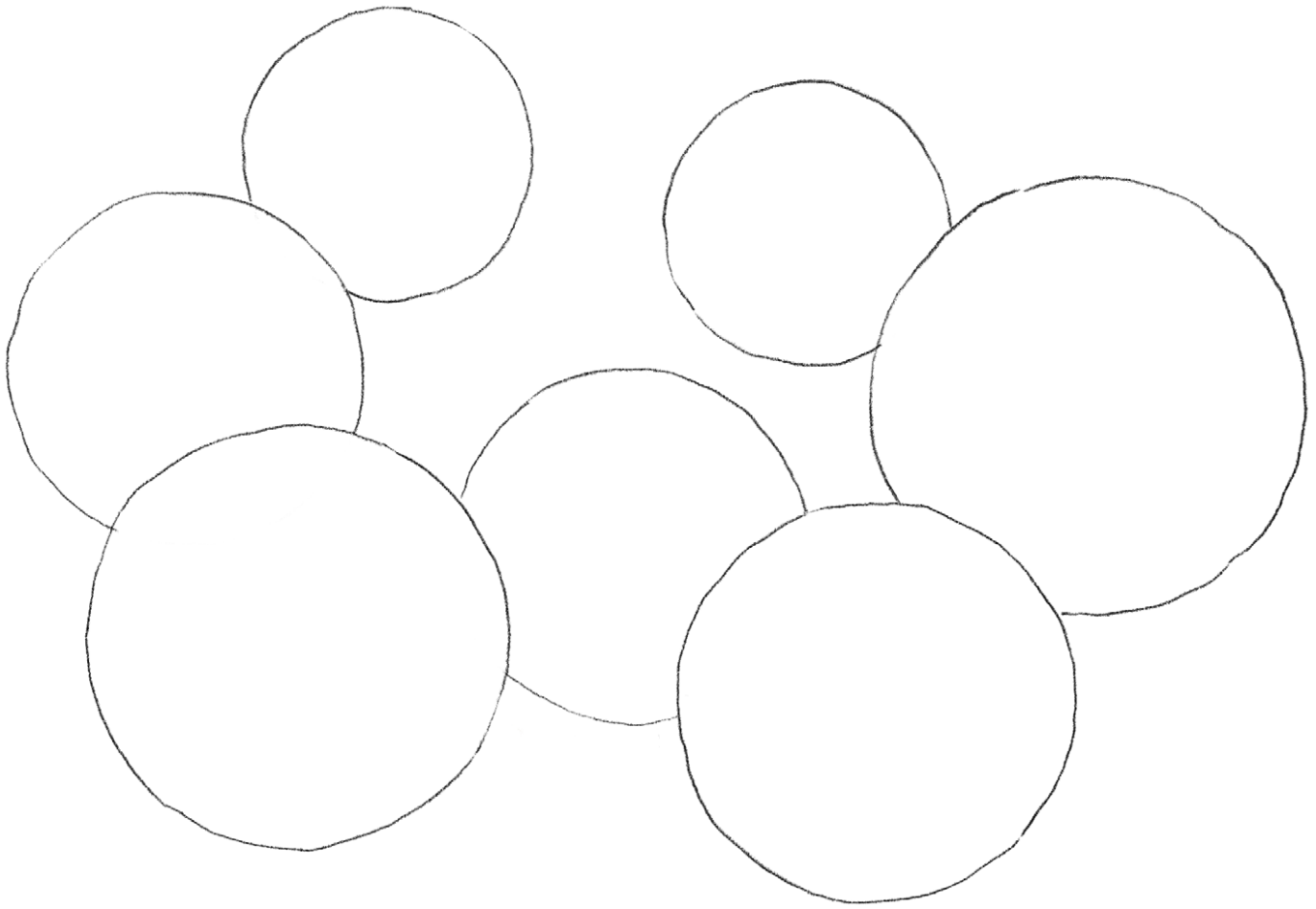


Cognitive<sup>o</sup>  
Design



# Building Community

Social Isolation and the Built Environment

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# Foreword

What does it mean to be a good human? Whether you profess to be a Christian, Muslim, Buddhist, Hindu, an Orthodox Jew, agnostic or any other manner of religious person, most would agree that Jesus was one of the greatest teachers who ever lived. In the scriptures, Jesus spells out what it means to be a “good human being”—love the Lord your God with all of your heart, soul and mind and love your neighbor as yourself.

Now whether you agree about the first statement is open to debate depending on your religious affiliation, but I think we all have to agree that if we all spent more time loving our neighbors more of the world would be a better place. As a matter of fact, Jesus held this command in such high regard that He believed in order to accomplish “the Law” one must love his neighbor! Alright, so it’s time to find a neighbor...

But you see this is where we run into a snag. In order to love a neighbor as oneself, one must be willing to be known as well as willing to know others. Currently in our culture we have made it easy to know someone through the modern marvel of social media, but we as a society have virtually handicapped our ability to know someone on a personal level; where eye contact can be made and a handshake extended, a meal can be shared or tools can be borrowed. Right now, in modern society, we lack the ability to know each other well due to the limitations of physical contact. We spend more time in commute, binge watching on our favorite streaming device, and running (if we are lucky enough) to our kids’ events. Being a “neighbor” or even wanting to be neighborly is the last thing we have on our minds or priority lists. Yet, most agree to really build a relationship it requires an in-person connection.

I will be 50 years old this year. I still remember when my dad got mad at our next-door neighbor for keeping his drill too long, but yet he lent him the lug wrench when they brought the drill back. Seeing that neighbor in the eye caused my father, who by the way was harsh and demanding, to sense a need and have sympathy for his fellow man. There is just something about real human contact that seems to go around cultural and societal divides and meets

# Foreword cont.

people where they have a need. Now, when I look around, I see people running into their homes and closing garage doors as fast as they can, afraid to make eye contact with their neighbors.

In the paper you are about to read it seems we identified or at least we have given a name to this sickness that has spread among the homes, schools, and workplaces of our communities. We call it “Social Isolation” and when you really look at the research you will be shocked to discover all the ways this disease can affect someone. To me, Social Isolation (SI) has become to the study of Sociology as Post Traumatic Stress Disorder (PTSD) has become to Psychology. It covers a multitude of dysfunctions and just trying to treat the symptoms of SI without ever treating SI as a problem itself most likely won’t work. You will see because the research speaks for itself. My hope is that you take the time to read this and my prayer is that you will pursue what it means to “love a neighbor as yourself.”

Grace and Peace to you,

Pastor Jody May

Highlands Community Church

# Introduction



Image: Luke Beard

At its best, the built environment is accommodating. Whether that solves a spatial challenge, coexists in harmony with the natural environment, or thoughtfully considers how a place will be used long after completion, purposeful spaces have a proven ability to impact change.

This paper aims to explore an often-underdiscussed and deeply impactful issue, social isolation, and how physical context influences social behaviors. We explore how human social behaviors and physical environments impact each other and place an emphasis on social isolation in suburban and rural communities. This research is part of a larger land-planning effort for a real estate development on a 10-acre parcel of land, pictured above, in Dallas, Georgia, USA. This development is intended to test the hypothesis that increasing social connectedness is an effective strategy for improving resilience to modern adversities, namely social isolation.

We seek to support and facilitate efforts reducing social isolation for the purpose of improving resilience against adversities including social isolation itself, in addition to other modern adversities faced by people in sub-urban and rural communities in America, such as education attainment, social mobility, and income inequality. This document explores connections between

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A detailed list of definitions of key terms used in this paper is provided in [Appendix A](#). This offers definitions of the most important terms to be understood prior to reading the next sections.

**Built Environments** include homes, schools, workplaces, parks/recreation areas, business areas and roads. These environments extend overhead in the form of electric transmission lines, underground in the form of waste disposal sites and subway trains, and across the country in the form of highways. The built environment encompasses all buildings, spaces and products created or modified by people.

the built environment and social isolation by identifying risk factors, known interventions, and environmental considerations to facilitate an intervention's efficacy, all of which are subsequently discussed in greater detail.

The authors of this paper have chosen to focus on the relationship between in-person social connections and the built environment, recognizing these interactions occur alongside other means of interaction such as social media. Due to the focus on the role of the built environment's impact on social behavior, and the irreplaceable value of in-person experiences, we acknowledge the importance of access to these technologies and excluded any investigation into their efficacy or impact in this research.

All research is deliberately focused on sub-urban and rural communities to most accurately reflect the population of Dallas, GA. The built environment alone cannot cause or resolve social isolation, but it does play an important role. Design decisions ranging in scale from city planning to accommodating mobility and cognitive impairments with design detailing, can help create an inclusive environment and serve as the foundation of a thriving community. Well planned interventions, good design, and well-executed programs and services stand to achieve a comprehensive solution to this complex condition.

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## Problem Statement

Social isolation is a complex condition potentially resulting from a variety of circumstances, and leads to serious health problems including early mortality.

While the places we build for ourselves and each other serve many purposes, in modern developed nations where physiological needs are largely met, threats to human health and wellbeing are far more complex than ensuring physiological survival. Adversities include factors such as obesity, opioid addiction, social isolation, loneliness, access to healthcare, income inequality, education attainment, financial literacy, and geographic disparities <sup>[9]</sup>.

Martha Thorne, Executive Director of the Pritzker Prize, was asked in a 2012 interview "What is the fundamental purpose of architecture". She answered, "That's a very simple yet complicated question. Architecture exists to create the physical environment in which people live. Obviously, that's a very simple answer, but if we dig deeper, we see the complexities. What is the built environment? What constitutes quality of life? How do architects determine whether something is positive, helpful or relevant for individuals and collectives?" <sup>[10]</sup>.

We ask the same questions and theorize the best way to program, design, and develop land for purposes of increasing connectedness as an effective strategy for increasing resilience against isolation as a social health adversity.

*Key Terms Continued:*

### **Built Environments** *cont*

It impacts indoor and outdoor physical environments (e.g., climatic conditions and indoor/outdoor air quality), as well as social environments (e.g., civic participation, community capacity and investment) and subsequently our health and quality of life <sup>[7]</sup>.

**Health** is defined by the Constitution of the World Health Organization (WHO) as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" <sup>[1]</sup>

**Risk Factor** is defined by WHO as "any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury" <sup>[4]</sup>.

**Social Connectedness** which is "a short-term experience of belonging and relatedness, based on quantitative and qualitative social appraisals, and relationship salience", when the appraisals involve "the subjective satisfaction with one's social situation" and relationship salience is "thinking of others and the feeling of being together outside of social contact" <sup>[8]</sup>.

**Social Health** is not defined by WHO, but can be explained as how much an individual is satisfied in their social statuses in society, system of social relationships and networks, financial position, and living circumstances <sup>[2]</sup>.



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## Method

We conducted a comprehensive literature search on the scientific database (NCBI) and the citations database (GoogleScholar) in addition to the search engine (Google) using numerous combinations of keywords directly related to the topic of the paper, including (social isolation); (risk factors of social isolation); (social isolation as a risk factor of); (rural areas); (urban areas); (interventions); (social connectedness); (resilience) amongst others. We did not specify a particular time span for the date of the studies; however, a majority of cited studies (70 of 76) were published during the last 20 years (after year 2000).

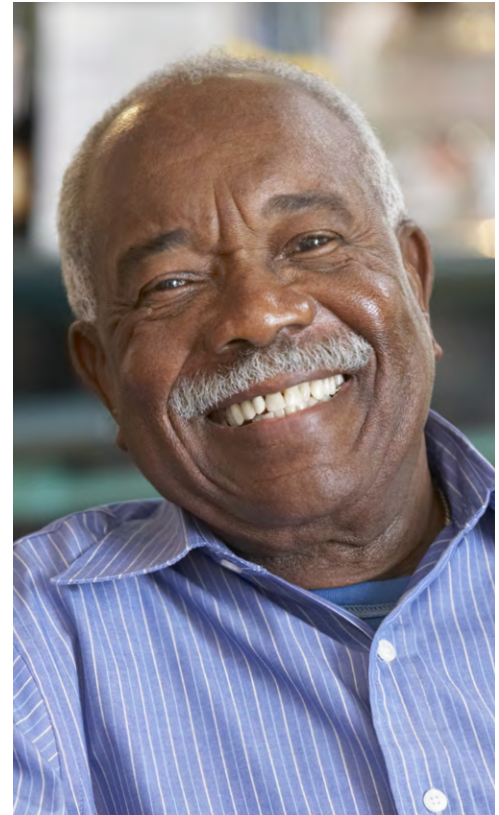
### *Key Terms Continued:*

**Social Isolation** is best defined as an “inadequate quality and quantity of social relations with other people at the individual, group, community, and larger social environment levels where human interaction takes place” [3].

**Social Network** refers to “an individual’s connections among a group of people, the characteristics of which are used to interpret the social behavior of people involved” [3], or simply, the relationships we have with other people and groups in society [6].

**Social Relationship** is “the sum of the social interactions between people over time. This can be a positive or a negative relationship. Momentary social interactions can be described in terms of parental care, dominant-subordinate or aggressive-fearful interactions etc.” [5].

# Social Isolation



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## Social Isolation as an Issue of Public Health

Apart from being a social health problem, social isolation is a serious threat to both physical and mental health <sup>[11]</sup> and is disproportionate in some demographics and locations. Studies have shown even though social isolation may not have high rates among the general population, it is a serious problem and the risk factors are indiscriminate, although the elderly are most vulnerable <sup>[12] [13]</sup>.

Reports and studies in the 1980s suggest social isolation rates were estimated to impact as few as one in 20 Americans <sup>[13]</sup>. These rates have spiked dramatically today as a study published in 2018 estimated a significant proportion (approx. 24%) of community-dwelling seniors (65+ years old) in the United States (U.S.), suffered from social isolation;

this equaled approximately 7.7 million people when the study was done <sup>[12]</sup>. With a high prevalence, and increasing number of older adults, social isolation will continue to impact the health, well-being, and quality of life of a large number of the elderly for the foreseeable future. The infrequent assessment of social isolation in senior citizens by public health professionals potentially compounds the problem <sup>[14]</sup>.

Further evidence showing an increase in social isolation comes from a 2015 study conducted at Brigham Young University which suggested adding the condition to lists of public health concerns. The study drew a parallel between recognition of social isolation in 2015 with the acknowledgment of obesity as early as 1978, noting that scientists in the 1980s raised serious warnings about obesity and its potential ramifications. The Brigham Young study concluded widespread dietary and behavior changes were taking place, accurately predicting the present obesity epidemic <sup>[15]</sup>.

Decades later the problem has grown and obesity now receives major attention in the media and in public health policy and initiatives. Social isolation currently retains the same status of research as obesity decades ago. The risk factors and social trends causing it are understood and actionable. Furthermore, the risks associated with lack of social relationships are greater than that of obesity <sup>[15]</sup>. Encouraging action now and heeding the findings of the aforementioned studies is a practical first step in preventing social isolation from reaching epidemic proportions in the future. This is most urgent for adults 65 and older, a demographic expected to double by 2030 <sup>[15]</sup>.

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## Health Problems Associated with Social Isolation

Social isolation has severe consequences on health, especially when associated with low health literacy <sup>[16]</sup>. A review in 2012 showed social isolation is a major and prevalent health problem among community-dwelling older adults, leading to a number of negative impacts on both physical and mental health. <sup>[14]</sup> A 2016 study investigating the impact of social isolation from family members and friends on mental health in the U.S. concluded being socially isolated from both family and friends was linked with symptoms of depression and psychological distress <sup>[17]</sup>. Furthermore, a study performed in 2005 considered social isolation to be one of the most important and best-studied risk factors for new-onset and recurrent depression in later life <sup>[18]</sup> in addition to suicide and dementia <sup>[19]</sup>.

It is suggested that social factors may alter the immune system, leading to increased physical health risks <sup>[20]</sup>, creating a link between social isolation and other serious outcomes such as cardiovascular disease and heightened inflammatory response to stress <sup>[11]</sup>. Numerous other studies support these findings and summarize that isolated people are at increased risk of Acute Myocardial Infarction (AMI, heart attack) and stroke and, among those with a history of AMI or stroke, increased risk of death <sup>[21] [22]</sup>.

The abovementioned adverse consequences contribute to social isolation being a major risk factor for both morbidity and mortality <sup>[23]</sup>. Studies have established a theoretical basis and strong empirical

evidence associating lack of social relationships with increased risk of death <sup>[11] [15] [23]</sup>. This includes people with a low quantity, and sometimes low quality, of social relationships <sup>[23]</sup>. A study that also considered social isolation as a risk factors for mortality, explained that isolation could perhaps be mediating the relationship between hearing loss, cognitive decline (which are risk factors for social isolation), and mortality <sup>[11]</sup>. Research determined the strength of social isolation as a predictor of mortality is similar to that of well-documented clinical risk factors <sup>[24]</sup> placing it on par with smoking, obesity, elevated blood pressure, and high cholesterol <sup>[13]</sup>, and predicted decreased longevity for both genders <sup>[12]</sup>.

Apart from its impact on health, social isolation at the individual level was even considered a strong risk factor for both robbery and assault victimization <sup>[25]</sup>. Considering the diversity and severity of these more easily measured health outcomes, it is imperative to take every opportunity to facilitate healthy social behaviors with design of the built environment. In the following sections of this paper, we will outline the risk factors and how they contribute to social isolation, strategies to address the root causes, and how design can contribute to the prevention of, or recovery from, these threats.

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## Risk Factors

The risk factors associated with social isolation are far-reaching and diverse. Bases on these studies <sup>[12] [26] [27] [28] [29] [13] [30] [31] [32] [33] [34] [35] [36] [37] [38] [39] [40]</sup>, we will discuss a list of factors in the following table organized into 5 groups with no hierarchy or priority of one risk factor/group above other.

The groups and risk factors are:

- 1. Environmental Factors:** Transportation & Accessibility, Geographic Location
- 2. Health Factors:** Health Issues & Disabilities, Aging
- 3. Social Factors:** Living Alone, Decreased Social Network, Loss of Spouse, Missing Events
- 4. Abuse and Adversity:** Domestic Abuse, Societal Adversity
- 5. Demographics and Other Factors:** Unemployment, Gender, Race/Ethnicity, Low Income & Education, Linguistic Capabilities and Illiteracy

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# Risk Factor Description and Contribution to Social Isolation

## 1. Environmental Factors –

### **Transportation & Accessibility**

#### Description

Lack of access to convenient and accessible transportation and environments. This includes pedestrian, non-motorized, and vehicular transportation, as well as accessibility for individuals with disabilities such as those accounted for in the Americans with Disabilities Act (ADA), and includes lack of affordability to use transport in some cases.

#### Contribution to Social Isolation

Lack of mobility in any situation has the potential to limit a person's ability to attain social interactions. This may be directly prohibitive by precluding access to a space or activity, or indirectly prohibitive if an individual chooses to not participate because they perceive themselves as unwelcome or burdensome to others.

### **Geographic Location**

#### Description

The location where a person spends their time including their residence, workplace, recreation areas, and access goods and services. Geographic locations are impacted by a variety of factors ranging from available social support services to community social capital which can be further influenced by risk factors such as median income and education.

#### Contribution to Social Isolation

The combination of an individual's Geographic Location and social resources may result in social isolation. For example, relocating to a new city may cause individuals to experience social isolation if they have not established a new social network compared to their hometown, even if all objective measures are otherwise comparable.

Rural and urban locations have potential to contribute to social isolation in different ways depending on an individual's social and material resources, which is further explained in the section Social Isolation in Rural and Urban Environs.

## 2. Health Factors –

### **Health Issues & Disabilities**

#### Description

Acute and chronic health issues or disabilities can contribute to social isolation in multiple ways. This can be compounded by feelings of embarrassment if an individual doesn't (or didn't) receive available support, or if a social/cultural stigma is associated with their condition. This is especially common among those who suffer from autism and mental health and developmental disabilities.

Obesity and lower back pain are also considered risk factors due to their ability to produce feelings of isolation and discrimination because of physical limitations. An inability to work, limited activity, and perceived stigma around these conditions can lead to further social isolation.<sup>[24] [41]</sup>

#### Contribution to Social Isolation

Health problems can be time consuming, financially straining, and otherwise stressful for an individual and/or their caregivers, potentially reducing an individual's capacity to expand or strengthen their social network. However, some adversities result in compassionate community outreach and social support, increasing social connections and resilience.

### **Aging**

#### Description

Many, sensory, cognitive and physical impairments and immobility come with age, although these disabilities are not exclusive to seniors and may have similar effects regardless of age.

The elderly people are particularly at risk of isolation due to risk factors such as physical frailty and deaths in one's family and friendship networks<sup>[13]</sup>. Other common risk factors include health problems, absent or uninvolved relatives or children, economic struggles, childlessness, and life events such retirement.

#### Contribution to Social Isolation

Health problems experienced by seniors can be both distracting and prohibitive to socializing outside the home, therefore limiting quantity of social interactions. Additionally, cognitive impairments such as memory loss and some physical impairments such as hearing loss, can reduce the quality of social interactions and social relationships.

### 3. Social Factors –

#### **Living Alone**

##### Description

In some cases, living alone can be a part of a solitary lifestyle with a very low quantity of social interactions. In most situations, living alone is an insufficient risk factor itself, but may be associated with social isolation when it is the result of adversity such as Loss of a Spouse, Domestic Violence, Societal Adversity, or other hardship.

##### Contribution to Social Isolation

Living alone becomes a risk factor in situations such as those described above due to the potential to reduce contact from one's social support network.

For instance, a 2015 study in the U.S. showed that living alone has risen to historic highs in the U.S. during the last 150 years, while the prevalence of living with roommates, boarders and other nonrelatives has fallen <sup>[42]</sup> creating a potentially heightened risk for social isolation amongst a growing population of solo dwellers.

#### **Decreased Social Network**

##### Description

When the quality or size of one's social network decreases (for any reason).

##### Contribution to Social Isolation

Decreased social networks are the core characteristic and cause of social isolation. This may occur as the result a significant relationship ending such as divorce in which mutual friends no longer support both partners, retirement resulting in less daily contact with former colleagues, or moving to a new city, especially if the transplant is a not fluent in the local language or familiar with local culture.

#### **Loss of Spouse**

##### Description

Permanent or temporary loss of a partner due to separation, divorce, death, work travel, military deployment, or otherwise. For the elderly, loss of spouse frequently occurs when one partner is placed in a nursing facility. These are often not located in close proximity to the partner remaining in the home and may be exacerbated by lack of accessible transportation.

##### Contribution to Social Isolation

Loss may result in isolation due to loneliness that can occur following such events, possibly leading to depression. Loneliness and depression can lead to unhealthy behaviors such as smoking, drug or alcohol abuse, failing to care for one's self, or becoming less socially active, all of which can result in isolation.

#### **Missing Events**

##### Description

The inability to attend events, especially those considered socially significant, either through inability such as loss of mobility or by choice.

##### Contribution to Social Isolation

Social events help form memories and provide opportunities for rich social interactions. The most harmful circumstance, considering social isolation, is missing an event due to neglectful action of another to purposefully prevent the isolate from attending. This has the potential to almost instantly create social isolation and, in some cases, has been associated with nervous shock. Some victims choose to seclude themselves from any type of future activity as a defense mechanism to avoid further emotional damage.

### 4. Abuse and Adversity –

#### **Domestic Abuse**

##### Description

Physical, emotional, social, financial, sexual, or other abuse, regardless of age, gender, or other circumstance. This includes abuse from someone within one's own family, social network, or someone outside these groups.

##### Contribution to Social Isolation

In some cases, social isolation is used as a tool by the perpetrator to control the victims by making them more dependent while reducing opportunities for the victim to escape or be rescued. All too often victims change their behavior to please their abuser and may interact with their friends and family less, or even stop communicating with them entirely.

In cases of domestic abuse, the abuse can be neglect or result in psychological damage that results in isolation. For example, if parent abuses their child, this may cause shock to the child and result in a defeatists mentality and lead the child not seeking positive social relationships nor interactions.

## **Societal Adversity**

### Description

Abusive social interactions such as rudeness, hostility, critical or judgmental treatment from others. This may be result from specific health conditions, physical or cognitive characteristics, personal beliefs, sexual orientation, etc. In some cases, this may lead to self-estrangement and social alienation.

### Contribution to Social Isolation

In many cases, people seek to distance themselves from distress caused by other members of their society. This natural desire to avoid the discomfort, dangers, or accountability may result in isolation if poor treatment is expected.

## ***5. Demographics and Other Factors –***

### **Change in Employment**

#### Description

Leaving a workplace with an established social network for any reason including a new job, being laid off, fired, or retirement. This is especially true when the person is not in control of the situation and cannot seek future employment or experiences long- term unemployment.

#### Contribution to Social Isolation

Sudden loss of income and associated financial hardship alongside psychological distress puts individuals with pre-existing lack of social support at the highest risk for social isolation due to change in employment. Loss of a schedule and/or routine in this instance may also increase the risk.

### **Gender**

#### Description

In America, men are four times more likely to suffer from social isolation than women.

#### Contribution to Social Isolation

Men's social networks are typically smaller and of lower quality than women, including the quantity of relationships with relatives and children over their lifetime. Men are also at higher risk than women of becoming socially isolated following divorce or loss of a spouse.

For both men and women, risk factors included being unmarried, and participating infrequently in

religious activities or organizations which encourage social contact.

### **Race/Ethnicity**

#### Description

Social isolation is associated with similar health outcomes across racial groups, however associated patterns are various, and there are racial and ethnic differences in social isolation among people who belong to different racial groups.

#### Contribution to Social Isolation

While social isolation's impact is similar and equally detrimental for all races and ethnicities, cultural factors play an important role. For instance, it is more likely for non-Hispanic Whites to live alone, be childless, and have limited contact with religious congregation members than African Americans and Black Caribbeans. Furthermore, being an African American or Black Caribbean female is considered protective against social isolation, but men are more likely to be married or have a romantic partner for both populations. For African Americans, residing in the South is also protective against social isolation.

### **Low Income & Low Education**

#### Description

Social isolation is associated with having low income and low education level. Although the baseline for these factors varies, a 2018 study in the U.S. found individuals with an annual income of \$15,000 USD or less are at higher risk of social isolation than those with higher income. Individuals with less than high school education are also at higher risk than those with a high school diploma or higher level of education. Lower income and education are also associated with higher levels of illiteracy which isolates people of all ages.

#### Contribution to Social Isolation

Insufficient income can preclude an individual from participating in various social activities because they cannot afford the financial requirement or because they are working extended hours to meet financial obligations. This has potential to limit the ability to expand and maintain a social support network. This prevents participation in valuable social experiences

and the ability to connect with other people, groups, or environments. Low education was significantly associated with weaker sense of belonging, leading to social isolation<sup>[43]</sup>.

### **Linguistic Capabilities and Illiteracy**

#### Description

In the United States, the likelihood of social isolation is higher for non-native English speakers, immigrants, and refugees with limited linguistic capabilities and those who are English illiterate<sup>[44]</sup>.

#### Contribution to Social Isolation

The language barrier for non-native English speakers makes an individual more susceptible to social isolation, regardless of their age due to lack of social networks and social activity. This is caused by many factors including the limited ability to obtain and understand essential information.

All of these risk factors share the ability to cause lost connections with social networks or complete prevention from maintaining or forming new relationships. While numerous strides have been made in identifying causes of social isolation and creating potential solutions to combat it, some factors and groups have still not been thoroughly researched or recognized. For example, it is unknown if the prevalence of social isolation differs between military and non-military populations. A 2018 study looking into isolation among military members found that unique experiences while serving impacted people in many different ways (i.e. related trauma or PTSD).

These risk factors are still in need of further research and demand solutions across the board from political action to improved city planning and a wide range of factors in-between. What can be confidently acknowledged is the factors leading to social isolation do not discriminate, are not going away, and can make their way into any community no matter it's social or economic status.

# Social Isolation in Rural and Urban Environs

Transect is a geographic cross section of a region used to reveal a sequence of environments. For human occupied environments, this cross-section can be used to identify a set of habitats that vary by their level and intensity of urban character - a continuum that ranges from rural to urban. As explained in the previous section, social isolation is due to many factors including geographic and environmental factors, making these risk factors and the intervention strategies vary by transect and local culture.

The following photo shows a list of transects <sup>[45]</sup> accompanied by short descriptions <sup>[46]</sup>.

## Zone Descriptions

### T1 Natural Zone

An area with little or no human impact consisting of lands approximating or reverting to a wilderness condition. This includes lands unsuitable for development due to hydrology, topography, vegetation, or special status as a protected area like a park or wildlife preserve. These areas have little or no human impact consisting of lands approximating or reverting to a wilderness condition.

### T2 Rural Zone

Sparsely settled lands in a cultivated or open state. Often these are comprised of woodlands, agricultural lands and grasslands. The typical buildings located in this zone would be farmhouses, agricultural buildings, and cabins or other isolated housing types.

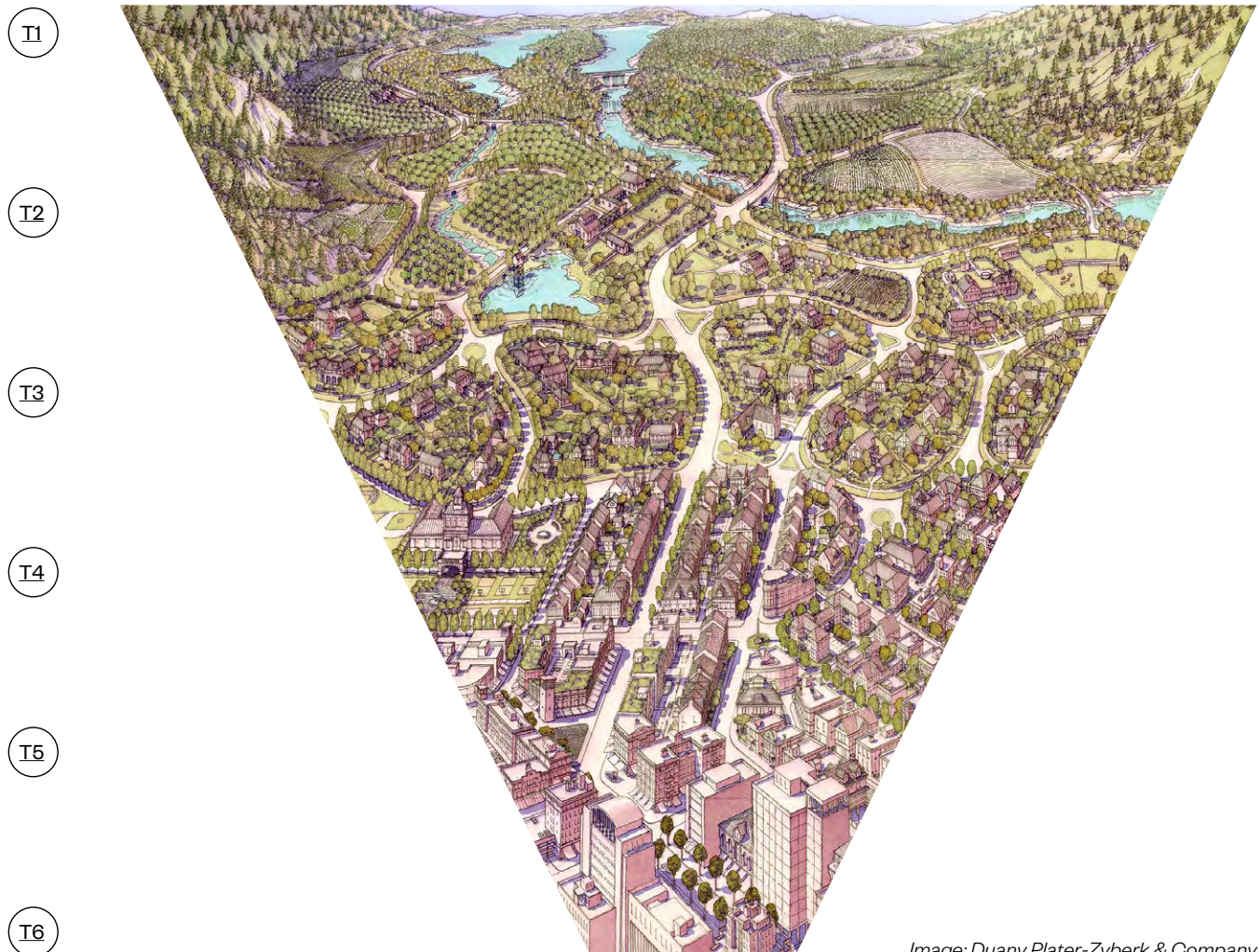


Image: Duany Plater-Zyberk & Company



### T3 Sub-Urban Zone

Low-density residential areas. Setbacks are relatively deep and plantings are natural in character. There is some mixed use in areas adjacent to higher transect zones. Homes and outbuildings are common, blocks are large, and roads can be irregular to accommodate natural features.

### T4 General Urban Zone

Mixed use but primarily residential urban fabric. A wide variety of housing types attached and detached are found in this zone. Setbacks and landscaping vary. Streets with curbs and sidewalks define the small to medium sized blocks and street connectivity is high. Streets with curbs and sidewalks define the small to medium sized blocks and street connectivity is high.

### T5 Urban Center Zone

Higher density mixed use that provide for retail offices, rowhouses and apartments. Setbacks are minimal or nonexistent and buildings are close to the Urban Center Zone sidewalks, which are wide. There is a tight street network forming small blocks and high connectivity. The urban center is often the location of traditional downtowns in many cities in Michigan, as an example.

### T6 Urban Core Zone

Highest density and height with the highest intensity and diversity of uses. Buildings are sited on the sidewalk, which are wide and there is very high street connectivity. Only the largest cities have an urban core, examples include Detroit, Grand Rapids, and Flint, Michigan.

Social isolation is most common among aging people, and according to a recent study in 2017, there are 10,000 people who reach age 65 in the U.S. every day, a trend anticipated to continue through 2030. The increasing number of older adults will be associated with heightened rates of social isolation <sup>[47]</sup> <sup>[48]</sup>.

These factors are linked to social and environmental determinants such as reliable and convenient transportation and better social opportunities. A study done in 2017 described how the consequences of neglecting these determinants can vary based on rural-to-urban transect. Research shows rural areas (just like urban areas) hold a potential for negative impact on quality of life, especially for older adults <sup>[47]</sup>.

In addition to the lack of social resources and services in rural areas, it is estimated that nearly 25% of Americans age 65 and older live in rural areas, this percentage is even higher in some states; for example, 58% of seniors in Maine reside in rural areas <sup>[49]</sup>.

Rural communities provide a higher chance of meeting a risk factor of isolation due to higher prevalence of chronic disease, higher rates of disability, lower prevalence of healthy behaviors, and a widening gap in lifespan in comparison to the nation as a whole <sup>[47]</sup>. Moreover, some of the challenges in rural areas are due to lower population density and more geographically dispersed populations, which makes creating and maintaining a comprehensive service infrastructure difficult and expensive compared to urban areas <sup>[50]</sup>. This is particularly true for easily accessible and affordable public transportation. The lack of availability leads to those in rural areas not accessing support such as medical care. This problem is exacerbated by the lack of sufficient numbers of healthcare providers in rural areas <sup>[51]</sup>.

Although some significant risk factors are more common in rural settings, urban settings pose their own threats. A paper discussing social isolation and its relationship to the urban environment concluded that social isolation is connected to urban planning decisions such as prioritizing highways and high-rise buildings over pedestrian zones and green spaces. Such trends in urbanization can be particularly problematic for those with disabilities and the elderly due to limitations such as an inability or neglect to retrofit existing buildings to accommodate mobility issues. Examples include an absence of ramps and elevators, and access to transportation, all of which pose disproportionate challenges to people with disabilities. For some, this can result in the isolate spending more time in their home than would have occurred otherwise <sup>[52]</sup>.

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## Interventions

Social isolation is a complex and serious social problem endangering a growing number of people. No single profession, organization, nor group has demonstrated they have the knowledge or resources to create and implement a comprehensive solution<sup>[47]</sup>. This section will discuss the best available research and interventions that have demonstrated a positive impact to reduce social isolation. All of these programs and services, like social behaviors themselves (including social isolation) occur within the built environment and therefore the role of design and the ability to facilitate healthy social behaviors must be acknowledged. While the authors of this paper understand the built environment cannot cause nor treat social isolation, design decisions ranging in scale from city planning to accommodating mobility and cognitive impairments can help create an inclusive environment and facilitate healthy social behaviors. Good design coupled with programs and services, can create a comprehensive solution.

Rural Aging in America: Proceedings of the 2017 Connectivity Summit, poses an important question: “What does it mean to age well in the context of contemporary society?” The answer: “Today, healthy aging is not just about living longer but about living better”. The paper continues by noting how health and quality of life are affected by a number of variables outside the common health care services delivery. For instance, “accessible and affordable housing, healthy foods, reliable and convenient transportation, social opportunities, access to affordable quality health care and community services”<sup>[47]</sup>, all of these variables are linked to social isolation as explained previously. This supports key points emphasized in a study conducted by the Glasgow Centre for Population Health in 2015 which considered social isolation to be “a part of a wider picture of changes in the nature of society and social networks”. The study calls for interventions and policy approaches that not only try to alleviate social isolation, but also look at the broader social context which produces social isolation in the first place such as neighborhood design, in order to find preventive approaches for those most at risk<sup>[53]</sup>.

Many approaches have been used to combat social isolation. First, we represent studies that address

solutions to some of the aforementioned risk factors of social isolation, supported by a number of interventions and case studies from across the world as examples from which to learn.

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## Studies with Recommendations

The causes of isolation and the most effective intervention are many, thus true assessment of social isolation must be done in person by healthcare professionals. However, there are general goals and environmental considerations healthcare professionals aim to address.

1. Increase the freedom of choice of the isolate.
2. Increase social interaction to a level acceptable to the isolate.
3. Use repetitive and recognizable strategies which are validated with the isolate and correlate to reducing isolating behaviors<sup>[54]</sup>.

Common features of successful interventions include adaptation to the specific needs of a local population and their culture, community participation projects and activities that provide the opportunity for isolates to be meaningfully involved in the activity’s development and execution, and productive engagement including interventions focused on creating opportunities for socialization and strengthening and forming new social networks<sup>[55]</sup>.

As described previously, the risk factor groupings of social isolation are Environmental Factors, Health Factors, Social Factors, Abuse and Adversity, and Demographics and Other Factors. Because social behaviors are culturally specific and vary by location, the table below presents Risk Factors alongside abstract descriptions of interventions derived from implemented examples. The intent is to provide community leaders, activists, and designers with a description of methodology capable of identifying and addressing unique needs in their community in a way unburdened by the fact some of these specific programs may not work in locations beyond where they were originally implemented; context matters. Additional information and specific examples are also provided in [\*Appendix A: Case Studies\*](#).

## *Risk Factor Intervention Examples*

### **Environmental Factors**

#### Transportation & Accessibility

Provide adequate means of transportation and a high-level of accessibility for those with economic hardship, reduced mobility, and cognitive impairments

*Appendix B.3, B.5, B.8*

#### Geographic Location

Provide services to at-risk individuals in isolated areas such as rural and sub-urban areas

*Appendix B.1, B.3, B.4, B.5, B.6, B.7, B.8*

### **Health Factors**

#### Health Issues & Disabilities

Perform an assessment of physical and cognitive health issues and provide those in

*Appendix B.1, B.3, B.7*

Two studies recommended healthcare providers assess isolation during routine patient examinations<sup>[24]</sup>; need with resources to help accommodate their condition<sup>[14]</sup>.

Two additional studies done in 2016 and 2017 emphasized this recommendation showing this assessment has clear potential to save, or extend, lives<sup>[13] [16]</sup>

A study in 2016 suggested old, frail, and reclusive people who live alone may require in-home care and specialized services such as meal delivery or social visits<sup>[13]</sup>.

#### Aging

Raise awareness and provide opportunities for social contact and companionship.

*Appendix B.1, B.2, B.4, B.5, B.6*

A study in 2016 suggested for relatively healthy people at risk for isolation, (e.g. widows and widowers, older single men, and older single lesbian, gay, bisexual, and transgender people who live alone), a warning about the danger of isolation and simple encouragement to be socially active may help promote social interaction<sup>[13]</sup>

#### Sensory and Cognitive Impairment

Provide medical equipment/devices and/or services to individuals with disabilities.

For some people a device, such as a hearing aid, can offset the negative effects of sensory impairment, such as hearing loss. In this example, the outcome is restorative of the individual's capacity for verbal communication and restores potential for social interactions in support of a robust social network<sup>[11]</sup>.

### **Social Factors**

#### Living Alone

Provide opportunities for social contact and companionship.

*Appendix B.1, B.2, B.4*

A study in 2016 concluded indoor gardening programs might decrease loneliness while improving socialization and life satisfaction, irrespective of factors such as age, finances, education, and any level of prior gardening experience<sup>[56]</sup>. The study also concluded that activities such as playing Nintendo Wii improve participant well-being, social connection, and enjoyment as shown through decreased loneliness and increased likelihood of positive mood.

#### Decreased Social Network

Provide opportunities for increased social contact and companionship, and Peer support services.

*Appendix B.1, B.4, B.6, B.7, B.8, B.9*

A study in 2011 concluded the most effective interventions were those developed to offer social activity and/or support within a group format<sup>[57]</sup>.

A 2016 study confirmed this conclusion and added that a reminiscence therapy intervention successfully reduced both social isolation and depression when facilitated by well-trained staff offering support and social interaction through sharing and the establishment of common ground<sup>[56]</sup>.

In addition, Peer support services are a successful practice as they are delivered by individuals who have common life experiences with the people they are serving. People with mental and/or substance use disorders have a unique capacity to help each other based on a shared affiliation and deep understanding of the experience. In self-help and mutual support, people offer this support, strength, and hope to their peers, which allows for personal growth, wellness promotion, and recovery.

Research has shown that peer support facilitates recovery and reduces health care costs. Peers also provide assistance that promotes a sense of belonging within the community. The ability to contribute to and enjoy one's community is key to recovery and well-being. Peers also provide the development of self-efficacy through role modeling and assisting peers with ongoing recovery through mastery of experiences and finding meaning, purpose, and social connections in their lives <sup>[58]</sup>.

#### Loss of A Spouse and Depression

Provide opportunities for social contact and companionship.

A study in 2012 revealed that widows who had more social contact and interactions had fewer depressive symptoms <sup>[59]</sup>.

#### Missing Events

Provide accessible means of communication and transportation.

*Appendix B.3, B.5, B.6, B.9*

A study in 2005 recommended involving older people in planning, developing and delivering social activities and expected this to be an effective approach to reduce isolation <sup>[60]</sup>.

### **Abuse and Adversity**

#### Domestic Abuse

Increase awareness and provide resources and refuge for victims.

Public health nurses can play an important role in the detection of domestic violence. In addition, both women and men, can be provided with information about domestic violence resources and get referred to services that can provide help in such cases <sup>[61]</sup>.

#### Societal Adversity

Increase awareness for purposes of reducing discrimination.

*Appendix B.2, B.9*

### **Demographics and Other Factors**

#### Unemployment

Provide opportunities for social contact and interaction at low or no cost for participation.

*Appendix B.1, B.8, B.9*

#### Gender

Increase awareness of the importance of familial bonds among men.

A study presented the following suggestions to increase social connectedness in male gender:

Help men build resilience via programs and training for those in danger of becoming disconnected (e.g.: recently unemployed). This has dual benefits – reducing psychological distress, and increase the ability to maintain and grow relationships through tough times.

Help guide men into a variety of social channels. This way, men can initiate new relationships with like-minded individuals over a shared or common purpose, which also provides the relationship 'breadth' from which 'depth' can be built.

Helping men initiate, conduct and 'own' conversations concerned with personal and emotional issues. Focusing this on how to offer support (while subtly demonstrating acceptable ways of asking for support) is likely a more powerful approach.

Reminding men (and the women in their lives) that men need social connections. Public acknowledgement of the importance of social connectedness, the need to devote some time to improving and developing male-male relationships.

Programs and tools to help men develop stronger, more robust community networks <sup>[62]</sup>

#### Race/ethnicity

Focus on varying patterns of social isolation across communities from different races, ethnicities, and cultural backgrounds.

Research looking into social isolation in Cambodian refugee communities in the US discusses the benefits of intergenerational aid provided by those in the younger generation to their elders, and vice versa. This aid includes assisting elders to socialize outside of their home, encouraging physical activity, and driving elders to health appointments. The elderly on the other hand may also provide valuable assistance to the younger generation by providing care to grandchildren that in turn reduces their own social isolation <sup>[63]</sup>.

## Low Income & Education

*Appendix B.1, B.8, B.9*

## Linguistic Capabilities and Illiteracy

Provide opportunities for non- traditional education and social support accessible to those in need.

A study from 2018 notes the importance of reducing [international] student social isolation as it may enhance the quality and well-being of future health professionals and scientists <sup>[44]</sup>. Another 2018 study suggests providing opportunities to practice English in a safe environment [most applicable to foreign students, immigrants, and refugees] is a key factor in overcoming social isolation <sup>[64]</sup>.

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## Strategy

Politicians, community groups and advocates, as well as designers including urban planners, landscape architects, architects, and interior designers make decisions that support Building Community by facilitating social connections to promote resilience against adversity. The strategies below were produced following review of available scientific evidence describing strategies to combat known risk factors of social isolation.

### **Assessing Social Isolation**

The first step, regardless of location, is an assessment of social isolation in the community to be served. The two most common measures are the Lubben Social Network Scale (LSNS) and the Berkman-Syme Social Network Index (SNI). Both of these tools essentially measure the amount of contact one has with others. It is recommended social isolation assessment be repeated after the project is finished and after time for the suggested interventions to make and sustain their impact. It is further recommended the results of the measurements and implemented program be made publicly available and include insights such as a description of process as well as realized and unrealized opportunities.

### **Enabling the Role of Church**

This paper is written as part of a land planning effort for a parcel owned by a Christian church in Dallas, GA which is located in the Southern United States where

approximately 76% of adults self-identify as Christians. Because of this prevalence, we are discussing the role of the Church and in no way intend to limit or imply any information in this paper as less applicable to other religious or spiritual groups.

Religious or spiritual affiliations offer an important social connection and give great meaning. Assuring isolates can connect with religious support may help them find new meaning for their life or changing circumstance, such as the loss of a loved one or coping with illness. This may also provide connection with other people who share common, significant beliefs and are motivated to provide or facilitate support that strengthens resilience against adversity.

To combat isolation, the outreach and social work of religious organizations may include in-home visitation, arranged social outings, or fellowship through other means of communication such as phone calls and emails. This approach need not be a new or stand-alone effort. Increasing accessibility to existing programs and services by providing transportation services is a valid strategy.

Religious groups are well positioned to identify the needs of their congregation and local community, as well as leverage the human resources within their network to assist in developing and implementing needed outreach programs. Participating in religious communities and activities enriches the social life of the isolate and may provide needed help and services they may otherwise not receive <sup>[64]</sup>. Additionally, the Church has the ability to mobilize large number of people, creating the opportunity to fulfill other roles to help combat isolation.

### **Designing for Health**

To reduce risk factors related to physical and mental health problem, we recommend including better access to health and social care services including emergency care and mental healthcare. This may include dedicated or multi-use space capable of hosting programs to support resilience, coping skills, and the development of feelings of contentment despite adversities <sup>[65]</sup>. We recommend collaborating with non-designers such as psychologists, social workers, and clinicians, in addition to practicing evidence-based design to improve both physical and mental well-being.

In addition, we highly recommend working and partnering with local Peer Support Community Centers. Peer support is acknowledged as vitally important by participants when considering social isolation interventions due to a shared sense of identity and life experiences to help others discover a meaningful role to play in their community. This is especially relevant to elder veterans <sup>[66]</sup>.

### **Designing for Mobility**

Accessibility for displaced people and those with limited mobility, such as refugees and seniors, is a vital consideration. These populations have the same access as those in good health to travel outside their home and participate in activities in an inclusive social and physical environment. This can be facilitated through design by providing adequate architectural accessibility such as those described by the Americans with Disabilities Act, and programs for mobility such as transportation or mobile services to improve social integration <sup>[50]</sup>. An example might be in the form of volunteer transportation services by those who have private vehicles, acknowledging the importance of effective and diverse methods of communication <sup>[65]</sup>.

### **Designing for Communication**

We recommend identifying weaknesses regarding communication among isolated populations and supplementing existing systems with more effective strategies. This may include soliciting for participation in activities, raising awareness of available resources, or architectural interventions such as improved acoustics to increase intelligibility in spaces where existing programs occur. In some situations, this may mean a new use for an existing space or building a new space for activities which improve socialization. For example, providing a space where youth can play video games will facilitate social connections with their peers; a place for the elderly to share memories or participate in special events with younger members of the community can increase their sense of belonging. We also support leveraging existing business and organizations, such as those described in *Appendix B.8 Social Care Farms*.

### **Designing for Efficient Use of Resources**

When considering unmet needs and strategies to address them, finding symbiotic relationships between existing and needed programs can have

great benefits. Pairing often unexpected populations, such as postal delivery workers and isolated seniors as described in Appendix A.1 has the potential to reduce cost and effort associated with delivering service or reaching people in need and improve an effort's accessibility or catchment area <sup>[50]</sup>.

### **Designing for a Community**

Volunteer and community-based initiatives can successfully help to improve social integration of marginalized populations, such as those who are experiencing known risk factors for social isolation including the elderly. Such initiatives can accomplish many things including increase solidarity and better access to healthcare, communication, food, education, and transportation. In addition to meeting needs, they can result in increased positive feeling of the isolate when receiving volunteer services from members of their community when compared to services of a transactional nature. We also support the concept of non-traditional familial living as described in Appendix *B.2 Pairing Senior and Single Mothers for Mutual Benefit* and *B.4 Foster Families*.

### **Designing for the Natural Environment**

While the focus of these guidelines is on sustainable human social behaviors, we recommend this be considered as a complement to designing for environmental sustainability. In addition to many prolific and available systems such as LEED, and Living Building Challenge, we recommend review of the World Health Organization's "Global Age-friendly Cities: A Guide" <sup>[54]</sup>.

# Conclusion



The influence an environment has on health of both individuals and communities can be seen across multiple touchpoints and facets of everyday life. While numerous factors contribute to social isolation, the impact of the built environment is one which should be heavily considered from initial planning to implementation.

Social isolation continues to grow across the United States and the recent rise in prevalence further emphasizes the need for intervention and impactful change. Action begins with properly defining social isolation as what it truly is: a public health crisis. By properly defining the problem, more emphasis and effort can be placed on implementing solutions.

The definition of health does not end with one's physical condition. The built environment can influence everything from connectedness to mental well-being and numerous other factors contributing to overall

health of an individual or community. This fact is often neglected in conversations across industries and is in crucial need of being brought to the forefront.

As those responsible for designing and creating built environments around the world, it is a responsibility of the design community to educate ourselves on the risk factors and impacts of social isolation. To contribute to the solution, we must first understand why and how the problem exists and persists. Considerate design can play an important role in changing communities and contributing to increased health. Our hope is to shine light on this issue and work as a community to take the correct steps and considerations to play our part in proactive solutions.

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## Appendix A: Extended Definitions

To understand problems affecting health, it is essential to first understand what is health and what are its determinants. Health is defined by the Constitution of the World Health Organization (WHO) as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. The WHO’s constitution also states that it is a substantial right for every human being to enjoy the highest possible standard of health, without any kind of discrimination <sup>[1]</sup>. A person was traditionally considered physically healthy if he or she was not suffering a serious illness, however, a study done in 2017 noted that recent innovations in medical sciences made human life-span longer and expanding the definition of Physical Health to include everything ranging from the absence of disease to fitness level <sup>[67]</sup>. Mental Health is defined by WHO as “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to her or his community” <sup>[68]</sup>. Social Health is not defined by WHO but can be explained as an individual’s satisfaction with their social statuses in society, their system of social relationships and networks, financial position, and living circumstances. This means the contrast of social health can be considered as a state of social illness and social neglect <sup>[2]</sup>. Understanding the different sides of health paves the way toward a better understanding of the terms used and disused in this report.

In a recent systematic review done in December 2017 the researchers concluded the following definitions for many social-science-related terms that we used in this paper. We adopt these definitions as they are applicable in the 21st century. This review considers objective and subjective measures to define Social Isolation as an “inadequate quality and quantity of social relations with other people at the individual, group, community, and larger social environment levels where human interaction takes place” <sup>[3]</sup>. Risk Factor is defined by

WHO as “any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury” <sup>[4]</sup>. Lower quality and/or quantity of social interactions and relationships are major risk factors for social isolation, and that all human interaction levels can be targets of interventions and improvement to counter social isolation. While this makes social isolation a problem to the social aspect of health, the paper will later discuss how social isolation actually is also a risk factor for morbidity and mortality <sup>[69]</sup>.

Although loneliness and alienation are not the topic of this paper, it is necessary to distinguish them from social isolation. Loneliness is defined as “a painful subjective emotional state occurring when there is a discrepancy between desired and achieved patterns of social interaction. It is thus conceptualized as an entirely subjective state, not necessarily dependent on the quantity of someone’s social relations” <sup>[3]</sup>. Alienation is “the feeling of disconnectedness from social settings, such that the individual views his/her relationships from social contexts as no longer tenable” <sup>[3]</sup>. Loneliness will be largely unused in this paper as it is a subjective state and not directly related to the more objective measures of one’s social network.

In simple terms, loneliness and alienation are an individual’s perception of the inadequacy of their personal social connections. These may be experienced concurrently to the more objective condition of social isolation but are not necessarily correlated. For example, a widow/widower may experience a deep feeling of loneliness immediately following the loss of their spouse while having ample quantity and quality of social relationships from a purely objective perspective.

Social Interaction refers to “a process of reciprocal stimulation or response between two people. It develops competition, interaction, influences social roles and status and people for social relationships” <sup>[70]</sup>. These



interactions form a Social Relationship defined as “The sum of the social interactions between people over time. This can be a positive or a negative relationship. Momentary social interactions can be described in terms of parental care, dominant- subordinate or aggressive-fearful interactions etc.” [5].

This leads to a Social Network which refers to “an individual’s connections among a group of people, the characteristics of which are used to interpret the social behavior of people involved” [3], or simply, the relationships we have with other people and groups in society [6]. While these are human social behaviors, it is important to acknowledge these occur within the Built Environment which includes our homes, schools, workplaces, parks/recreation areas, business areas, and roads. It extends overhead in the form of electric transmission lines, underground in the form of waste disposal sites and subway trains, and across the country in the form of highways. The built environment encompasses all buildings, spaces and products that are created or modified by people. It impacts indoor and outdoor physical environments (e.g., climatic conditions and indoor/outdoor air quality), as well as social environments (e.g., civic participation, community capacity and investment) and subsequently our health and quality of life [7].

Inclusive environment “is one in which members feel respected by and connected to one another. All members contribute to the formation of the group’s goals and to the realization of those goals. Inclusivity moves us away from simply the physical integration of people to the integration of people’s experiences, knowledge and perspectives” [71]. In an inclusive environment, “all users, whatever their abilities, are able to carry out their day to day activities comfortably, effectively and safely without being restricted by the poor design, maintenance or management of the built environment”. According to this, the principles of Inclusive Design “aim to accommodate the broadest range of bodily shapes, dimensions and movements, in the belief that designers and manufacturers should ensure that buildings, products and services address the needs of the widest possible audience. A key outcome for 14 inclusive design should therefore be to both alleviate environmental pressure and architectural disability, and also to achieve a greater measure of social equity and justice” [72].

As social isolation is attributed to inadequate quantity and quality of contact with other people, we also introduce the definition of Social Connectedness which is “a short-term experience of belonging and relatedness, based on quantitative and qualitative social appraisals, and relationship salience”, when the appraisals involve “the subjective satisfaction with one’s social situation” and relationship salience is “thinking of others and the feeling of being together outside of social contact” [8].

The following definition combines both social isolation and social connectedness; it starts by defining Belonging as “a multidimensional social construct of relatedness to persons, places, or things, and is fundamental to personality and social well-being”. Then considers belonging to be equivalent to connectedness, which makes Social Isolation “the distancing of an individual, psychologically or physically, or both, from his or her network of desired or needed relationships with other persons. Therefore, social isolation is a loss of place within one’s group(s)”. Adding that isolation may be voluntary or involuntary [54]. This more experiential definition, as compared to the more objective and quantitative definition provided earlier, stands to show the complexity of this condition. All of these social behaviors, healthy and disordered, operate within a larger evolving society with hyper-local cultural nuance, modern adversities such as obesity and cancer, and potentially disparate physical and digital societies.

To counter adversity, a person needs resilience. An interdisciplinary study in 2014 concluded that one final definition for it can’t be made as there are many types of resilience depending on context. Instead, the study presented various definitions of resilience that were derived from experts in many areas of science, for instance: Resilience was defined as “a stable trajectory of healthy functioning after a highly adverse event; a conscious effort to move forward in an insightful and integrated positive manner as a result of lessons learned from an adverse experience; the capacity of a dynamic system to adapt successfully to disturbances that threaten the viability, function, and development of that system; and a process to harness resources in order to sustain well-being” [73], while Psychological Resilience is defined as “the ability to successfully cope with a crisis and to return to pre-crisis status [e.g. pre- crises level of

social connectivity] quickly” [74]. Resilience exists when the person uses “mental processes and behaviors in promoting personal assets and protecting an individual from the potential negative effects of stressors” [75]. Social Resilience is the ability to engage in ‘Social Interactions’ in a ‘Built Environment’ where adversity has been previously experienced whereby the level of interaction is on par with what was experienced before the adverse effects of interactions were introduced.

The main adversity considered in this paper is social isolation itself, which is a complex condition that can be the result of a variety of circumstances. Because of this, we cannot adopt any single definition of resilience. In contrast, we will take many concepts of resilience into consideration in attempt to develop a built environment that facilitates social relationships that results in resilience to adversity as many forms of diversity.

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## Appendix B: Case Studies

### **B.1 New Use of Existing Postal Service Network**

Primary Risk Factors: Geographic Location, Health Issues & Disabilities, Aging, Living Alone, Decreased Social Network, Unemployment

A free service organized by the French postal service where postmen pay preventive visits to at-risk or isolated older and/or disabled persons during mail delivery.

This program focuses on disabled adults, aged 60 or older, who are unable to work or are recipients of in-home assistance, by utilizing the French postal service's extensive network in rural areas. They used their existing network of postmen who have daily connections with residents, including the most isolated, which can be considered clever and cost-effective strategy. This service is free for seniors and helps to relieve caregivers in their work, to reassure families, and improve the well-being and safety of older persons, especially those living alone <sup>[50]</sup>.

### **B.2 Pairing Senior and Single Mothers for Mutual Benefit**

Primary Risk Factors: Aging, Living Alone, Societal Adversity, Low Income

An experimental program in Japan was launched around 2011 that voluntarily paired two different at-risk demographics for mutual benefit. The program allowed seniors who were interested in renting space in their house after their own families had moved out with single mothers in search of affordable housing and also, perhaps, a live-in babysitter <sup>[55]</sup>.

### **B.3 Village Service**

Primary Risk Factors: Transportation & Accessibility, Geographic Location, Health Issues & Disabilities, Missing Events, Low Income

The program in Austria is an initiative in rural areas that

aims to lessen gaps in the regional support structures through volunteer work. They offer free services intended to complement (not replace) other available care and commercial services. The services are designed to provide aid in daily life such as driving older persons to the doctor, assistance with grocery shopping, or simply social visits.

Volunteers receive training and counselling if needed, e.g. driving courses or how to deal with older people with dementia. This initiative connects the community, combats isolation of older people and fosters a sense of solidarity and mutual assistance in the community <sup>[50]</sup>. ➔

### **B.4 Foster Families**

Primary Risk Factors: Geographic Location, Aging, Living Alone, Decreased Social Network, Low Income

In rural and remote parts of the Russian Federation, familial forms of living arrangements for older people have gained popularity. When living with family is not an option, foster families take in older people and provide assisted living services including meals, laundry and a place to sleep. This form of social care is a middle ground between living at home and institutional care and is intended to extend the stay of older people in a familial social environment. Often, the foster families are former neighbors and in return, they receive monetary compensation and training courses <sup>[50]</sup>.

### **B.5 Rural Transport Services**

Primary Risk Factors: Transportation & Accessibility, Geographic Location, Aging, Missing Events

The Lincolnshire County Council in the UK introduced a localized bus service designed to connect isolated rural areas to the main transport network. The service is driven by local demand, with the needs of the rural communities at the center of planning. There are local buses running at frequent intervals which are fully accessible to those with mobility issues. In

addition, passengers can pre-book an auxiliary service, CallConnect, which will collect them at a convenient location (including their home for those with disability) and bring them to a point where they can access other transport <sup>[50]</sup>.

### **B.6 Village Meeting Point**

Primary Risk Factors: Accessibility, Geographic Location, Aging, Decreased Social Network, Missing Events, Societal Adversity

A group of older people in the Danish village of Idestrup renovated a former shop and transformed it into a meeting place for the whole community, in particular for older people, as a solution to not having a place to socialize in their community.

The meeting point offers a range of services and activities, for example a coffee shop, a computer lab where basic skills are taught, exercise and fitness rooms, a second-hand shop, meeting rooms and a kitchen. The refurbished building and offered activities have helped to modernize the village and make it more socially connected, thereby promoting active ageing and connecting isolated older people in the village with their community <sup>[50]</sup>.

### **B.7 Professional Working Weekend**

Primary Risk Factors: Geographic Location, Health Issues, Decreased Social Network, Low Income, Low Education

The Red Cross of Serbia organized working weekends in which a variety of professionals dedicate one weekend to supporting rural communities in their municipality.

The offered activities include health check-ups and health advice related to preventive healthcare and frequent health problems for seniors. This is a particularly good example for how limited resources in rural areas can be overcome to improve access to healthcare and social services <sup>[50]</sup>.

### **B.8 Social Care Farms**

Primary Risk Factors: Geographic Location, Decreased Social Network, Unemployment, Low Income, Low Education

Social care farms deliver social care services in rural areas where public care services are often non-existent, inadequate, inaccessible or of poor quality. People with social care needs participate in the agricultural work, supervised by the farm owner or a family member who has received training or by professional care staff. They take part in activities such as caring for animals, woodworking, or agriculture.

The combination of these activities and the associated socialization contributes to the diversification of the rural economy and provides new sources of income and employment for isolates and the rural community which helps integrate care in society <sup>[50]</sup>.

### **B.9 Teaching Computer Skills with Mobile Labs**

Primary Risk Factors: Transportation & Accessibility, Decreased Social Network, Missing Events, Societal Adversity, Unemployment, Low Education

Despite the recent increase in studies, there is still little evidence to show internet effects on social isolation and loneliness <sup>[76]</sup>.

However, the Saskatoon Public Library created a mobile computer lab to teach seniors in the community the basics about computers so they can have access to basic information found on the internet and better communicate with loved ones.

Many seniors often do not leave the house for a variety of reasons. Having the course come closer to them meant that they did not have to travel as far to attend classes. A mobile computer lab houses laptop, a projector and wireless internet all in suitcases. Seniors were hired as teachers and teach basic skills including how to use a mouse and desktop, to more advanced things like use of specific software including Microsoft Word, Facebook, Skype and the internet web browsers. Before the mobile lab existed, only those who could attend the classes at the library were able to learn how to use a computer <sup>[50]</sup>.

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Cognitive<sup>o</sup>  
Design

# Building Community

Social Isolation and the Built Environment