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SCHREYER HONORS COLLEGE

DEPARTMENT OF ARCHITECTURE

Forgotten Keys: Unlocking a Community Framework for a Lasting Impression on Those Who [We] Forget
CARA TRETTEL
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Reviewed and approved* by the following:
Darla Lindberg
Professor of Architecture
Thesis Supervisor

Orsolya Gaspar
Assistant Professor of Architecture
Honors Adviser

* Electronic approvals are on file.

ABSTRACT

This project provides an example framework for how to design our cities and communities to be truly inclusive. Dementia is one of the leading causes of death amongst elderly persons in the U.S. and as it is associated with older age, its prevalence will increase as longevity increases. This work argues that there is a need to design our communities for aging in place to be possible despite developing such a condition. To accomplish this, I have created a framework for defining and implementing parameters that compose a healthy and inclusive community which promotes longevity alongside quality of life in a way that is applicable and accessible to all. These parameters draw from the work of Dan Buettner and his defined "Blue Zones," the principles of Universal Design, wayfinding strategies, and dementia villages to create a community where residents are able to age in place, maintaining their independence as they age in an environment which promotes longevity and quality of life.

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Overview

Sub-Chapter 1: Project Narrative

This project will promote a framework for defining and implementing parameters that define a healthy and inclusive community which promotes longevity alongside quality of life in a way that is applicable and accessible to all. Broadly, this project will draw from existing works on longevity, healthy living, and accessibility to demonstrate how to design our communities to allow senior members of our society to maintain their independence and stay connected despite developing conditions like dementia which will continue to rise in prevalence alongside longevity. The framework can be applied to larger scales at the city and greater community level to encourage a more accessible world in an age of longer living.

Sub-Chapter 2: Project Summary

In this project, I aim to create an example framework for how to design our cities and communities to be truly inclusive. Our communities are currently arranged so that as one ages, there is no longer a space for them. Senior members of our society are being sent off to nursing homes, and other care facilities, and forgotten. This is especially true in the case of those suffering from dementia. Dementia patients make up well over half of nursing home populations (Davis & Weisbeck, 2016). These care facilities are not made with their specific condition in mind, leading to increased anxiety and distress for the patients (ibid.). This work argues that everyone has a right to belong and that communities should be designed to protect and care for the most vulnerable members of its population while encouraging them to experience fulfilling lives despite chronic conditions. To accomplish this, I have created a framework for defining and implementing parameters that compose a healthy and inclusive community which promotes longevity alongside quality of life in a way that is applicable and accessible to all. These parameters are based on the work of Dan Buettner and his defined "Blue Zones", and the principles of universal design. Additionally, this work is drawing from the precedent of "dementia villages" to create a neighborhood at the heart of this community where those with dementia will have the ability to continue participating in daily life in a safe and controlled environment that they are familiar with and able to easily navigate through the implementation of wayfinding strategies. The end product is a community where residents are able to age in place, maintaining their independence as they age in an environment which promotes longevity and quality of life. The legacy of this work aims to promote designing with an implicit care for those with dementia in a similar manner to how we design with the care of children in mind, while simultaneously destigmatizing the condition and treating it as a normal part of aging.

Sub-Chapter 3: Specific Aims

Dementia is one of the leading causes of death amongst elderly persons in the U.S. and as it is associated with older age, its prevalence will increase alongside life expectancy which has risen steadily and significantly across all regions, leading to a large aging population that we do not currently have the infrastructure to support (Gorina, Hoyert, Lentzner , & Goulding, 2006), (Dattani, Rodés-Guirao, Ritchie, Ortiz-Ospina, & Roser, 2023). This is due not only to our societal norm of placing seniors in nursing homes that are ill-designed to meet their needs, especially the needs of those with dementia who comprise the majority of patients in these facilities, but also because our communities lack accessibility features to support its residents as they age (Davis & Weisbeck, 2016). This proposed framework aims to combine existing works on longevity, healthy living, and accessibility to demonstrate how to design our communities to allow senior members of our society to maintain their independence and stay connected despite developing conditions like dementia. This approach seeks to serve as a model for how to transform cities and communities to promote healthy living and accessibility.

This approach leverages the work of Dan Buettner and is defined "Blue Zones" – which offers nine commonalities found amongst regions with large numbers of centenarians who live active, rewarding lives in their advanced age – along with the principles of universal design and wayfinding strategies. Existing "dementia villages" like Hogeweyk serves as a model for creating a neighborhood at the heart of this community to provide care for its residents with dementia while allowing them to remain embedded in their communities and to maintain their independence. The knowledge found in these sources is compiled into this proposed framework for healthy and accessible community making and is applied in practical and defined measures.

Specific Aim 1. The legacy of this work aims to promote designing with an implicit care for those with dementia in a similar manner to how we design with the care of children in mind, while simultaneously destigmatizing the condition and treating it as a normal part of aging.

Specific Aim 2. Define parameters for healthy living and accessible design and develop practical strategies for applying these parameters to influence the design of cities and communities.

Specific Aim 3. Design a community which utilizes these parameters and strategies to create a community model that allows residents to age in place while maintaining their independence and their community connections, while receiving the medical care they need.

Chapter 2
Dementia

Sub-Chapter 1: Dementia Villages

In 1993, Yvonne Van Amerongen, a staff member at Hogeweyk nursing home, located just outside of Amsterdam, received a phone call informing her that her father had suddenly passed away from a heart attack (Mars & Renault, 2023). One of the first thoughts that crossed her mind was relief that he never got to be in a nursing home, followed by disgust that she could think such a thing as someone in the management of one. This radical sentiment was shared by other members of Hogeweyk's staff, leading to drastic architectural and programmatic changes to the facility and resulting in the creation of the world's first dementia village.

The Hogeweyk dementia village is based on a balance of safe design and controlled risk (Haubursin, 2022). The residents are able to maintain their independence and to live normal lives while receiving the care they need. Its unique set up fundamentally varies from that of a typical nursing home. In this care model, the residents live in group homes with six to seven residents per household (Mars & Renault, 2023). Each resident has their own room to fill with memorabilia from their life. Rather than giving each resident their own bathroom, as is typical in a nursing home design, the residents share as they would in a home. These group homes are arranged into neighborhoods, each with its own distinct courtyard to assist with wayfinding. The community has restaurants, a grocery store, a cinema, and a barber shop. These amenities are intentionally spread out to encourage organic physical activity in replacement of a dedication physiotherapy room. Residents take part in many group activities and clubs to connect with those with similar interests and to wake up each day with a sense of purpose. There is a scale of private to public interactions that exist within this community: the bedroom is for private escape, and socialization can be done in your group home's living room; the courtyards within distinct neighborhoods; or within

the community (Haubursin, 2022). This allows the residents to have independence and to make their own choices.

Staff at Hogeweyk are instructed not to think of themselves as authority figures, but to assist residents and work to ensure their happiness (Mars & Renault, 2023). Both residents and staff wear their normal street clothes in this facility to maintain the residents' dignity and promote normalcy. Residents are able to maintain their ability to accomplish activities of daily living by completing household tasks. They take turns going to the grocery store each week and take part in meal planning. A washer and dryer are available in each household to allow residents to do their own laundry as long as they are able. Staff members only shift from supporting residents with a task to taking over after they are unable to complete it themselves.

Since the Hogeweyk shifted from a traditional nursing home to a dementia village in 2008, it has seen a decrease in the number of residents on antipsychotic medications (Haubursin, 2022). In 1993, approximately half of patients were on antipsychotic medications; today, only 8-10% of patients take these medications (ibid.). Studies conducted on the success of dementia villages have found that these small units with deinstitutionalized environments and less crowding prompted a decrease in behavioral changes amongst the residents; that their higher levels of daylight lighting were found to reduce behavioral disturbances and improve special orientation; and that the outdoor gardens within each residential neighborhood reduces agitation and improves quality of life (ibid.).

Dementia is the seventh leading cause of death and one of the major causes of disability and dependency amongst older people globally (WHO, 2023). Alzheimer's, the primarily form of dementia, currently affects 6.9 million Americans, and is expected to affect 13 million by 2050 (Alzehimer's Association, 2024). A common symptom of dementia is perception loss, which leads to misidentifications,

misinterpretations, hallucinations, and difficulties wayfinding (Alzheimer's Society, 2024). Nursing home environments are not made to assist patients with perception loss; their long similar looking hallways prevent patients from finding their residence and from fulfilling their basic needs (Davis & Weisbeck, 2016). In the dementia village model, wayfinding and perception loss assistance are baked into the design from its conception. Its design discourages antipsychotic usage, behavioral issues, and confusion in orientation, while promoting a higher quality of life through independence, natural movement, and socialization. It is necessary to shift to a model that is better designed to support the specific needs of dementia patients, especially as a larger percentage of our population joins this demographic.

Sub-Chapter 2: History of Care

Western cultures sent those with dementia to poor houses and jails for centuries, before being moved to public mental hospitals in the 19th century (Mars & Renault, 2023). These hospitals were designed with the goal of containing, not providing care. They were notorious for poor living conditions; patients suffered from overcrowding, poor hygiene, ill-treatment, neglect, and abuse (Fakhoury & Priebe, 2007). The deinstitutionalization movement in the 1970s brought the closure of public mental hospitals and the transition of those patients to nursing homes (ibid.). These facilities demonstrated the same harshness as their predecessor. Staff routinely utilized physical restraints, antipsychotics, and sedatives to deal with patients (Mars & Renault, 2023).

Nursing homes evolved from rest homes who took care of the worthy poor in the late 19th century (Gillick, 2017). The Old Age Assistance Program established under the Social Security Act of 1935 encouraged hospitals to send their chronic cases to rest homes, allowing them to receive government subsidies. By the 1950s rest homes had become fully institutionalized with the introduction of government regulations. The Hill-Burton Amendment in 1954 granted public money to build nursing homes, prompting further government regulations. The Health Safety Officials appointed to create these regulations recreated the hospital settings they were familiar with. This pseudo-hospital setting is what dementia patients entered into from the closure of public mental hospitals.

Present day nursing homes are facing numerous challenges. Although quality measures have been put in place and have been improving over time, reoccurring concerns prevail as a serious issue (Harrington, Wiener, Ross, & Musumeci, 2017). Such concerns include staffing levels, abuse and neglect, unmet resident needs, quality problems, worker training and competency, and lack of integration with medical care. Additionally, many nursing homes continue to fail to meet all federal quality standards. 93% of

American nursing homes received at least one inspection deficiency citation in 2015 (ibid.). This statistic demonstrates a lack of significant improvement over time by showing comparable results to those found in 2005. Of those nursing homes, 21% received deficiencies for serous quality violations relating to potential or actual harm or jeopardy of residents in their care.

Sub-Chapter 3: A Change in Perception

Dementia was once viewed as senility. In some ways, this was harmful; it is the reason that so many dementia patients were kept in poor houses and jails for centuries. In other ways, it made senility a normal part of aging, with the mind being the first part of the body to deteriorate. Dementia was a rarely used term up until the 1970s (Mars & Renault, 2023). At this time the deinstitutionalization movement was taking place, bringing dementia patients out of public mental hospitals and into nursing homes. A few years later, Dr. Robert Butler was launching a fear campaign for dementia and Alzheimer's.

Butler was appointed as the first director of the newly formed National Institute on Aging (NIA) in 1976 (Columbia University Irving Medical Center, 2022). The creation of this department of the National Institutes of Health (NIH) was a controversial decision. Many officials and directors of other departments considered it to be a waste of funds to create duplicate research on aging, strokes, and heart disease. Butler was eager to prove the NIA's worth. His methodology for doing so was to make Alzheimer's a household name. He described Alzheimer's as a painful and devastating disease that accounts for half of all people in nursing homes (Mars & Renault, 2023). He proclaimed that Alzheimer's has not been solved due to inadequate investment in a scientific solution. With these powerful statements to members of the press, came an influx of funding. Federal funding for Alzheimer's research went from 4 million in the mid-1970s to 400 million by the year 2000 (ibid.). This campaign was successful in fulfilling Butler's mission, but it brought drastic inadvertent consequences.

The campaign brought awareness for the disease by sharing tragic stories of loss and grief. Alzheimer's became the disease of the century and a "dread disease." A stigma developed where those with the condition were seen as "shadows," "vegetables," and "hallow versions of their former selves" (Mars & Renault, 2023). The victims were thought of as something less than human because they were no longer

the person they used to be. They are not thought of as being capable of having a meaningful sense of self, and thus are less deserving of dignity and comforts. Another impact of Butler's campaign is that nursing homes were treated as a half-way technology; a place to store the patients until a cure is found through scientific developments. With the entirety of the narrative focused on the need for a cure, little thought was given to how to care for those with the condition. The project being proposed in this work aims to reverse the inadvertent effects of Butler's campaign by promoting designing with an implicit care for those with dementia in a similar manner to how we design with the care of children in mind, while simultaneously destigmatizing the condition and treating it as a normal part of aging.

Chapter 3
The Makings of a Healthy, Inclusive Community

Sub-Chapter 1: Blue Zones

Dan Buettner, a National Geographic Explorer and Fellow and journalist, coined the term "blue zones" during an exploratory project to areas of the world with reportedly high longevity (Buettner, 2012). Together with National Geographic, and his team of scientists and demographers, Buettner identified five regions that stood out for their longevity and vitality: the Barbagia region of Sardinia; Ikaria, Greece; Nicoya Peninsula, Costa Rica; Seventh Day Adventists in Loma Linda, California; and Okinawa, Japan. Buettner and his team found that these regions shared nine specific lifestyle habits which he refers to as the Power of 9, shown in Figure 1. The nine habits of the world's healthiest, longest-lived people that Buettner identified are move naturally, purpose, downshift, 80% rule, plant slant, wine at 5, right tribe, loved ones first, and belong.
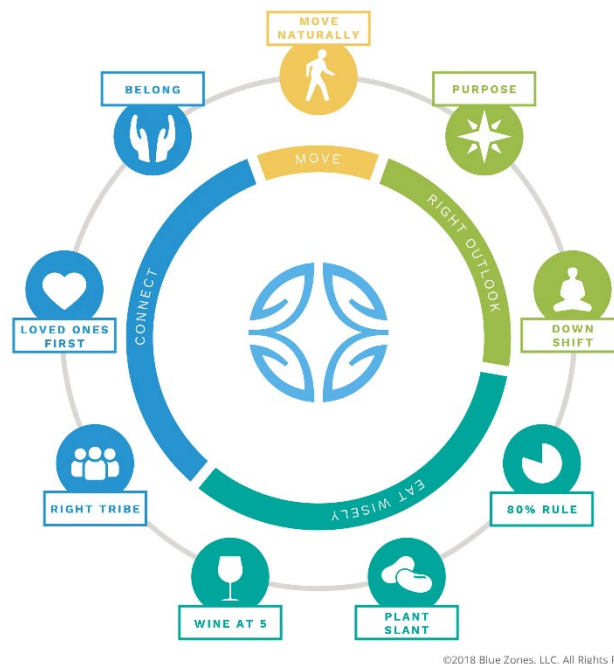

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Figure 1. Power of 9

Similar to how the residents at Hogeweyk incorporate organic exercise into their routine by walking between strategically spread-out social hubs, centenarians in the blue zones live in environments that constantly nudge them into moving without thinking about it. Residents of Okinawa sit on the floor, and they garden for an hour or two each day; and those of Sardinia walk the landscape's steep inclines daily (Buettner, 2012). To apply this habit into planned communities, walkability should be encouraged over car-centric design, and stairs should be encouraged over elevators for those who are able-bodied.

The residents of blue zones have a clear purpose in their lives. Although they may have their own term for it, each region places an emphasis on having a reason to wake up each morning. Having a mission or passion to accomplish keeps the mind and body engaged. This could be accomplished through volunteer work like the residents of Loma Linda.

Stress has drastic negative impacts on a person's health. It leads to chronic inflammation which has been tied to every major age-related disease (Buettner, 2012). It is imperative to develop a routine to alleviate stress. Okinawans take time each day to remember their ancestors, Adventists pray, Ikarians take a nap, and Sardinians participate in happy hours. There are many ways to handle stress, the important part is to find a method that naturally fits into one's daily routine.

Diet plays a great role in health, longevity, and vitality. In Okinawa, residents follow the 80% rule which reminds them to stop eating when they are 80% full. The gap could be the difference between losing weight and gaining it. Many centenarian diets are heavily plant-based with beans playing a crucial role in their diet. In all the blue zones except the Adventists in Loma Linda, they drink alcohol moderately and regularly by having one or two glasses per day with friends and food. Chronic alcohol abuse leads to a heavily increased risk of developing dementia (Alzehimer's Association, 2024).

Connection is vital to all humans. In the United States, the elderly are currently experiencing a loneliness epidemic. In 2017, 27% of adults 50-80 years old reported they felt isolated. This number rose to 56% in June of 2020, during the COVID-19 pandemic, and it remains high at 34% reported in January of 2023 (Luterman, 2023). Emotional loneliness is associated with all-cause mortality in older adults, and a 50% increased risk of developing dementia (O'Súilleabháin, Gallagher, & Steptoe, 2019). A risk factor for loneliness is living alone, being unmarried, or unpartnered (ibid.). A census conducted in 2020 found that 27% of Americans 65 years and older are currently living alone (United States Census Bureau, 2023). This percentage increases with age for both men and women. The majority of those in this demographic are living only with their partner. In the blue zone regions, loneliness is much less common (Buettner, 2012). Successful centenarians put their loved ones first. This often means having multi-generational households which lowers disease and mortality rates for children in the home too. These centenarians commit to a life partner and invest in their children with time and love. They are a part of social circles that support healthy behaviors, and the majority of them belong to some form of faith-based community.

Sub-Chapter 2: Universal Design

Universal Design refers to the process of creating an environment so that it can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, ability, or disability (Centre for Excellence in Universal Design). Ronald Mace, an architect and professor at North Carolina State University, and his team of architects, designers, and engineers developed 7 Principles of Universal Design to be applied to existing designs, guide the design process, and educate both designers and consumers about the characteristics of more usable products and environments (Centre for Excellence in Universal Design). These principles are as follows: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use.

Independent living is promoted by factors like Universal Design which creates inclusive design solutions and promotes accessibility and usability for all. 90% of adults over 65 years of age want to remain in their current home as they age (USC Leonard Davis School of Gerontology). For many people, aging in place is primarily about maintaining independence, and by implementing principles of universal design, it is possible. Aging in place also allows older adults to maintain their connections to their community and friends, permitting social interaction to remain a part of their daily lives. An active social life has been shown to prevent dementia and to contribute to better health and a higher quality of life (Alzheimer Society).

Hogeweyk is a great example of Universal Design as it is easily able to be used by its residents regardless of their limitations. The residents in dementia villages are people with aspirations that are able to be realized thanks to their environment which was made to accommodate them. Such accommodation should not be found in isolated communities for a select demographic, but the success found in Hogeweyk, in

part due to its implementation of the principles of Universal Design, should be wider implemented in the creation of our cities and communities, to promote designing with an implicit care for those with dementia.

Sub-Chapter 3: Wayfinding

Wayfinding is a strategy implemented in architecture to assist building users in understanding where they are physically and to intuitively know how to reach their destination, while decreasing stress and increasing the efficiency in user experience (Craig Goulden Davis). Articulation of elements in the built environment using color, texture, and lighting assists users in orienting themselves. Principles of wayfinding design are as follows: visual identity, nodes and landmarks, well-ordered plans, long sight lines, and strategic signage. Wayfinding can be a part of Universal Design as it relates to its principles of simple and intuitive use while exerting low physical effort. Adding this additional element as a fully integrated part of the overall design allows for buildings and communities to be designed for all. In this project, wayfinding plays an integral role in assisting those with dementia in orientation. Wayfinding abilities are impaired in those with dementia, leading to increased anxiety and feelings of distress as well as decreased interaction (Davis & Weisbeck, 2016). By creating a community that is designed to assist its users in understanding where they are and intuitively how to reach their destination, it will allow the members of that community with cognitive disabilities like dementia to live more independently and to meet their basic needs.

Wayfinding difficulty presents itself amongst the earliest symptoms of dementia. It can inhibit people from locating their own apartments, bathrooms, activity rooms, and dining areas (Davis & Weisbeck, 2016). This prevents those with dementia who suffer from wayfinding issues from completing their basic needs like sleeping, eating, socializing, and toileting. Over 70% of those living in assisted living facilities and over 60% of those living in skilled nursing residents have been diagnosed with dementia (ibid.). These facilities are particularly difficult for those with dementia to navigate due to their long double-loaded corridors, a lack of distinctiveness in different areas, and a lack of environmental clues. Implementing salient visual cues at key decision places such as hallway intersections and creating visual

identities for different building areas using color and texture have been proven to assist those with dementia (ibid.). This project implements these wayfinding strategies at various scales, allowing for easy navigation in the community as a whole and buildings within it for all people regardless of cognitive ability or age.

Kevin Lynch's work in defining "elements of a city" is also applicable in producing intuitive wayfinding. Lynch determined that people make sense of their surroundings in predictable and consistent ways. This methodology utilizes patterns of the following recognizable symbols: paths, edges, districts, nodes, and landmarks (Lynch, 1964). Paths, such as streets and sidewalks, contribute to legible design when they have a distinguished character. To encourage pedestrian use, they should be attractive, entertaining, and safe. This could be accomplished by utilizing active frontages to convey a sense of enclosure. Edges are perceived boundaries such as walls, buildings, and shorelines. Districts refers to city sections that have a distinctive sense of identity which could be defined by architectural style or characteristics, its usage, or special features. Nodes are focal points or intersections. Landmarks are identifiable reference points such as unique landscape features, public art installations, or notable architectural works. Together, these five elements create a legible city that provides a sense of security for its users, which reduces the fear of disorientation. This project utilizes the work of Lynch to create a legible city to assist in intuitive wayfinding with the goal of creating a more accessible environment that encourages independence in those with dementia and alleviates their disorientation and spatial confusion; thus, making his work a valuable part of this proposed framework for promoting cities and communities to be designed with the implicit care of residents with dementia in mind.

Chapter 4
Site

Sub-Chapter 1: Community Systems

This project is located on a parcel of land in Woodbridge, VA, a town roughly 30 miles outside of Washington D.C. This location was chosen due to its existing community systems for public transportation and healthcare facilities. Washington D.C. has the second highest percentage of public transit commuters in the United States, behind New York City (Bureau, 2006). Only 28% of those who work in Washinton D.C. commute from within the city, with the rest coming from Maryland and Northern Virginia (ibid.). As an outlying suburb of D.C., the people of Woodbridge are used to commuting into the city with 47% of the working population in Woodbridge having a 40+ minute commute, and as a result there is an abundance of public transportation available to accomplish this (Data USA). The site is located along an existing Omni-Ride bus loop that connects to the heart of Washington, the Pentagon, and Northern Arlington as shown by Figures 2 and 3. Placing it here allows for the creation of a community that is not car-centric and away from the pollution and overstimulation of the city, while still maintaining the commuter culture of the area and providing convenient public transportation to these workplaces.
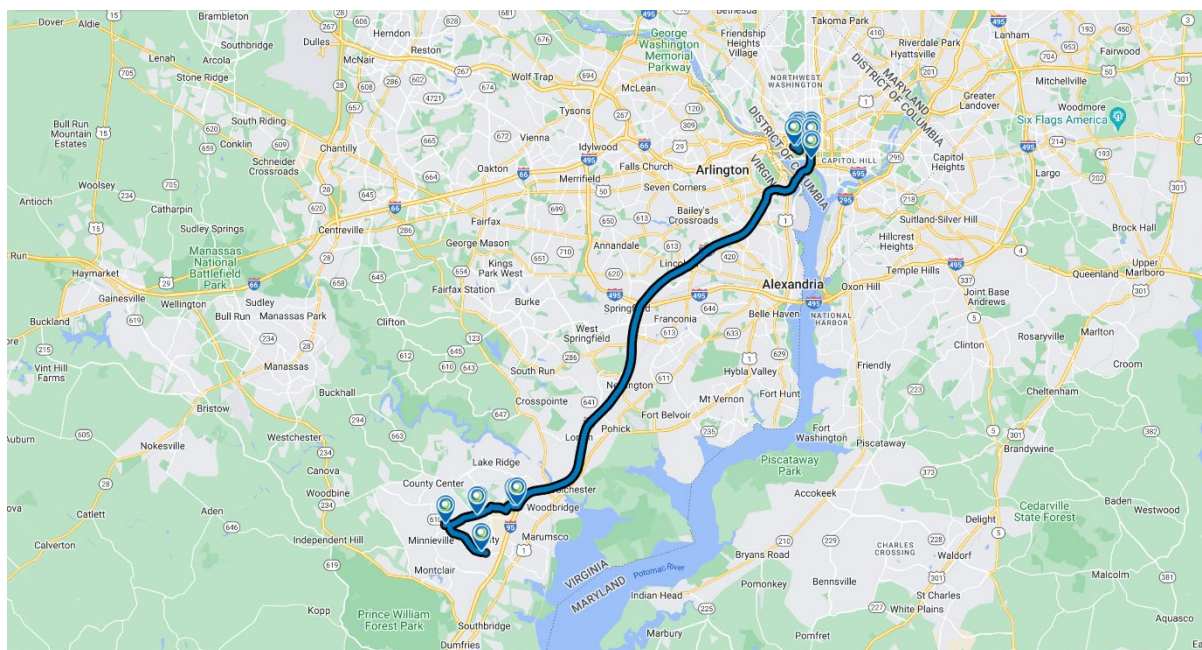
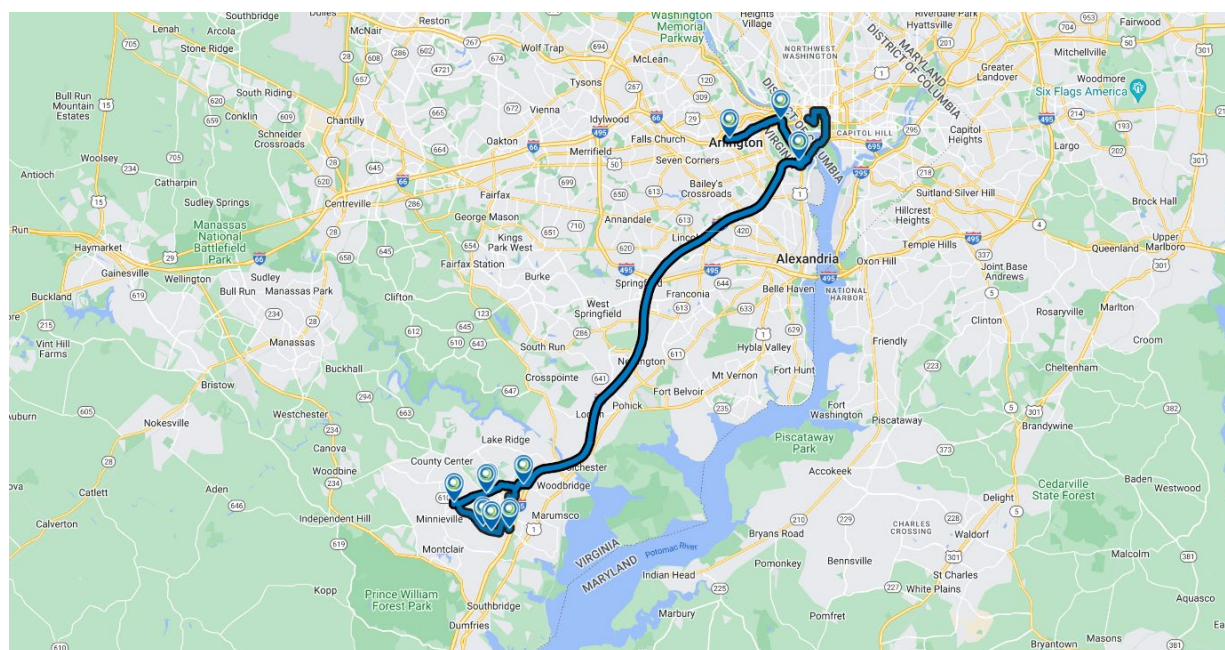**Figure 2. Omni-Ride Dale City to Washington Route**

Figure 3. Omni-Ride Dale City to Pentagon & Rosslyn / Ballston Route

Medical Centers are of high quality and abundant in this area. Just under five miles away from the site location is Sentara Northern Virginia Medical Center, a 183-bed not-for-profit trauma III hospital. Inova Fairfax Medical Campus is located 22 miles away and is rated the best hospital in Northern Virginia and the state of Virginia based on specialty, procedure, and condition rankings by US News and World Report. Additionally, there are many neurologists and geriatricians in the areas that can assist in meeting residents' needs.

Sub-Chapter 2: Zoning

The selected site is designated as Planned Mixed Development (PMD). It is surrounded by residential

developments (represented in yellow and orange in Figure 4) and planned developments (brown).

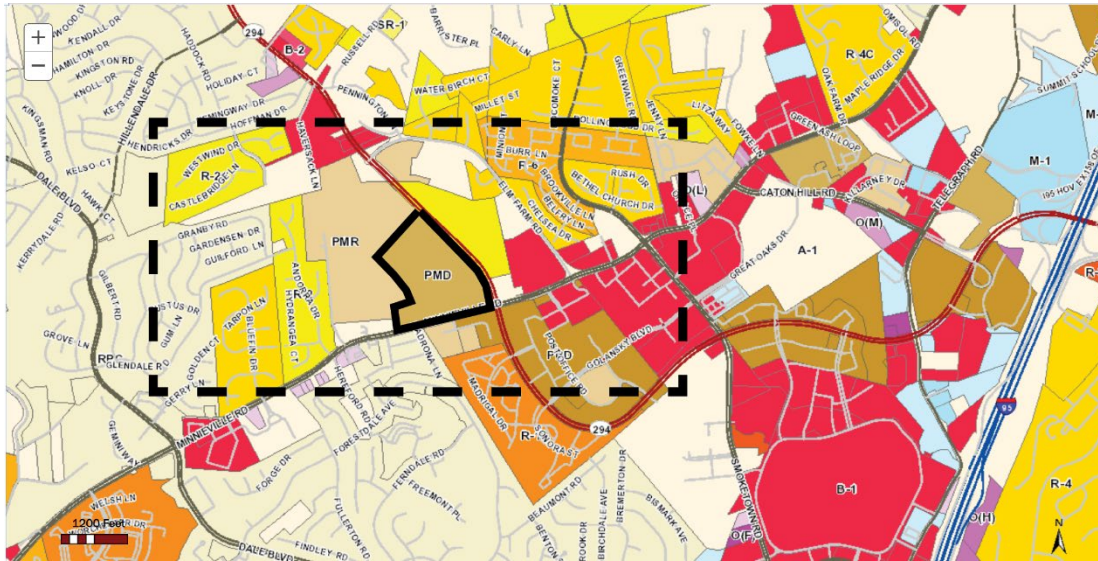Farmland (shades of cream) is being preserved.

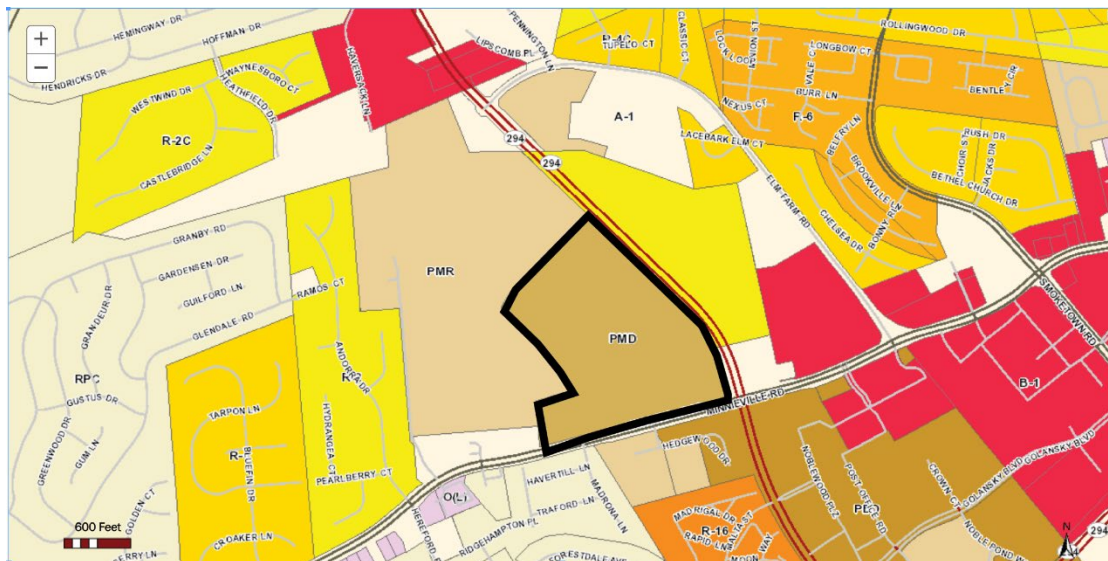**Figure 4. Zoning Map with Larger Context**

Figure 5. Zoning Map Focused on Immediate Site Context

In the Prince William County Municipal Code, there is not currently instructions specific to the nature of this community. For the purposes of future development towards a more accessible world where we implicitly design for the needs of those with dementia, the code will need to be updated. Legislation plays an integral role in allowing for such a community as the one being proposed to be possible. Since the code does not currently have a space for this community, it is drawing from the residential requirements within PMD designated land. These requirements necessitate at least two residential unit types (Sec. 32 – 306.10). These residential typologies are limited and provide no option for a group home model. To follow the existing code, townhouses and multifamily buildings will be provided. The townhouses will contain no more than six dwelling units per group (Sec. 32 – 306.12-part F). The chosen housing typologies abide by the setback, minimum lot width, maximum building height, and minimum building square footage requirements as outlined in Sec. 32 – 306.12. Additionally, Residential units are permitted and encouraged above commercial spaces as per Sec. 32 – 280.41. These residential units allow for residents who are unable to travel long distances alone to maintain a higher level of independence through living just above necessary amenities.

Chapter 5
Program

Sub-Chapter 1: Community

Figure 6: Community Plan

The community created in this project serves as an example framework for how to design our cities and communities to be truly inclusive. Rather than continuing the current planning model where senior members of our society as sent off to nursing homes, and other care facilities, and forgotten, this community contains a dementia village at the heart of it, to ensure there is a place for everyone as they age. Following the spirit of universal design, this community allows its residents with dementia to experience fulfilling lives despite their condition. The defined framework for designing a healthy and inclusive community which promotes longevity alongside quality of life in a way that is applicable and accessible to all utilizes the work of Dan Buettner and his "blue zones" and the principles of universal design. Residents of this community, and the cities that may stem from this proposed framework, are able to age in place through the inclusive design which allows for residents to maintain their independence and continue participating in daily life in a safe and controlled environment that they are familiar with and able to easily navigate through the implementation of wayfinding strategies.

Drawing from the knowledge of the blue zones and their nine shared lifestyle habits, the community will encourage natural movement, healthy eating, connection and purpose, and stress management. This walkable community differs from the typical car-centric world that we typically design for. A study found that people consider trips within a quarter of a mile radius to be within walking distance, although 65% of walking trips are farther than this (Yang & Diez-Roux, 2012). Additionally, it found that the purpose of walking trips has a correlation with the distance that is considered walkable, with people being willing to walk farther for recreation than they are for shopping trips and restaurants. 77% of walking trips take under 20 minutes, and 82% are under a mile. By designing with easy access to a wide variety of amenities in under a mile radius from housing developments, residents will be inclined to incorporate walking into their everyday lives. For adults under 60 years of age, the incremental reduction in risk of a premature death levels of at 8,000 – 10,000 steps a day; and for those older than 60, at 6,000 – 8,000 steps (Carnethon & Evenson, 2022). This means that adults younger than 60 should be walking 3.5 - 4.5 miles

each day, while those who are older should be walking 2.5 – 3.5 miles per day. Community based programs and designed spaces can also be effective in encouraging natural movement. Abundant access to green spaces, parks, sport courts, jogging paths, and group exercise classes encourage movement.

Healthy eating is crucial to living a healthy lifestyle. The NIH advises that to create a healthy eating environment, the healthy choice must also be the easy choice. Neighborhoods that have easier access to supermarkets, and limited access to convenience stores tend to have healthier diets and lower levels of obesity (Parker, Burns, & Sanchez, 2009). In this community, healthy foods will be easy to access through community gardens, incentivizing restaurants to serve and highlight healthy menu options, and requiring grocery stores to provide healthy food options. Promoting a heavily plant-based diet, nutritional meals, and moderate drinking habits will create a healthier community.

Connecting within a community can take form in many ways: encouraging multi-generational households to keep loved ones close and well cared for; belonging to a faith-based organization; participating in organized group activities with others that share the interest; maintaining friendships; and volunteering are just a few examples. Those in the blue zones incorporate these ways of connection into their daily lives. In addition to promoting a lifestyle where individuals feel a sense of belonging, it assists in feeling an inner sense of purpose (Buettner, 2012).

Implementing the aforementioned blue zones lifestyles of natural movement, healthy eating, and connection all play a role in promoting stress management within a community. Regular exercise, eating well, limiting alcohol, making time for hobbies, meditating, and maintaining a healthy support network are all strategies for stress management (Ragland, 2023).

Most seniors would like to remain in their current homes as they grow older (USC Leonard Davis School of Gerontology). Aging in place allows for a preservation of freedom, maintenance of community connections, and decrease in cost compared to relocating to a senior facility. Nevertheless, it is difficult for some seniors, especially those with a form of dementia, to age in place to do a lack of universal design and wayfinding strategies within our communities. Universal design goes far beyond adhering to the letter of ADA legislation, it bakes accessibility into the design from its very conception to create spaces that can be enjoyed by everyone without drawing attention to its accessibility features. Wayfinding strategies play an integral role in creating this community to be welcoming and accessible to all its residents. By creating a community that is designed to assist its users in understanding where they are and intuitively how to reach their destination, it will allow the members of that community with cognitive disabilities like dementia to live more independently and to meet their basic needs.

Wayfinding is implemented primarily through color coding and giving areas distinct identities. In Hogeweyk, each residential cluster has its own distinctive courtyard to assist residents in navigating to their homes. Following this example, landscape features, materials, colors, and architectural styles are utilized to provide obvious distinctions between areas, allowing for easy wayfinding navigation. The streets of the community also assist in wayfinding. In the outer community, walkable streets are made using green pavers; while in the dementia village region, stone pavers are used. These stone pavers are colored to allow residents to follow a line of their neighborhood's color to find their home. Signage is abundant and strategically placed at decision points to aid in wayfinding decisions. Sightlines show what is ahead, allowing ample opportunities to spot a landmark. Drawing from the work of Kevin Lynch, legibility is created in the city using the following recognizable symbols: path, edge, district, landmark, and nodes.
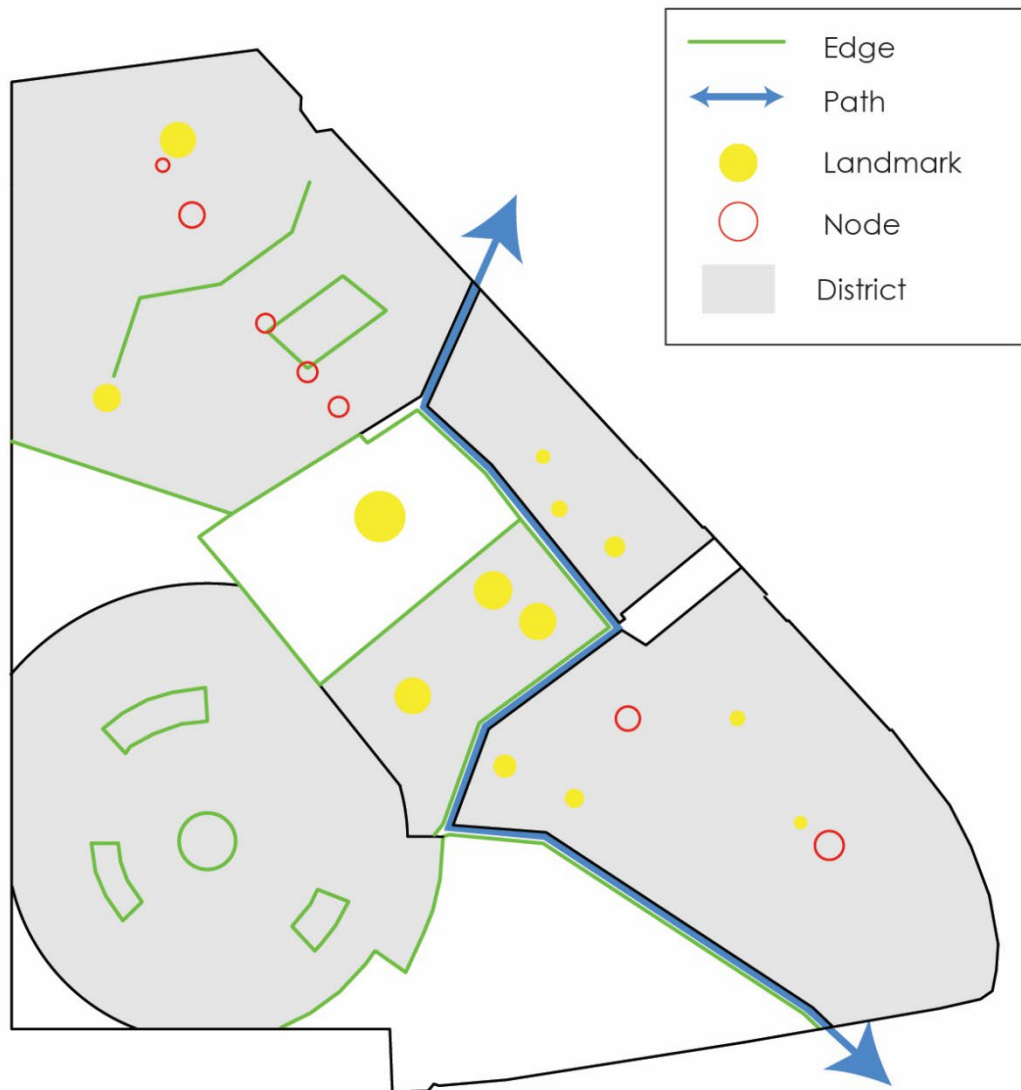
Figure 7: Diagram of Kevin Lynch Strategies

Figure 8: Before and After Demonstrating Street Wayfinding Strategies

Sub-Chapter 2: Dementia Village

Program

Whole Community	6.38 acres	**Cafe**	1,000 sqft x 2
Community Building	13,375 sqft	**Restaurants**	2,000 sqft x 4
Library		**Grocery Store / Farmer's Market**	2,000 sqft
Visitor Center		**Store**	1,000 sqft x 2
Club Gathering Spaces			
Restaurants			
Shops			
Cinema			
Nail Salon			
Spiritual Center			
Loading Dock			
Medical Center and Gym	9,000 sqft		
Pharmacy			
Doctor's Offices			
Optometrist			
Dentist			
Gym			
Natatorium			
Public Lawn	6,680 sqft		
62 Home Units	1420 - 2420 sqft*		
Kitchen			
Living Room			
Bedrooms			
Full Baths			
*14 private home units and 48 group home units are available			
Courtyards	2,500 - 4,000 sqft x 5		
Hair Salon	2,000 sqft		

Figure 9: Dementia Village Program

Depression is very common amongst those with dementia. It is found in 30% of patients with vascular dementia and Alzheimer's disease, and in 40% of patients with dementia associated with Parkinson's and Huntington's disease (Kitching, 2015). Although antidepressants are commonly used to treat depression for dementia patients, there is little evidence supporting this to be an effective solution (Alzheimer's Society, n.d.). It is suggested that their depression would be better addressed by improving the patient's quality of life through providing care and support that matches their needs, addressing loneliness, and

ensuring they have opportunities to do fun and fulfilling activities (ibid.). The program of this proposed

dementia village aims to decrease the prevalence of depression in its residents through creating an

environment suited to their needs that promotes community, independence, and quality of life. As is

typical in existing dementia villages, the residents are assisted in completing day to day activities,

allowing them to participate in life as usual. The abundance of amenities allows the residents to go

grocery shopping, cook meals, eat at restaurants, go to the salon, watch a movie, gather with friends,

participate in group activities and hobbies, and exercise regularly.

The plan of this dementia village located at the heart of the larger proposed community is heavily based

on that on existing dementia villages in Europe. Group homes are similarly used to allow the patient both

privacy and an easy connection to others. The amenities are placed centrally to allow easy access to all

residents, even as the disease progresses and mobility declines. The neighborhoods each contain a

distinctive courtyard and are color coded to assist in wayfinding. This color coding extends to the streets

of the community, through using colorful stones on walkable streets to guide users to their home from any

given location within the dementia village. Aforementioned strategies of universal design and wayfinding

such as baking in accessibility beyond the letter of ADA laws, providing abundant and easy to follow

signage at key intersection points, and utilizing landmarks to guide residents are also in effect.

Figure 10: Dementia Village Plan

Aalborg, Denmark

DVA Berlin, Germany

Hogeweyk, Netherlands

Alliade Meriant, Netherlands

Figure 11: Dementia Village Precedents

Perception issues are common amongst those with dementia due to the condition damaging parts of the brain that cause misperceptions, misidentifications, hallucinations, delusions, and time-shifting (Alzheimer's Society, 2024). A dark colored doormat could be perceived as a deep hole; and blue tile, as water (ibid.). A person experiencing these perception issues will rely more heavily on memory and habit, emphasizing the importance of making aging in place possible through the implementation of universal design and wayfinding strategies. Figure 12 demonstrates how to design for these perception issues at the finishes level to be applied within the residential homes of this dementia village.
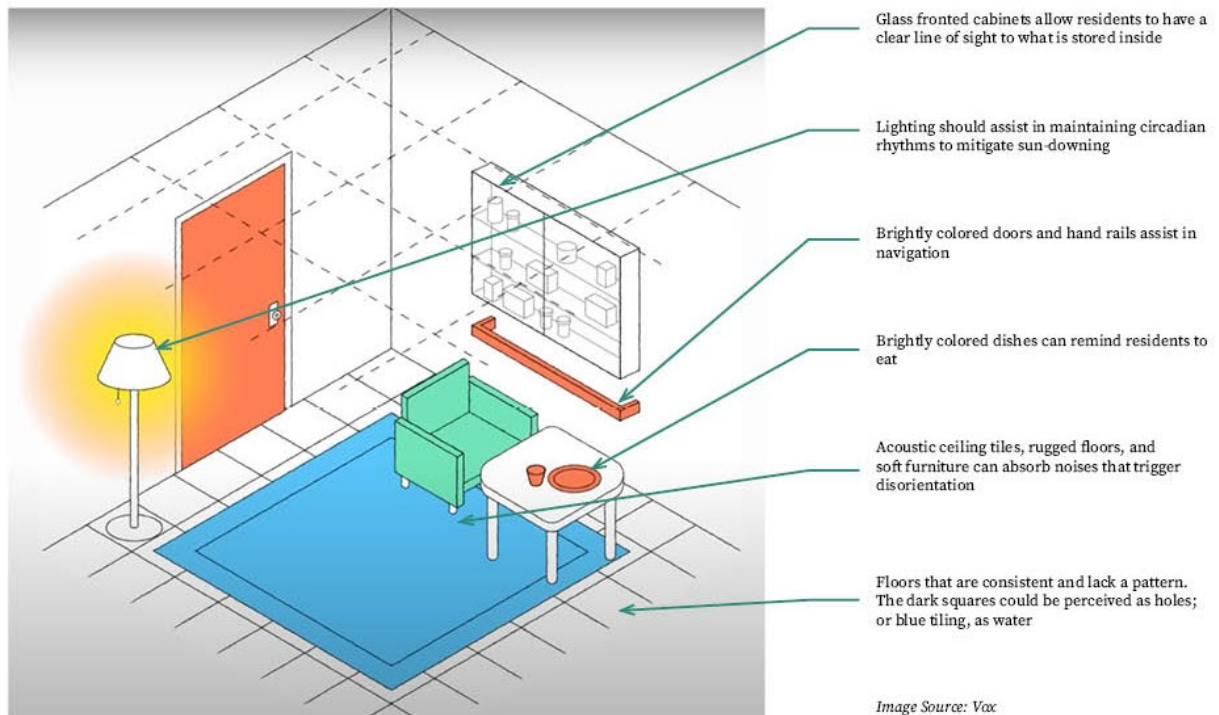
Figure 12: Designing for Loss of Perception

Sub-Chapter 3: Conclusion

6.9 million Americans are currently living with dementia, and this number is expected to rise to 13 million by 2050 (Alzehimer's Association, 2024). To proactively prepare for this influx in cases, it is crucial that we modify our cities and communities to be accessible for those with dementia through the implementation of universal design and wayfinding strategies, and by adopting a care model better suited to their needs as demonstrated by the success of dementia villages such as Hogeweyk. The rise in dementia cases is attributed to America's aging population which has caused a shift in the paradigm from increasing life span to improving quality of life. The commonalities found amongst "blue zone" regions – where residents are living long, active, and healthy lives – should be baked into community design alongside of accessibility to produce communities where longevity and quality of life are not only encouraged, but possible to achieve. The framework for such a community as outlined in this project should be applied to cities and communities to aid in the creation of a world where everyone can fully participate in society and enjoy a high quality of life. The legacy of this work aims to promote designing with an implicit care for those with dementia in a similar manner to how we design with the care of children in mind, while simultaneously destigmatizing the condition and treating it as a normal part of aging.

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