

Connecting Our Kūpuna Through Shared Spaces:

Designing for Social Cohesion

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Abstract

Kūpuna is the Hawaiian term for grandparent, ancestor, or elder, and kūpuna are seen as the backbone of Hawai'i's culture and traditions. Their role is respected and honored, and the built environment should reflect this. They are invaluable in knowledge and experience yet commonly neglected in design. Design often considers ADA standards as guiding principles that address general aspects of physical accessibility, but when designing for kūpuna, their mental and social well-being should be equal in value. This is more pertinent with the world's increasing elderly population.

The recent pandemic has shown us the effects of isolation and its psychological burden. Burdens which our kūpuna have known all too well, preceding the pandemic. Social isolation is at the center of excessive health concerns and needs, including chronic health issues. Low-mobility, sedentarism, sensory impairments, and mental health conditions all become contributors and aging factors that affect the kūpuna population greatly. As kūpuna encounter increased health risks in aging, especially when living alone, it becomes of greater importance to integrate them into their community where accessibility to others and social support can be easily attained. In this, designing to foster social interactions and connections is becoming increasingly important.

This thesis aims to address two driving issues: an increasing elderly population, and social isolation. Based on research and review of relevant literature, case studies, and existing community outreach and needs assessment findings, this thesis investigates opportunities to improve social cohesion within urban residential communities. This is done through the development of a framework and set of design interventions centered on circulation space.

The framework and design strategies are speculative guidelines, with adaptability in mind. The intention behind this is to inspire and inform decision makers, professionals, and those in academia on the importance of designing for social cohesion and serve as an example of applied research and design to support our kūpuna to age in place.

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Definition of Terms

1. **Social cohesion:** refers to the presence of meaningful social relationships, the strength of relationships, and the sense of solidarity among members of a community.¹ One indicator of social cohesion is the amount of social capital a community has.
2. **Social capital:** Social capital deals with shared group resources, which is the ability to access resources based on one's network, which can encompass emotional support, instrumental support, and shared knowledge amongst a community.²
3. **Social isolation:** defined as the absence of meaningful social relationships.³ It differs from loneliness, as loneliness is singularly the feeling of this absence. One can be socially isolated yet not lonely, however, one can feel lonely yet still have meaningful relationships.⁴
4. **Kūpuna:** the Hawaiian term for grandparent, ancestor, or elder.⁵ It can also refer to a relative or close friend of the grandparent's generation, such as a grandaunt, or granduncle.⁶ It also means an adopted grandparent. *Kūpuna* is the plural term.
5. **Circulation space:** defined as the movement of people through a building or the built environment. Within buildings, circulation spaces can be categorized as horizontal

¹ Healthy People 2030, "Social Cohesion," U.S. Department of Health and Human Services, accessed February 26, 2022, <https://health.gov/healthypeople/objectives-and-data/social-determinants-health/literature-summaries>.

² Ibid.

³ "Explore Risk of Social Isolation - Ages 65+ in Hawaii | 2021 Senior Report," America's Health Rankings, accessed February 26, 2022, https://www.americashealthrankings.org/explore/senior/measure/isolationrisk_sr/state/HI.

⁴ Ibid.

⁵ Kawohiokalani Ellis-Jenkins, "Kupuna Wisdom," Papa Ola Lokahi, accessed February 28, 2022, <http://www.papaolalokahi.org/kupuna-wisdom-by-aunty-betty.html>.

⁶ "Nā Puke Wehewehe 'Ōlelo Hawai'i," Nā Puke Wehewehe 'Ōlelo Hawai'i, accessed April 23, 2022, <https://wehewehe.org/gsd/2.85/cgi-bin/hdict?e=q-11000-00---off-0hdict--00-1----0-10-0---0---0direct-10-ED--4--textpukuiebert%2ctextmamaka-----0-1l--11-haw-Zz-1---Zz-1-home-kupuna--00-4-1-00-0--4----0-0-11-00-0utfZz-8-00&a=d&d=D10044>.

circulation, such as corridors, lobbies, and entrances, and vertical circulation, such as stairs, ramps, and elevators.⁷ Circulation is what connects the resident to their neighbors, to the street and amenities, and ultimately to the surrounding neighborhood.

6. **Amenities:** a term that encompasses a multitude of meanings and interpretations. Generally, amenities refer to a desirable or useful feature of a building or within a neighborhood.⁸ Parks, schools, small retail, and accessible transit can be considered amenities that make a neighborhood desirable.⁹
7. **Universal design:** a one-for-all approach to design, where the design itself is aimed to be used by a broad range of users.¹⁰
8. **Inclusive design:** a design that targets specific, multiple needs. Rather than generalizing a design for multiple users, it aims to address as many different solutions as possible, making sure as many needs are met with an experience to fit those needs.¹¹
9. **Intergenerational:** defined as existing or occurring between generations.¹² In this thesis, this term is used to describe the involvement of two or more generations within a social context.
10. **Multigenerational:** refers to a family or community that consists of more than one generation.¹³ In this thesis, this term is used to identify a household demographic.

⁷ "Circulation Space," Definition; Guidance; Regulation (<https://www.designingbuildings.co.uk>), accessed February 22, 2022, https://www.designingbuildings.co.uk/wiki/Circulation_space.

⁸ "What Is This 'Amenity' of Which You Talk?," Redshift Architecture & Art, accessed April 23, 2022, <https://www.redshiftaa.com.au/portfolio/what-is-this-amenity-of-which-you-talk/>.

⁹ "Urban Amenities and the Impact to (Re)Development," Envision Tomorrow, accessed April 23, 2022, <http://envisiontomorrow.org/urban-amenities-development>.

¹⁰ "Understanding Universal Design vs Accessibility vs Inclusive Design," *Say Yeah!* (blog), May 12, 2020, <https://sayyeah.com/digital-insights/universal-design-accessibility-inclusive-design/>.

¹¹ Ibid.

¹² Merriam-Webster.com Dictionary, "Intergenerational," Merriam-Webster., accessed April 24, 2022, <https://www.merriam-webster.com/dictionary/intergenerational>.

¹³ Merriam-Webster.com Dictionary, "Multigenerational," Merriam-Webster., accessed April 24, 2022, <https://www.merriam-webster.com/dictionary/multigenerational>.

Preface

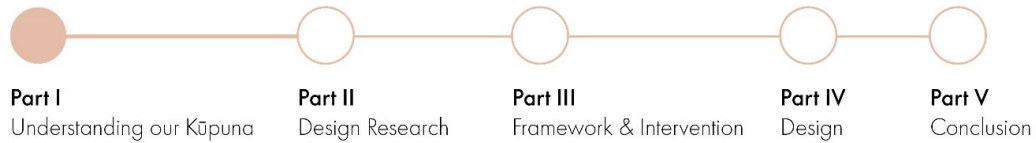
My interest in this topic originated from my participation in the UH Community Design Center's project titled "Future of Hawai'i's Housing" conducted for the Hawai'i Public Housing Authority, since 2019. This project included ethnographic interviews, where 30 families were interviewed across the state to better understand their daily lives and what home means to them. In addition to the interviews, case study research and block densities and housing typologies across the state were also analyzed. From this research, 36 design opportunities were developed and were used as a basis to design 26 block massing typologies at different densities. The Holistic Housing Handbook was one of the outcomes of the project, presenting a response to covid and its effect on housing design. My understanding of housing and the design of places where we live was expanded by this project. I developed an interest in furthering the work focusing on supporting kūpuna and aging in place. I saw an opportunity to take the research on housing further and apply it to kūpuna and aging in place.

This thesis centers around the term *kūpuna*. It is the Hawaiian term for grandparent, ancestor, or elder and holds great significance in Hawaiian culture.¹⁴ Throughout this thesis, the term is often used in place of "elderly" to further emphasize the significance that kūpuna have on our communities and that their impact reaches those outside of their nuclear family. Designing for kūpuna interested me because of my own experience, or lack thereof. Multigenerational families are very common in many households in Hawai'i, but I was disconnected from my grandparents. One was in another country, but we remained in regular contact. The other was separated due to other circumstances. The closest ties I had were the kūpuna in my neighborhood, who would walk their dogs, tend to their yards, and talk story as us

¹⁴ Ellis-Jenkins, "Kupuna Wisdom."

neighborhood kids played on the street and walked to the bus stop for school. Though I wasn't as connected to my own grandparents, I saw the value of kūpuna and intergenerational connections within the community, within the neighborhood.

Part I: Understanding Our Kūpuna



This first part of this dissertation reviews the scope of this thesis project. Chapter 1 reviews the project background, scope, and goals, along with the research and design methodology. Chapter 2 identifies major factors to consider, which include the rise in the elderly population, and the effects of the Covid-19 pandemic on the population and investigates Hawai'i's population and demographics. Chapter 3 brings forth secondary issues for review, such as the physical and mental needs that arise during the aging process, with a specific focus on social cohesion and isolation, and aging in place. Part I is an overview of the problems this thesis aims to address, setting the stage for design research.

Chapter 1: Introduction

Background

Aging is inevitable. It is ingrained in our lifestyle and choices. We are influenced by not only our generation, but by the generation of those who raised us, and by the generation, we will raise, who will hopefully care for us in our later years. The elderly are invaluable in knowledge and experience, yet commonly neglected in design. The needs of the elderly are often seen as ADA standards to meet, and while physical safety is important, mental, and social well-being should be seen as equal. This is increasingly more pertinent with the world's increasing elderly population.

Today, 4 billion people, over half the world's population, live in urban areas which are also increasing in density.¹⁵ By 2050, it's projected that more than two-thirds of the world's population will live in urban areas.¹⁶ The rising demographic seen in this population are elderly. By 2050, the population of Americans aged 65 and older is projected to rise to 88.5 million, previously totaling only 40.2 million in 2010.¹⁷ The bulk of this population shift will happen by 2030, specifically for ages 65-80, which will increase significantly during this time.¹⁸

Hawai'i's population is no exception. By 2050, Hawai'i's aging population will have increased by 24%, with most of the increase occurring already by 2030.¹⁹ Projected population

¹⁵ Hannah Ritchie and Max Roser, "Urbanization," *Our World in Data*, June 13, 2018, <https://ourworldindata.org/urbanization>.

¹⁶ Ibid.

¹⁷ Grayson K. Vincent and Victoria A. Velkoff, "The Next Four Decades: The Older Population in the United States: 2010 to 2050" (US Census Bureau, May 2010), <https://www.census.gov/content/dam/Census/library/publications/2010/demo/p25-1138.pdf>.

¹⁸ Ibid.

¹⁹ Yang-Seon Kim, Jie Bai, and Eugene Tian, "Population and Economic Projections for the State of Hawaii to 2045" (Research and Economic Analysis Division, Department of Business, Economic

increases include age 65 and up but are still not as rapid as the rate of ages 86 and older.²⁰ In reference to the census data, it is clear that the elderly demographic is currently the second highest population in Urban Honolulu.²¹

The population is affected by three factors: birth, death, and migration rates. All of which have been affected by the recent Covid-19 pandemic. Birth rates have been on a steady decline for some time now, but surveys show that women plan to have children later in life or not at all due to the pandemic.²² Historic studies, based on the last pandemic of 1918, predict a drop of 300,000 to 500,000 births in the United States.²³ Covid-19 exacerbated mortality rates, with people over ages 70 and 80 experiencing the most detrimental effects of COVID-19 mortality so far, both due to the greater risk factor and the number of elderly in closed communities such as nursing homes.²⁴ Covid-19 also affected internal and international migration, causing immigrants to move back home to be with family abruptly and rapidly before travel restrictions were placed. It also prevented many from returning to their pre-pandemic lifestyles away from home. These lower birth rates and lower migration rates imply a future shift toward an older population, despite the high mortality rates. However, even more pertinent is the cultural shift that entails greater isolation, smaller families, and fewer family members to care for our aging adults.²⁵

The aging population became the demographic of the highest risk to contract the disease, caused by fatal symptoms and increased isolation. While policies and mandates for at-

Development and Tourism, June 2018), https://files.hawaii.gov/dbedt/economic/data_reports/2045-long-range-forecast/2045-long-range-forecast.pdf.

²⁰ Ibid.

²¹ "Census Profile: Urban Honolulu, HI," Census Reporter, accessed February 22, 2022, <http://censusreporter.org/profiles/16000US1571550-urban-honolulu-hi/>.

²² Esther M. Friedman and Andrew M. Parker, "The Impact of the Pandemic on Demographic Trends," April 12, 2021, <https://www.rand.org/blog/2021/04/an-early-look-at-the-impact-of-the-covid-19-pandemic.html>.

²³ Ibid.

²⁴ Ibid.

²⁵ Ibid.

home isolation and physical distancing were put in place to protect the health of the population, the byproduct was social isolation, lower healthcare utilization, and reduced physical activity and social interaction for the elderly demographic.²⁶ This in turn led to an increase of anxiety, depression and posttraumatic stress symptoms, which were contributed by numerous other factors, such as the fear for family members and others in one's circle getting infected or hospitalized.²⁷

While the pandemic left its mark on the global population, it doesn't erase the fact that our population will continue to age, and in the coming decades the scales will tip towards a predominantly elderly demographic. As a result, there is an even larger need for housing to accommodate this increasing population. In addition, there is a greater need for housing to accommodate the elderly, such as increasing the number of accessible units and shared spaces. In addition, the pandemic has shed light on the severity of social isolation and the resulting psychological burden; a burden that our kūpuna have felt for some time now, even before the pandemic. And with household structures changing, both due to social and economic factors, our kūpuna may be left with fewer family members to care for them. Considering this, there is a greater need for access to amenities within the neighborhood and shared residential spaces and support services.

²⁶ Lukas Richter and Theresa Heidinger, "Hitting Close to Home: The Effect of COVID-19 Illness in the Social Environment on Psychological Burden in Older Adults," *Frontiers in Psychology* 12 (2021), <https://www.frontiersin.org/article/10.3389/fpsyg.2021.737787>.

²⁷ Ibid.

Project Scope, Goals & Objectives

My thesis aims to address two driving issues: an increasing elderly population, and social isolation. This thesis investigates opportunities to improve the quality of life for our aging population, our kūpuna within the urban context, because urban cores have the highest projected population density increase by 2050. The framework is intended to be applicable to any urban residence, such as low to high-rise apartments, but for this thesis, the design interventions are placed in the context of the Kapālama TOD neighborhood, ranging from low to mid-rise residential apartments and walk-ups. The design interventions are adapted to the climate of the Kapālama site, but with the intention that it can be adapted, to an extent, to the climate of other locations. The framework and design specifically aim to provide spatial interventions to increase social inclusion and connectivity.

The goal is to develop a design framework and interventions that aims to foster social connections within residential communities. Specifically, interventions within circulation space. Circulation is defined as the movement of people through a building or the built environment. Within buildings, circulation spaces can be categorized as horizontal circulation, such as corridors, lobbies, and entrances, and vertical circulation, such as stairs, ramps, and elevators.²⁸ Circulation is what connects the resident to their neighbors, to street and amenities, and ultimately to the surrounding neighborhood. This thesis focuses on circulation space because it is often overlooked, but has the opportunity to be better utilized, to not only be a means of egress, but to foster social connections. This thesis aims to rethink the design of circulation spaces and to introduce spaces to better support the social ecosystem for our kūpuna within a residential community.

²⁸ "Circulation Space."

Listed below are some of the questions that helped guided the research and design process:

Q: How might we design the block to better connect kūpuna to their neighbors?

Q: How might we better connect kūpuna to daily resources and amenities?

Q: How might we promote activity and mobility?

Q: How might we encourage social connections?

Research Methodology

As previously described, this thesis aims to produce a speculative framework and design strategies, focusing on circulation spaces. The research to support this is the culmination of learnings taken from literature reviews, case study research, reviews of local surveys and needs assessments, discussions with professionals, and ultimately research through design.

The first part of this dissertation overviews the scope of this thesis project and identifies major factors to consider, which include the rise in the elderly population, the effects of the Covid-19 pandemic on the population and investigates Hawai'i's population and demographics. From there, secondary issues are reviewed, such as the physical and mental needs that arise during the aging process, with a specific focus on social cohesion and isolation and aging in place.

The second part of this dissertation reviews literature and case studies relevant to designing for elderly, for aging in place, and ultimately for social cohesion. Case studies are then reviewed, spanning different typologies, from residential, to landscape, to public space to

get a full grasp on how different approaches to designing for social cohesion, and how that can be achieved. In understanding relevant literature and case studies, its components and commonalities can then be refined and reapplied as design strategies.

The third part of this dissertation reviews the design process and the framework and design strategies developed from the culminated research. After summarizing the design process, the framework is reviewed, and the design strategies are expanded on. Each step in developing and implementing the design strategies are defined.

The fourth part of this dissertation reviews the design implementation of the framework and strategies within a sample site. It begins with the research pertaining to site selection, and the design at the block level. From there, the design is depicted through plan, section, and perspective renders to show how the spaces use the strategies to improve social connectedness within the shared courtyard spaces and vertical circulation space. This dissertation then concludes by overviewing research goals, and limitations, and the potential for future research.



Figure 1-1: Research Methodology

Source: Author

Significance

The main beneficiaries of this research are our kūpuna. kūpuna is a term that is at the center of this thesis. Kūpuna is the Hawaiian term for grandparent, ancestor, or elder, and kūpuna are seen as the backbone of Hawai'i's culture and traditions. Their role is respected and honored, and the built environment should reflect that. The pandemic has shown us the effects of isolation and its psychological burden, burdens which our kūpuna have known all too well, even before the pandemic. Designing to foster social interactions and connections is becoming increasingly important. I hope that my thesis and speculative design helps to contribute to future conceptual designs and decision making within the architecture and design practices and can be used as a tool of reference for architecture students. Though my design is only speculative, I hope it can inspire designers and inform decision makers on the importance of designing for social cohesion and serve as an example of applied research and design to support aging in place.

Chapter 2: A Changing Demographic

The intention of this chapter is to understand the shift in demographics within the population in the coming decades at both a local and global scale. Determining the population, and how our kūpuna fit in, is important to consider especially when designing and developing cities and neighborhoods. Soon, the population will be predominantly elderly. Not only do we need to have more residential units to accommodate the growing population, but we need to rethink how we design the units and the surrounding spaces to support this demographic shift. It is important to understand how much the population will change, how much will be elderly, and what households may look like in the future to determine how much residential unit need will increase, what type of households we need to accommodate, and ultimately how we can rethink residential design to support the elderly.

Population & Aging

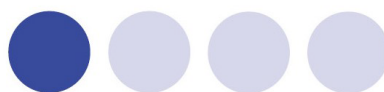
As mentioned, more than half the world's population lives in urban areas, and urban areas are increasing in highly dense cities.²⁹ The 2050 prediction describes two-thirds of the world's population, that being 7 billion people, will live in urban areas.³⁰ In 2018, for the first time in history, persons aged 65 or above outnumbered children under five years of age globally.³¹ By 2050, one in six people in the world will be over age 65 (16%), up from one in 11 in 2019 (9%), and one in four persons in Europe and North America could be over age 65.³²

²⁹ Ritchie and Roser, "Urbanization."

³⁰ Ibid.

³¹ United Nations, "Ageing," United Nations (United Nations), accessed February 23, 2022, <https://www.un.org/en/global-issues/ageing>.

³² Ibid.



by 2050, **one in four persons in Europe and North America** could be over age 65.

Figure 2-1: Percentage of persons in Europe and North American over age 65
Source: United Nations, "Ageing."
Illustration: Author

The number of persons aged 80 years or over is projected to triple. In 2019 the elderly population went from 143 million to 426 million, whereas Americans aged 65 and older were projected to hit 88.5 million with the starting at 40.2 million in 2010.³³ The bulk of this population shift will happen by 2030, with ages 65-80 increasing significantly during this time.³⁴

Estimated and projected old-age dependency ratios and prospective old age dependency ratios show Europe and Northern America, Australia, and New Zealand, and Eastern and South-Eastern Asia with an increase in the aging population with even higher projections.³⁵ According to the UN, worldwide, a person who reaches age 65 years in 2015-2020 can expect to live, on average, an additional 17 years. By 2045-2050, that figure is expected to increase to 19 years.³⁶

³³ Ibid.

³⁴ Ibid.

³⁵ United Nations, Department of Economic and Social Affairs, and Population Division, *World Population Ageing 2019, Highlights.*, 2020.

³⁶ United Nations, Department of Economic and Social Affairs, and Population Division, *World Population Ageing 2019*, 2020.

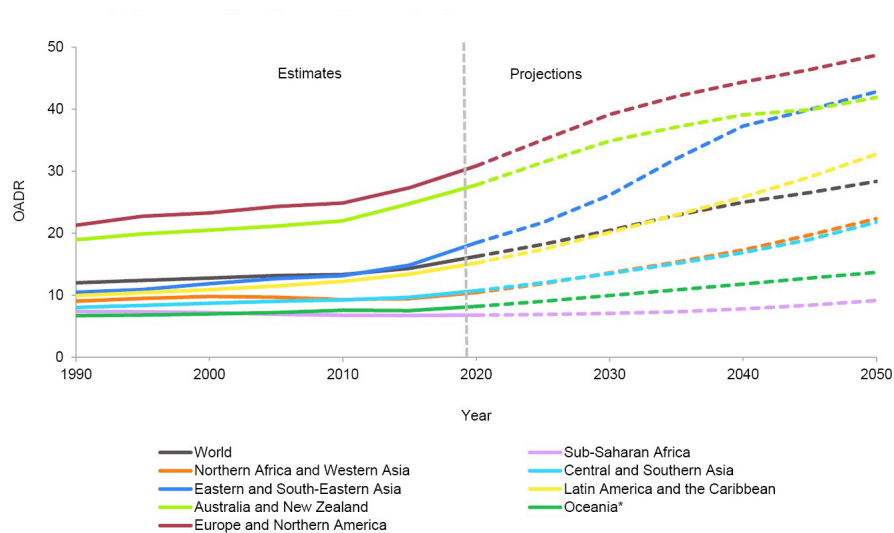


Figure 2-2: Estimated and projected old-age dependency ratios by region, 1990-2050
Source: United Nations, *World Population Ageing 2019, Highlights*.

Covid-19's Effect on the Population

Population factors, such as birth, death and migration rates have been extremely affected by the recent COVID-19 pandemic. Birth rates have been on a steady decline as of recent, but surveys show that due to the pandemic women plan to have children later in life or not at all.³⁷ Historic studies, based on the last pandemic of 1918, predict a drop of 300,000 to 500,000 births in the United States.³⁸ Covid-19 exacerbated mortality rates, with people over ages 70 and 80 experiencing the bulk of COVID-19 mortality so far, both due to the greater risk factor and the number of elderly in closed communities such as nursing homes.³⁹ As of February 2022, there have been a total of 914,230 deaths due to covid, with approximately half of those deaths from ages 75 and over.⁴⁰

³⁷ Friedman and Parker, "The Impact of the Pandemic on Demographic Trends."

³⁸ Ibid.

³⁹ Ibid.

⁴⁰ "COVID-19 Deaths by Age U.S. 2022," Statista, accessed February 25, 2022, <https://www.statista.com/statistics/1191568/reported-deaths-from-covid-by-age-us/>.

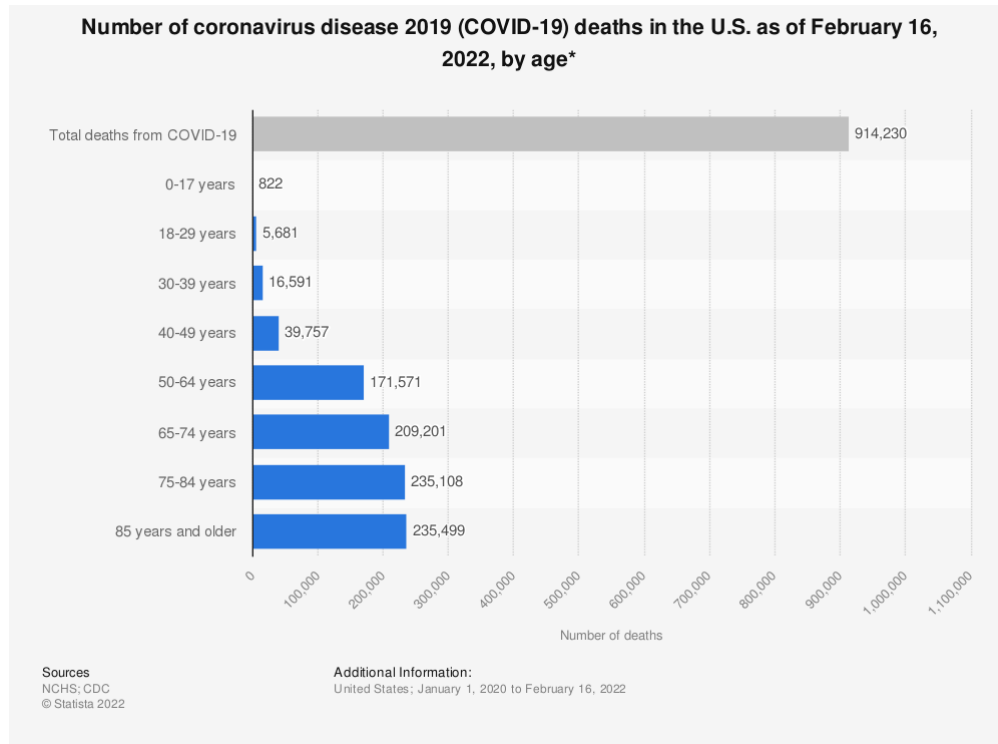


Figure 2-3: Number of coronavirus disease 2019 (COVID-19) deaths in the U.S. as of February 16, 2022, by age
Source: Statista. "COVID-19 Deaths by Age U.S. 2022."

Covid-19 also affected migration. At the start of the pandemic, many international migrants returned home before borders began to close, and those closed borders in turn made it hard to return. International migration is important, especially in the United States, as many migrants work in healthcare, eldercare, and other essential services.⁴¹ Migrants also make up for low-fertility trends, and in turn are responsible for keeping the workforce strong.⁴² The United States has a history of regulating and restricting international migration. The first series of restrictions started in 1875, which targeted criminals, the sick, beggars, and immigrants from various countries.⁴³ In the past century, there have been sanctions to grant legalization,

⁴¹ Friedman and Parker, "The Impact of the Pandemic on Demographic Trends."

⁴² Ibid.

⁴³ D'vera Cohn, "How U.S. Immigration Laws and Rules Have Changed through History," *Pew Research Center* (blog), accessed April 10, 2022, <https://www.pewresearch.org/fact-tank/2015/09/30/how-u-s-immigration-laws-and-rules-have-changed-through-history/>.

prioritize enforcement, and tighten eligibility.⁴⁴ With migrants returning to their home counties due to the pandemic, it has slowed the growth of international migrants, causing the U.S. to lose migrants who are key to the workforce.

These decreasing birth and migration rates imply a future shift to the older population, even with the high mortality rates. But even more pertinent is the fact that in the future this could mean greater isolation, smaller families, and fewer family members and essential workers to care for our aging adults.⁴⁵

Hawai'i's Kūpuna

Population & Aging in Hawai'i

When we look at Hawai'i, the aging population is projected to increase 24% by 2045, the bulk happening in 2030, and slowing down by 2045.⁴⁶ Honolulu is the 5th densely populated city in the U.S., with over 1,500 people per square mile, and it is projected that urban cores will continue to increase in density.⁴⁷

Ages 65 and up are projected to increase, with ages 85 plus even more significantly.⁴⁸ Over the past 60 years of census data, the trend of aging has increased among the age groups. While ages 65 and up are projected to increase, but not nearly as much as ages 85 and over.⁴⁹ In then further emphasizing that the elderly demographic is the second highest population in

⁴⁴ Ibid.

⁴⁵ Friedman and Parker, "The Impact of the Pandemic on Demographic Trends."

⁴⁶ Kim, Bai, and Tian, "Population and Economic Projections for the State of Hawaii to 2045."

⁴⁷ Research and Economic Analysis Division, Department of Business, Economic Development and Tourism, "Kaka'ako, Urban Core Living" (State of Hawaii, June 2014).

⁴⁸ Kim, Bai, and Tian, "Population and Economic Projections for the State of Hawaii to 2045."

⁴⁹ Ibid.

urban Honolulu.⁵⁰ The in-migration of older adults from the U.S. mainland, lower mortality rates, improved public health practices, advances in medicine and pharmaceuticals and declining birth rates among most ethnic groups are resulting in this age boom.⁵¹ Already by 2020, 1 in 4 residents of Hawai'i is 60 years or older.⁵²

Historically, Hawai'i has long been a state with a larger proportion of younger people. However, the percentage of elderly over 65 has overshoot the national average since the year 2000.⁵³

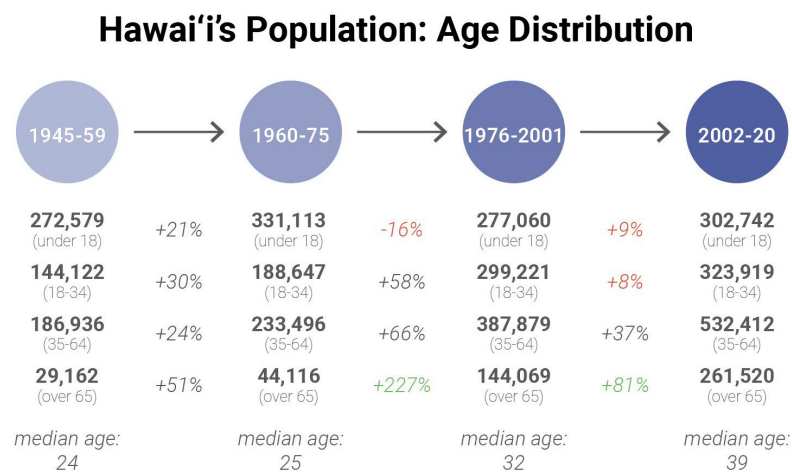


Figure 2-4: Hawai'i's Population: Age Distribution

Source: Populations taken from census reports by Hawai'i. Dept. of Business, Economic Development and Tourism and the U.S. Department of Commerce Economic and Statistics Administration Bureau of the Census.

Illustration: Author

⁵⁰ "Census Profile."

⁵¹ Caroline Servat, Nora Super, and Paul Irving, "Age-Forward Cities for 2030" (Milken Institute, October 21, 2019), <https://milkeninstitute.org/report/age-forward-cities-2030>.

⁵² "2019 – 2023 Hawaii State Plan on Aging" (Department of Health, Executive Office on Aging, n.d.), http://www.advancingstates.org/sites/default/files/Hawaii_draft_2019-2023%20Hawaii%20State%20Plan%20on%20Aging%20rev%2005-17-19.pdf.

⁵³ "Hawai'i's 2020 Vision: The State of Active Aging" (Executive Office on Aging, Department of Health, November 2013).

Hawai'i is particularly challenged since as an archipelago, all islands are required to create their entire aging network of services and delivery infrastructure and cannot share services or workers readily.⁵⁴ From 1980 to 2035, those 60 years of age and older will increase 310 percent and those over 85 and older are expected to experience a hyper growth rate of 1,158 percent during this same 55 year period.⁵⁵

In Hawai'i, only 32.7% of its older adult population live alone whereas, 40% of older adults live alone in the U.S. In 2015 approximately 36,203 Hawai'i households (11.6%) are multigenerational, defined as households with more than two generations living under the same roof. Many households in Hawai'i are multi-generational for various reasons, such as culture and high cost of living.⁵⁶

SOCIAL DEMOGRAPHIC CHARACTERISTICS	HAWAI'I					UNITED STATES				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Householder living alone	31.9	31.8	31.7	33.8	32.7	40.0	40.0	39.9	39.8	39.4
Responsible for grandchildren	1.9	2.4	1.6	2.0	1.7	1.6	1.6	1.5	1.5	1.5
Civilian veteran	18.8	17.3	17.9	16.7	16.8	18.4	17.5	16.6	15.8	15.1
With a disability	29.5	30.4	28.3	29.3	27.8	31.8	31.5	31.0	30.9	30.4
Speak English less than "very well"	18.3	17.5	18.5	17.4	16.2	8.5	8.7	8.9	8.9	8.8
Live below 100% of the poverty level	7.6	9.0	8.3	9.6	9.6	9.9	9.9	9.5	9.7	9.7

Figure 2-5: Social Demographic Characteristics of Persons 60 Years and Older
Source: Department of Health, Executive Office on Aging. "2019 – 2023 Hawai'i State Plan on Aging."

⁵⁴ Ibid.

⁵⁵ Ibid.

⁵⁶ "2019 – 2023 Hawaii State Plan on Aging."

Hawai'i Households and Caregiving

The multigenerational household is prevalent in Hawai'i due to cultural and economic factors. These households, and the idea of family, is tied to the extended family, rather than the nuclear family. Native Hawaiian and Pacific Islanders have the highest proportion of multigenerational households, followed by Asian and Filipino families.⁵⁷ High concentrations of multigenerational families follow immigration populations, so while it is common across the islands, neighborhoods like Waipahu, Kalihi, and Palolo, have high concentrations of multigenerational families.⁵⁸

Caring for kūpuna is a common part of multigenerational families. Families provide 85% of all long-term care in Hawai'i.⁵⁹ And of these caregivers are women, totaling up to 75% of family caregivers.⁶⁰ But as of late, traditional family structures have evolved, a major cause being cost of living. Hawai'i has the highest cost of living in the country, making it hard for families to find long-term rentals.⁶¹ It is now becoming increasingly common for our kūpuna to be separated from their families and their support networks.⁶²

The Importance of Our Kūpuna in Our Communities

Kūpuna is a term that is at the center of this thesis. *Kūpuna* is the Hawaiian term for grandparent, ancestor or elder, and our kūpuna are seen as the backbone of Hawai'i's culture

⁵⁷ Olivia Peterkin, "Why Hawaii Trends Toward Large And Extended Families," Honolulu Civil Beat, November 21, 2017, <https://www.civilbeat.org/2017/11/why-hawaii-trends-toward-large-and-extended-families/>.

⁵⁸ Ibid.

⁵⁹ Non-Profit Finance Fund, "Caring for Our Kupuna: Building an Aging in Place Movement in Hawaii" (Hawaii Community Foundation, 2013), <https://www.hawaiicomunityfoundation.org/file/pdfs/Caring-for-Our-Kupuna-Study.pdf>.

⁶⁰ Ibid.

⁶¹ Peterkin, "Why Hawaii Trends Toward Large And Extended Families."

⁶² Non-Profit Finance Fund, "Caring for Our Kupuna."

and traditions.⁶³ They are the source of traditional beliefs, practices, and values, and their role is respected and honored.⁶⁴ A major value in Hawaiian culture is *‘ohana*, or family. However, the western concept of family falls short in defining *‘ohana*. Hawaiians consider family not only in lateral terms, which include the nuclear family, extended family and non-blood relations, but vertically as well.⁶⁵ *‘Ohana* includes *kūpuna* as well as *aumakua*, or family gods, and ancestors.⁶⁶

Conclusion

The global aging population is increasing at a dramatic rate, and Hawai‘i is no exception. This issue extends beyond its growth, as *kūpuna* are also living longer. Despite Covid-19’s high mortality rates, an increasing aging population is still predicted. In conjunction, the pandemic is predicted to cause decreases in birth rates and migration ultimately keeping the well-being of our *kūpuna* at risk. The abrupt change in migration patterns may lead to less essential workers to care for *kūpuna*. Family structures are also evolving, and it’s becoming more common for our *kūpuna* to live independently. In this chapter, the understanding of the global and local issue of population and aging has been established, as well as the significance of our *kūpuna* within local culture and communities. Our response to the increasing issues and how we are caring for our *kūpuna* need to be put under critical review. What are the needs of our *kūpuna* that are critical to address currently and in the future?

⁶³ “Themes – Kūpuna,” *‘Ulu‘ulu*, accessed February 28, 2022, <http://uluulu.hawaii.edu/themes/kupuna>.

⁶⁴ Ellis-Jenkins, “Kupuna Wisdom.”

⁶⁵ *Ibid.*

⁶⁶ *Ibid.*

Chapter 3: Shifting Perspectives - Rethinking How We Age

As the percentage of our aging population increases, our life expectancy parallels. In this, all walks of life must be considered. The pandemic has also shed light on the importance of mental health, and the effects of isolation. The objective of this chapter is to understand the physical and mental health of kūpuna as they age. In considering kūpuna and their well being, it is common to resort to accommodating to chronic illnesses and low mobility. However, social isolation is something many experience, which in turn amplifies any existing health conditions ultimately increasing additional health issues. Further, in understanding the desire to age in place, current housing typologies may then evolve toward inclusivity, accessibility, and to prevent social isolation.

The Health Needs of Our Kūpuna

Aging processes per individual are unique and unprecedented. As some remain active and healthy throughout their adult life, others may develop health conditions or age at a different rate. Generally, 92% of older adults develop at least one chronic condition, and 77% develop two or more.⁶⁷ Heart disease, cancer, stroke and diabetes are among the most common causes of death among individuals 65 and over, contributing to almost two thirds of all deaths each year.⁶⁸ Other signs of aging include hearing impairment, ranging from mild to moderate, as well as visual impairments, such as difficulty seeing in dim conditions and causing difficulty in driving. Both are common, as approximately 25% of adults 65-74 and 50% of adults over 75

⁶⁷ "Older Adults' Health and Age-Related Changes," American Psychological Association, accessed February 25, 2022, <https://www.apa.org/pi/aging/resources/guides/older>.

⁶⁸ Ibid.

have hearing impairments, which contributes to feelings of isolation.⁶⁹ Despite the range of health issues mentioned, fewer than one-fifth of adults between 65 and 74 need assistance with daily living, but that increases to over 40% for adults over 85.⁷⁰ In this, chronic health issues still do not prevent kūpuna from remaining independent as well as aging in place well into later years.

An additional common and critical symptom of aging is loss of mobility. Mobility is critical for maintaining function and independence, and is vital for those who wish to age in place. Low mobility affects physical health along with social and emotional health as many are susceptible to illness, disability, hospitalization, or death.⁷¹

Low-mobility can result from falls or hospitalization, or movement disorders such as Parkinson's, leading to loss of function and difficulty with daily activities such as bathing, dressing or using the bathroom.⁷² Muscle strength and balance impairments are both related to mobility issues. Mobility limitations increase more than five times with both balance and strength impairments than those with no impairments. However, those with balance impairments with normal strength are three times at risk.⁷³ Strength impairment alone does not increase risks, which places more critical attention on balance and stability when observing mobility affects.⁷⁴ In this, stairs are the most challenging as one's mobility decreases, and interventions addressing balance and strength impairments are critical, such as adequate space to pause and

⁶⁹ Ibid.

⁷⁰ Ibid.

⁷¹ "Maintaining Mobility and Preventing Disability Are Key to Living Independently as We Age," National Institute on Aging, November 3, 2020, <http://www.nia.nih.gov/news/maintaining-mobility-and-preventing-disability-are-key-living-independently-we-age>.

⁷² Ibid.

⁷³ Merja Rantakokko, Minna Mänty, and Taina Rantanen, "Mobility Decline in Old Age," *Exercise and Sport Sciences Reviews* 41, no. 1 (January 2013): 19–25, <https://doi.org/10.1097/JES.0b013e3182556f1e>.

⁷⁴ Ibid.

contact the ground with both feet allowing kūpuna to regain balance and lower physical demands.⁷⁵

Sensory impairments, such as vision and hearing, can accelerate the decline of mobility and restrict participation in social activities.⁷⁶ kūpuna with co-existing vision and hearing impairments are four times more at risk of falls, and those with vision, hearing and balance impairments are 30 times more at risk of fall compared to those without vision and hearing impairments.⁷⁷ As kūpuna encounter increased risks of falling, especially when living alone, it becomes a greater importance to integrate them into their community where accessibility to others and social support can be easily attained. It's also crucial to maintain visibility in high-risk areas, such as stair circulation.

Mobility also worsens due to sedentarism. Many kūpuna spend between 9 and 13 hours a day sitting, and most don't get an adequate amount of physical activity.⁷⁸ Fear is a vital factor that affects sedentarism. Approximately 20-40% of adults over 65 fall every year, and half of those adults fall repeatedly.⁷⁹ The fear of falling and the fear of traveling outdoors may lead to the avoidance of outdoor activities, which then the lack of physical activity accelerates the decline of mobility.⁸⁰ This fear in conjunction with sedentarism was exacerbated by the pandemic, not only the fear of falls but the fear of disease. kūpuna are no longer comfortable re-entering society due to the rise in variants, which leads to increased time sitting at home, and their muscles becoming weaker, then becoming more susceptible to falls.⁸¹ Providing multiple

⁷⁵ Jesse V. Jacobs, "A Review of Stairway Falls and Stair Negotiation: Lessons Learned and Future Needs to Reduce Injury," *Gait & Posture* 49 (September 1, 2016): 159–67, <https://doi.org/10.1016/j.gaitpost.2016.06.030>.

⁷⁶ Rantakokko, Mänty, and Rantanen, "Mobility Decline in Old Age."

⁷⁷ Ibid.

⁷⁸ "Maintaining Mobility and Preventing Disability Are Key to Living Independently as We Age."

⁷⁹ Rantakokko, Mänty, and Rantanen, "Mobility Decline in Old Age."

⁸⁰ Ibid.

⁸¹ "Why Senior Mobility Is so Important Right Now," Cleveland Clinic, August 17, 2021, <https://health.clevelandclinic.org/why-senior-mobility-is-so-important-right-now/>.

types of shared spaces within a residential community could allow kūpuna to reintegrate themselves back into their neighborhood and community, at their own pace.

In addition to these physical health conditions, kūpuna can also experience mental health concerns. Generally, around 20% of adults over 55 experience some type of mental health condition, such as anxiety, cognitive impairments, and depression, all of which can lead to physical, mental and social functioning impairments.⁸² Depression is the most prevalent mental health problem among our kūpuna, but it is not a normal part of aging, and it often goes under-recognized and untreated. This can adversely affect the treatment of other chronic conditions.⁸³ Similarly, anxiety is also under-recognized, and older adults are less likely to report these symptoms compared to physical complaints.⁸⁴

However, physical and mental health are interrelated. They are symbiotic and cause various effects to each other. For example, depression can increase the risk for multiple health problems, such as diabetes, heart disease and stroke.⁸⁵ Depression has a direct effect of several different systems in the body that can cause inflammation, change heart rate and blood circulation, cause abnormalities in stress hormones, and cause metabolic changes.⁸⁶ Conversely, the presence of these same chronic conditions can increase the risk for mental illness.⁸⁷ This can be observed in those with Alzheimer's which, like depression, is not a normal part of aging, affects approximately 5% of older adults. However, it increases exponentially in later years, affecting 37% of elderly over 90.⁸⁸ Alzheimer's can contribute to the risk of mental

⁸² Center for Disease Control and Prevention, "The State of Mental Health and Aging in America," 2006, 12.

⁸³ Ibid.

⁸⁴ Ibid.

⁸⁵ Center for Disease Control and Prevention, "About Mental Health," Center for Disease Control and Prevention, November 23, 2021, <https://www.cdc.gov/mentalhealth/learn/index.htm>.

⁸⁶ "Chronic Illness and Mental Health: Recognizing and Treating Depression," National Institute of Mental Health (NIMH), accessed February 25, 2022, <https://www.nimh.nih.gov/health/publications/chronic-illness-mental-health>.

⁸⁷ Ibid.

⁸⁸ Center for Disease Control and Prevention, "About Mental Health."

illnesses such as depression, and likewise depression can increase the risk of diseases such as Alzheimer's. Chronic illness, visual and hearing impairments, and low-mobility all contribute to feelings of isolation which are also contributing factors causing depression.

Regular exercise is beneficial for both physical and mental well-being. It reduces the risk of mobile disability by 18%, and can benefit older adults who are vulnerable to such.⁸⁹ Physical activity also benefits emotional and social health which contributes to improved management of anxiety and depression.⁹⁰ Research has shown that endurance, strength, balance, and flexibility exercises are important to improve physical mobility.⁹¹ Endurance exercises, such as walking, yard work, climbing stairs, or playing tennis, help to increase breathing and heart rate to lessen efforts in carrying out daily tasks.⁹² Strength exercise, such as lifting weights or simply carrying groceries, arm curls, and wall push-ups, can keep muscles strong and help with balance and prevent falls.⁹³ Balance exercises, such as Tai Chi, standing on one foot, and standing from a seated position, strengthen the lower body to also help improve balance and prevent falls.⁹⁴ Flexibility exercises, such as stretching, improves flexibility and movement, such as reaching down to tie your shoes.⁹⁵ It is highly beneficial to break up sitting and sedentarism with short periods of standing or short walks during the day to maintain mobility and health longevity, so it is important that residential communities should provide spaces that support these beneficial activities.

⁸⁹ "Maintaining Mobility and Preventing Disability Are Key to Living Independently as We Age."

⁹⁰ "Why Senior Mobility Is so Important Right Now."

⁹¹ "Four Types of Exercise Can Improve Your Health and Physical Ability," National Institute on Aging, accessed February 26, 2022, <http://www.nia.nih.gov/health/four-types-exercise-can-improve-your-health-and-physical-ability>.

⁹² Ibid.

⁹³ Ibid.

⁹⁴ Ibid.

⁹⁵ Ibid.

Specific to Hawai'i, the average life expectancy is 81.3 years of age, which is longer than any other U.S. state., Hawai'i was also considered one of the healthiest states for several years with the lowest obese population of 19%.⁹⁶ However, 87% of older adults have one or more chronic conditions, and disease prevalence differs by ethnicity. Native Hawaiians and Filipinos have higher prevalence of diabetes, while Caucasians have higher incidences of cancers, and Japanese have higher prevalence of hypertension. Because of the high prevalence of multiple chronic conditions, 27% of older adults have at least one disability and approximately 38% of them report poor physical and mental well-being.⁹⁷

AGE GROUP AND DISABILITY	HAWAII					UNITED STATES				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
65 years and older										
Hearing	15.2	16.4	15.4	14.5	13.7	15.2	15	14.8	14.6	14.4
Vision	5.8	5.3	4.7	5.1	4.8	6.8	6.7	6.5	6.5	6.3
Cognitive	12.7	12.2	10.3	11	9.1	9.2	9.1	9	8.9	8.6
Ambulatory	22	22.9	20.4	22.3	20.1	23.3	23	22.6	22.5	22.5
Self-Care ¹	7.8	9.3	8.5	8.9	6.8	8.5	8.4	8.2	8.1	7.8
Independent Living ²	17	17.5	15.7	16.3	13.4	15.4	15.4	14.9	14.6	14.2

Figure 3-1: Persons with Disabilities in Hawai'i and the United States
Source: Department of Health, Executive Office on Aging. "2019 – 2023 Hawai'i State Plan on Aging."

In Hawai'i, 1 in 4 adults struggle with disabilities.⁹⁸ It is also likely that the majority of elderly face mobility impairments along with cognition, hearing and vision.⁹⁹ Cognition, or

⁹⁶ "2019 – 2023 Hawaii State Plan on Aging."

⁹⁷ Ibid.

⁹⁸ CDC, "Disability & Health U.S. State Profile Data: Hawaii," Centers for Disease Control and Prevention, June 28, 2021, <https://www.cdc.gov/ncbddd/disabilityandhealth/impacts/hawaii.html>.

⁹⁹ Ibid.

difficulty concentrating, remembering, or making decisions, may also commonly be encountered among kūpuna through aging processes.¹⁰⁰

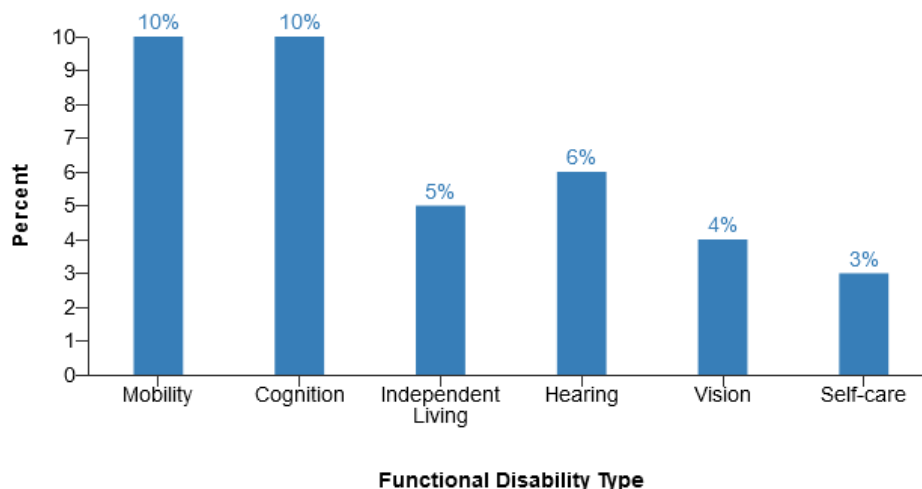


Figure 3-2: Percentage of adults in Hawai'i with select functional disability types
Source: CDC. "Disability & Health U.S. State Profile Data: Hawai'i."

Mental health is critical to address as perceptions are often based heavily on cultural influences. Hawaiian perspectives are also integral in community development and aging perspectives. "In the Native Hawaiian view, mental health is part of the larger continuum of physical, emotional, and spiritual well-being that is tied to the well-being of and connections to our families, the larger community, and the land."¹⁰¹ Designs that support aging communities can also further integrate kūpuna care within the neighborhood and further. Social connections,

¹⁰⁰ Ibid.

¹⁰¹ Office of Hawaiian Affairs, "Addressing Native Hawaiian Mental Health Needs Through Culturally Informed Services and Programs," 2019, <https://19of32x2yl33s8o4xza0gf14-wpengine.netdna-ssl.com/wp-content/uploads/OHA-4-Mental-Health-Council-External-White-Paper-Final.pdf>.

and connections to the land are foundational for our health and well-being, and must be fostered in design.

Social Cohesion and Isolation

Over time, one's social structures shift due to life events such as retirement, loss of loved ones, and onset of physical and mental health conditions, leading to increased difficulty in maintaining social connections. These changes can increase the risk of social isolation and have an effect on chronic illness and physical and cognitive health.¹⁰² Social isolation is defined as the absence of meaningful social relationships.¹⁰³ It differs from loneliness, as loneliness is singularly the feeling of this absence. One can be socially isolated yet not lonely, however one can feel lonely yet still have meaningful relationships.¹⁰⁴ In this, it is clear that social isolation is unintentionally integrated through habits built out of the need for convenience and fear of many kūpuna.

Social isolation affects 25% of adults over 65.¹⁰⁵ Risk for social isolation increases for adults who are divorced, widowed, or separated, for those who live alone, those with disabilities such as low-mobility, and poverty.¹⁰⁶ Isolation is exacerbated when older adults are slow to recognize that they are in need of assistance, refuse to accept assistance or worry to burden or bother others.¹⁰⁷ Elderly who live in isolation are often separated from their support network further elongating responses to help and care needed. If emergencies, such as falling, occur,

¹⁰² "Explore Risk of Social Isolation - Ages 65+ in Hawaii | 2021 Senior Report."

¹⁰³ Ibid.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid.

¹⁰⁷ Non-Profit Finance Fund, "Caring for Our Kupuna."

assistance may then take hours or days to arrive. kūpuna could also put off or neglect daily activities, such as cooking, or bathing if they are unable to do it independently.¹⁰⁸ In addition to isolation from friends and family, many kūpuna are isolated from physically accessing their community. Most elderly are unable to drive, and must rely on others, or public transportation to allow them to run errands and connect them to the greater community.¹⁰⁹

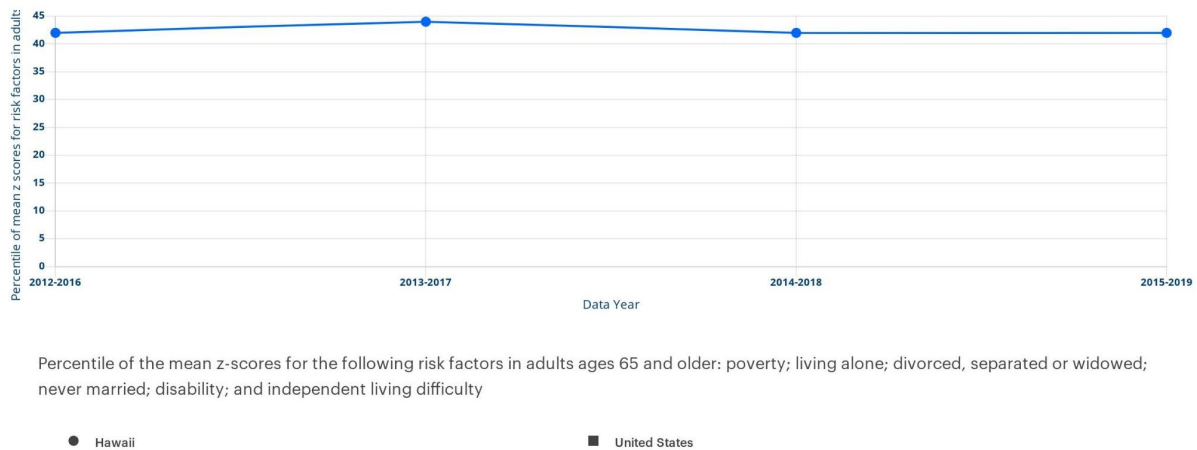


Figure 3-3: Trend: Risk of Social Isolation - Ages 65+, Hawai'i, United States
Source: America's Health Rankings. "Explore Risk of Social Isolation - Ages 65+ in Hawai'i | 2021 Senior Report."

¹⁰⁸ Ibid.

¹⁰⁹ Ibid.

Subcomponents

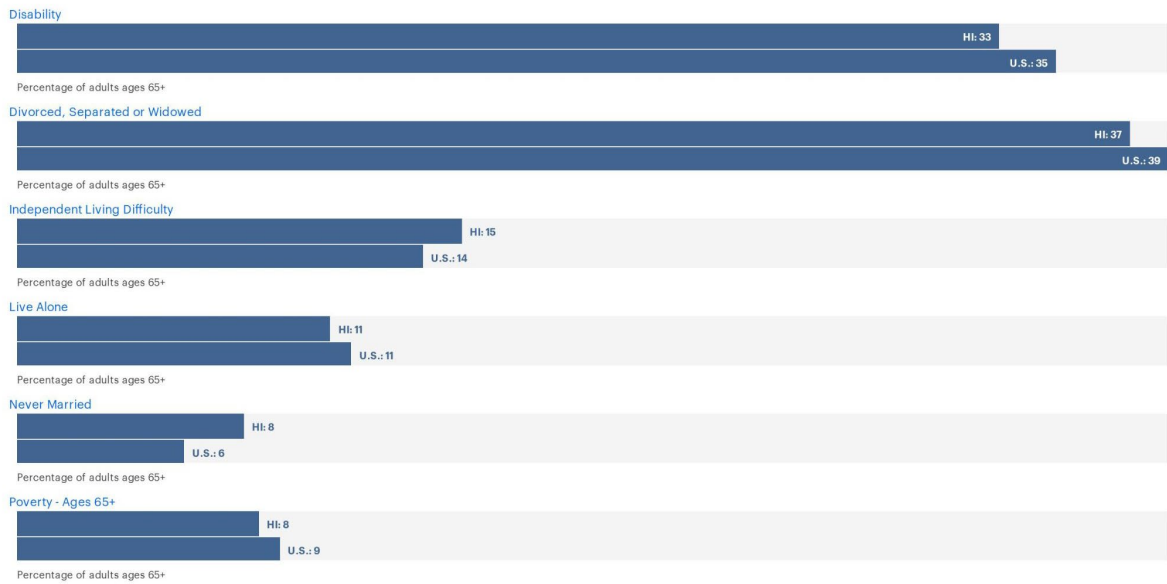


Figure 3-4: Subpopulations: Risk of Social Isolation - Ages 65+, Hawai'i, United States
Source: America's Health Rankings. "Explore Risk of Social Isolation - Ages 65+ in Hawai'i | 2021 Senior Report."

Hawai'i's kūpuna have experienced social isolation consistently over many years, and the main contributing factors are disability and being divorced, separated or widowed.¹¹⁰ Other factors include living alone, difficulties associated with disability while living alone, never getting married and poverty.¹¹¹

Healthy People 2030 identified the five domains of the social determinants for health, which include topics on economic stability, education, healthcare, the neighborhood, and social community context.¹¹² Social cohesion, the strength of relationships and a sense of community, is a key issue in the social and community context domain.¹¹³ One indicator of social cohesion is social capital, which is the ability to access resources based on one's network, which can

¹¹⁰ "Explore Risk of Social Isolation - Ages 65+ in Hawaii | 2021 Senior Report."

¹¹¹ Ibid.

¹¹² Healthy People 2030, "Social Cohesion."

¹¹³ Ibid.

encompass emotional support, instrumental support, and shared knowledge amongst a community.¹¹⁴ Examples of social capital within a community may vary in time and levels of interaction. This includes encouragement and support, getting a ride to the pharmacy, or learning about community resources and volunteer opportunities from friends, family and neighbors. Studies have shown that social capital, or the lack thereof, is directly linked to mortality.¹¹⁵ The presence of social support can positively affect health both behaviorally and psychologically.¹¹⁶ It can influence our diet and stress levels, as well as affect our cardiovascular, neuroendocrine, and immune systems.¹¹⁷

A study led by University of Hawai'i Thompson School of Social Work & Public Health found that social cohesion is especially important among the Native Hawaiian and other Pacific Islander (NHPI) kūpuna, as it is associated with lower risk of serious psychological distress or memory problems.¹¹⁸ The research suggests that our NHPI kūpuna “experience health challenges that have been linked to social and structural disparities rooted in the experience of historical trauma and discrimination,” indicating that “a positive association between neighborhood social cohesion and health, which potentially creates new pathways for decreasing inequities faced by NHPI older adults.”¹¹⁹ This significantly highlights the importance of designing spaces that support social environments that foster social cohesion and prevent isolation.

When a neglect or lack of social cohesion is present, isolation then occurs, which is detrimental to health that progresses throughout many aging processes. Social cohesion is

¹¹⁴ Ibid.

¹¹⁵ Ibid.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

¹¹⁸ “Neighborhood Ties Improve Well-Being of Older Adults,” *University of Hawaii News* (blog), June 29, 2021, <https://www.hawaii.edu/news/2021/06/29/neighborhood-ties-for-older-adults/>.

¹¹⁹ Ibid.

important, especially during natural disasters, or pandemics, because it lessens the likelihood of social support for kūpuna. This leads to fewer neighbors who might provide care, presence, and support along with fewer communal areas to seek refuge.¹²⁰

The recent Covid-19 pandemic highlighted the importance of social cohesion. The policies that were put in place to protect the physical health of the population had led to social isolation, lower healthcare utilization, and reduced physical activity and social interaction.¹²¹ This in turn increased anxiety, depression and posttraumatic stress symptoms.¹²² In a sample study, half of adults age 50–80 reported feeling regularly stressed and isolated from others.¹²³ However, one in three older adults hesitate when seeking care for their mental health.¹²⁴

Analysis of native views and health studies of kūpuna, along with effects from the pandemic further emphasize the range of responses and roles of kūpuna within society. Applications can then be determined to recognize how to design to aid needs of aging. Social isolation is not new to our kūpuna, and only after the pandemic has the rest of the population begun to experience and understand the weight of this issue.

Community and Kuleana

The importance of community in Hawai'i is emphasized in *Kaiāulu: Gathering Tides* by Mehana Blaich Vaughan. *Kaiāulu* is a culmination of two decades of interviews with Hawaiian

¹²⁰ Healthy People 2030, "Social Cohesion."

¹²¹ Richter and Heidinger, "Hitting Close to Home."

¹²² Ibid.

¹²³ Lauren Gerlach, "Mental Health Among Older Adults Before and During the COVID-19 Pandemic," National Poll on Healthy Aging, May 4, 2021, <https://www.healthyagingpoll.org/reports-more/report/mental-health-among-older-adults-and-during-covid-19-pandemic>.

¹²⁴ Ibid.

elders and community members that “shares their stories of enduring community efforts to perpetuate kuleana, often translated to mean ‘rights and responsibilities.’”¹²⁵ Here, its explained that a community’s wealth lies in the resources that the land provides:

What do communities look like when wealth is measured not by what we have, but by what we give away?...Living from the natural resources of the immediate area provided roles for everyone, shared work, and security rooted in relationships with other community members, and with the land. ‘A [contemporary] subsistence economy emphasizes sharing and redistribution of resources, which creates a social environment that cultivates community and kinship ties, emotional interdependency and support, prescribed roles for the youth, and care for the elderly. Emphasis is placed on social stability rather than on individual efforts aimed at income generating activities.’¹²⁶

There is an abundance of wealth in the land and its resources, further emphasizing the necessity and responsibility to care and maintain it. How resources are utilized and then regenerated, according to Vaughan, applies both to the physical action of maintaining the land but also the practice and action behind it. This principle of care and responsibility translates in application to any and all inhabited spaces. There is opportunity to create and cultivate social connections through caring for the land. *Kaiāulu* explains the value and importance of community and social connections. It is vital to maintain a strong connection to community and neighbors to both maintain the building or space, and also those living in one’s surroundings.

¹²⁵ Mehana Blaich Vaughan, *Kaiāulu: Gathering Tides* (Oregon State University Press, 2018).

¹²⁶ Ibid.

Reciprocity and responsibility are important components in caring for the people and places that shape and sustain us.¹²⁷

If kūpuna are removed and isolated from the community, it is apparent that the trust and values for the community then may be lost. kūpuna, along with many, desire greatly to age in place, and in that, social cohesion is key.

Aging in Place

Aging in place is popular among our kūpuna, with 90% of seniors in America desiring to remain in their homes.¹²⁸ Not only is this beneficial for their mental wellbeing, but it helps our kūpuna maintain independence, reduces social isolation, and helps our kūpuna avoid nursing home admission, all of which lower health costs and is a significant financial benefit.¹²⁹

However, there are multiple components, such as available transportation, daily needs support, community connections, respite care, and access to health and nursing services, needed to effectively allow and empower our kūpuna to age in place healthily.¹³⁰ The Hawai'i Community Foundation and the Non-Profit Finance Fund list four barriers limiting aging in place programs: 1) Funding structures, which leave a large gap of our kūpuna underserved, 2) Information gaps, where our kūpuna and their families are unaware of available services, 3) Caregiver stress, which ultimately leads to sending our kūpuna to homes, and 4) Isolation, which is known to be detrimental in multiple facets.¹³¹

¹²⁷ Ibid.

¹²⁸ Non-Profit Finance Fund, "Caring for Our Kupuna."

¹²⁹ Ibid.

¹³⁰ Ibid.

¹³¹ Ibid.

Funding is primarily dependent on assistance from Government entities, which tend to provide curative, and not preventative care, and subsidized services, which are limited.¹³² Existing information management resources are either inadequate or unaffordable, and service providers lack collaboration, and have their own information gaps on services outside the general aspects of care.¹³³

Caregiver stress and isolation both have direct impacts of social cohesion and community connection. Our kūpuna rely heavily on friends and family, as they provide 85% of all long-term care in Hawai'i, which totals to 162 million hours of service, which is valued at \$2 billion.¹³⁴ As the value and care of kūpuna proves to be great, it also imposes financial burdens on family members, such as expenses, reduced work hours, lower savings and burnout.¹³⁵ These stressors lead to eventual transition to institutional care once these burdens become too much to bear, which is why accessibility to age-in-place services are integral in retaining independence and wellbeing for not only kūpuna, but for their family caregivers as well. Successful aging in place communities provide readily available respite services, which can include adult daycares, short-term residential options, and volunteer and chore services.¹³⁶

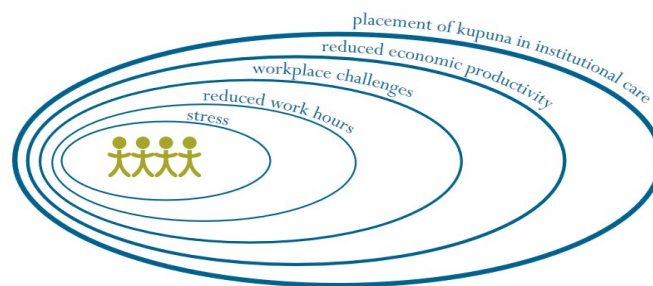


Figure 3-5: The Compounding effects of caregiver stress
Source: Non-Profit Finance Fund, "Caring for Our kūpuna: Building an Aging in Place Movement in Hawai'i"

¹³² Ibid.

¹³³ Ibid.

¹³⁴ Ibid.

¹³⁵ Ibid.

¹³⁶ Ibid.

However, there are a number of kūpuna who are isolated and without family caregivers and support systems. As covered in the previous sections, social isolation is detrimental to the health of kūpuna, and increasing community connections help to mitigate the negative effects of isolation. 40% of Honolulu seniors identified that senior centers and activities are a major service that is lacking within their communities.¹³⁷ Another factor contributing to isolation is transportation or the lack thereof. A lot of kūpuna are unable to drive, therefore disconnected from the greater community, especially those who live in suburban and rural areas. Transportation is also a struggle in denser neighborhoods and cities. There are certain restrictions limiting the amount of time an elderly individual can be in a van, which limits the number of kūpuna that an organization, such as a daycare, can transport.¹³⁸ There are also challenges for maintaining transport services, and growing interests in outsourcing programs like the Handi-van to non-profit providers.¹³⁹

Neighborhoods and communities that are connected and accessible, that provide support for daily needs, community connections, respite care and access to health services help our kūpuna to effectively age in place. In learning about the benefits and components of aging in place, it is also important to understand the current housing options for seniors and what each provides.

Existing Housing Typologies

There are a variety of different housing options for our kūpuna that are specific to different aging needs. Below is a list of some of those options:

¹³⁷ Ibid.

¹³⁸ Ibid.

¹³⁹ Ibid.

Housing & Facilities:

- Adult Residential Care Homes

These homes are state licensed, but not certified for Medicare. Basic services, such as meals and safety measures are included, with a 24-hour staff to provide programs and support for therapy, medication, exercise, and activities. Larger facilities can accommodate individuals with higher level care as well.¹⁴⁰

- Skilled Nursing Facilities

Nursing facilities, or nursing homes, provide care for those with needs that their family caregivers can no longer provide, but don't require hospitalization. These homes have a 24-hour nursing staff that can provide a variety of rehabilitation services and therapy.¹⁴¹

- Affordable Senior Housing

Subsidized housing through government programs, which include Public Housing, and Housing Choice Voucher, and are based on age and income.¹⁴²

Multi-generational:

- Accessory Dwelling Units

ADU's, or 'Ohana Units, are a separate attached or detached living space on a single-family home lot, and a common option for kūpuna who want to be close to family members yet maintain independence.¹⁴³

¹⁴⁰ Locations Hawaii Real Estate and Hawaii 96815735-4200, "Senior Housing in Hawaii," Locations Hawaii Real Estate, accessed February 23, 2022, <https://www.locationshawaii.com/news/senior-resources/senior-housing-in-hawaii/>.

¹⁴¹ Ibid.

¹⁴² Ibid.

¹⁴³ Ibid.

Communities:

- Assisted Living Communities

Assisted living provides assistance with daily care, but not at the level of nursing homes.

Provided are assistance with daily needs, such as meals, laundry and transportation, and personal needs, such as bathing, dressing, and eating.¹⁴⁴

- Continued Care Retirement Communities

Continued care retirement communities offer a range of care and assistance in a community setting, allowing residents to remain in community as health needs change as they age.¹⁴⁵

- Active Independent Senior Living Communities

These communities are the most independent and geared towards relatively healthy seniors who prioritize independence and privacy, with opportunities for socialization through activities and classes.¹⁴⁶

- Intergenerational Communities

Community cluster of unrelated individuals and/or clusters of multi-generational families and is a naturally occurring typology in Hawai'i due to cultural norms.

¹⁴⁴ Ibid.

¹⁴⁵ Ibid.

¹⁴⁶ Ibid.

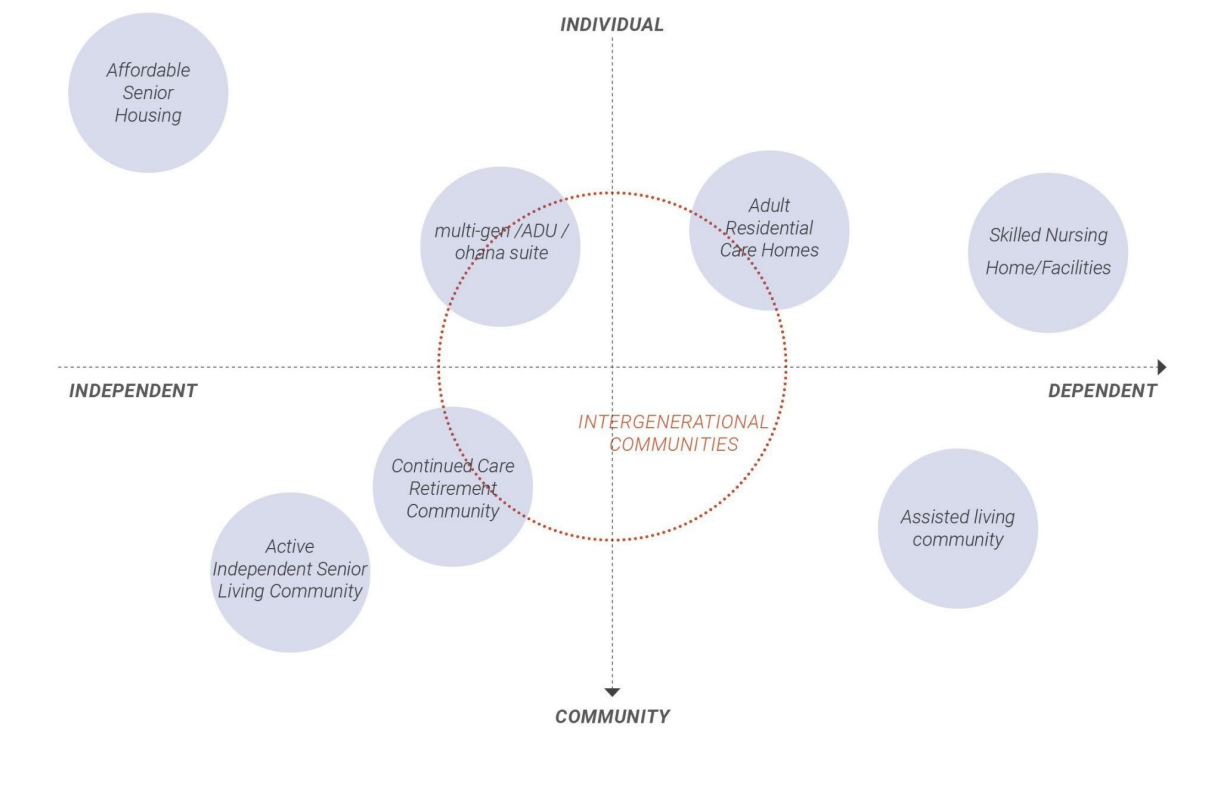


Figure 3-6: Existing Housing Typologies
Source: Locations Hawai'i Real Estate. "Senior Housing in Hawai'i."
Illustration: Author

In identifying the different housing typologies for aging available to our kūpuna, intergenerational communities seem to provide a balance between individual and community, independent and dependent living.

Importance of Inclusivity

When thinking of intergenerational living, it often forms ideas of communities that span multiple generations, a community that supports kūpuna, as well as young children, adolescents, and adults. Inclusivity is an important component in intergenerational communities, and where we live should encompass it.

In reference to kūpuna and design interventions, it is commonly viewed as universal design. Universal design is a one-for-all approach, where the design itself is aimed to be used by a broad range of users.¹⁴⁷ Inclusive design, however, is design that targets specific, multiple needs. Rather than generalizing a design for multiple users, it aims to address as many different solutions as possible, making sure as many needs are met with an experience to fit those needs.¹⁴⁸

The idea of centering on inclusive design derives in understanding the design's users. When thinking of designing for kūpuna, it accommodates their needs along with those connected to them, such their children, and their grandchildren, to have a fully developed design. Universal design has limitations and can be used in tandem with inclusive design strategies. Elderly and children have both extremely similar and extremely different needs, and not all universal strategies are applicable to all users and cater to all needs. For example, universal design element such as consistent ground conditions, ergonomic handrails, and hall and doorway spacing to accommodate wheelchairs should be combined with inclusive design elements, such as a secondary handrail for children, variety of seating heights in public spaces, and multiple recreational programs for various age groups.

Bloomberg CityLab, a new source that focuses on cities and issues related to transportation, housings, design, culture, justice and the environment, recently addressed the idea of inclusivity within cities.¹⁴⁹ CityLab called attention to the redesign of cities, and how it lacks levels of inclusivity when attempting to cater to those with disabilities and mobility

¹⁴⁷ "Understanding Universal Design vs Accessibility vs Inclusive Design."

¹⁴⁸ Ibid.

¹⁴⁹ "What Is Bloomberg CityLab?," *Bloomberg Help Center*, accessed April 20, 2022, <https://www.bloomberg.com/help/question/what-is-bloomberg-citylab/>.

constraints.¹⁵⁰ The concept of the 15-minute city has been a staple for many in recent years. Their aim is to increase access to essential services within their cities and neighborhoods, where everything is within a 15 min walk from home, or sometimes measured as amenities within a ½ mile radius. But who are the intended measurements aimed toward? CityLab raises these questions, and challenges the 15-minute cities accessibility claims:

In addition to the racialized and colonial assumptions at play, the 15-minute city model also erases disabled bodies and movement...It's easy for privileged folks to support this vision of urbanism without making any sacrifices, without addressing the profound disparities of race and wealth and disability that make this 15-minute city utterly inaccessible to so many.¹⁵¹

This idea of the 15-minute city prioritizes speed and efficiency over accessibility. It is an exclusive view geared towards the able-body. It doesn't consider those with mobility disabilities, like many of our kūpuna, if you have vision impairments, or if you are a parent with children and a stroller.

The City and County of Honolulu are developing Transit-Oriented Development neighborhoods around 21 rail stations, and these neighborhood developments follow the ½ mile radius parameters. It is important to consider kūpuna, who will make up a large portion of neighborhoods, as well as families. Inclusivity is essential at both the building and the neighborhood level to ensure accessibility of public transportation to the entire community.

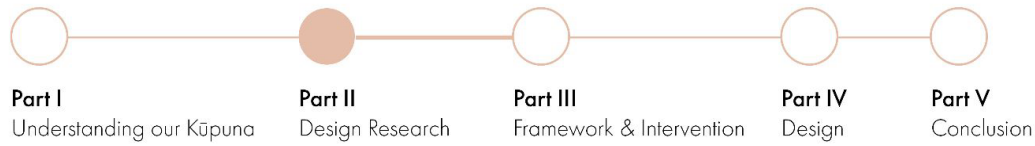
¹⁵⁰ Anna Zivarts, "The '15-Minute City' Isn't Made for Disabled Bodies," Bloomberg CityLab, April 22, 2021, https://www.bloomberg.com/news/articles/2021-04-22/the-people-that-the-15-minute-city-leave-behind?utm_medium=website&utm_source=archdaily.com.

¹⁵¹ Ibid.

Conclusion

In this chapter, the range of physical, mental, and social needs of kūpuna are analyzed. Social isolation is at the center of excessive health issues and needs, which has been neglected over time. Both native and local perspectives of community and culture are addressed in association with the roles, shared work, and shared resources. It is then aligned with the current culture and trends surrounding care for kūpuna and the common areas of neglect throughout the pandemic and redesign of communities. The design opportunities in creating supporting and healthy environments for the physical and mental well-being then provide additional opportunities to reconnect with kūpuna. Within the next design frameworks, observations, and approaches to aging in place along with strategies for integrating kūpuna into communities are highlighted. The inventory of observations in this chapter in conjunction with the upcoming case studies allows opportunity to further define how design can connect the care and building of kūpuna homes and lifestyles can be improved.

Part II: Design Research



The second part of this dissertation reviews literature and case studies relevant to designing for elderly, for aging in place, and ultimately for social cohesion. Chapter 4 overviews relevant literature at the global, national, and local scale, followed by literature that discuss specific strategies for aging. Chapter 5 reviews case studies spanning different typologies, from residential, to landscape, to public space to get a full grasp on how different approaches to designing for social cohesion can be achieved. In understanding relevant literature and case studies, its components and commonalities are extracted. Chapter 6 then reviews community surveys and needs assessment to get a better understanding of user needs. Findings extracted from this part of the dissertation were used as a basis for the framework and design.

Chapter 4: Literature Reviews

This chapter provides additional context to various frameworks and strategies for aging happening at the local, national, and global scale. In reviewing the reports, many include other aspects related to aging such as financial security, healthcare, and employment. However, the aspects related to the block, building and strategies related to increasing social connections were focused on and extracted from each study. Further, it is at question to observe how to better design the block to improve connections to kūpuna and their neighbors, along with how to improve the connection between kūpuna and daily resources, and finally, how to promote mobility and social connections. The following studies highlight these immediate observations, analyses, and predictions at different scales to compare needs of aging in the context of design.

1 Global, National, and Local Frameworks

The frameworks and strategies for aging from global, national, and local resources are reviewed throughout this section. Social cohesion and further conclusions are highlighted to further understand potential design applications.

1.1 Global AgeWatch Index 2015

Overview:

The Global AgeWatch Index 2015 rankings list the following countries by income security, health status, capability and enabling environments.¹⁵² Topping the list are

¹⁵² “Global Rankings Table,” HelpAge International, accessed February 23, 2022, <https://www.helpage.org/global-agewatch/population-ageing-data/global-rankings-table/>.

Switzerland, Norway, Sweden, Germany, and Canada, with the United States listed as number nine. The AgeWatch Index determined these rankings through four domains: Income security, health status, capability and enabling environment.¹⁵³

Figure 4: Global AgeWatch Index domains and indicators

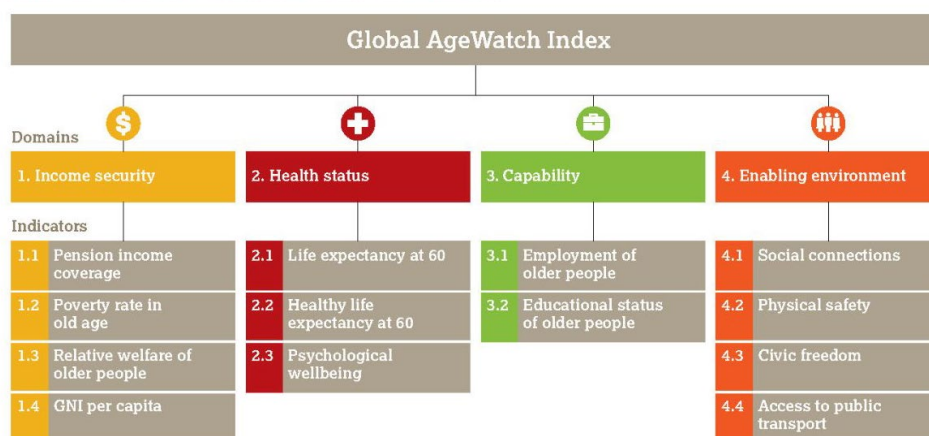


Figure 4-1: Global AgeWatch Index domains and indicators
Source: HelpAge International, “Global AgeWatch Index 2015 Insight Report,” 2015.

Takeaway:

Indicators for healthy cities include high health statuses, particularly psychological wellbeing. Environments that enable social connections is another key indicator of healthy cities. Further, the significance in addressing mental health and social connections is observed through the interactions within the context of income security, employment and education capabilities, other aspects of health and engaging community environments.

¹⁵³ HelpAge International, “Global AgeWatch Index 2015 Insight Report,” 2015.

Overview:

In WHO's *Global Age-Friendly Cities: A Guide*, there are eight topic areas that are discussed that can support age-friendly cities: Housing, Social participation, Respect and social inclusion, Civic participation and employment, Communication and information, Community support and health services, Outdoor Spaces and buildings, and Transportation.¹⁵⁴

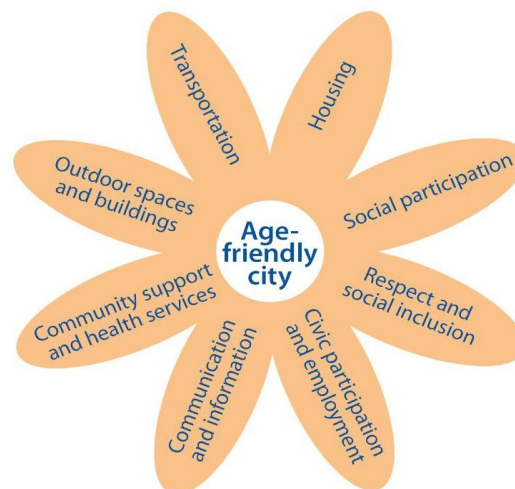


Figure 4-2: Age friendly cities topic areas

Source: World Health Organization. *Global Age-Friendly Cities: A Guide*. World Health Organization, 2007.

Takeaway:

Social participation within communities can increase through accessibility of events and activities, in conjunction with the range of activities available. It is essential to provide outdoor

¹⁵⁴ World Health Organization and Japan) WHO Centre for Health Development (Kobe, *Global Age-Friendly Cities: A Guide* (World Health Organization, 2007), https://www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf.

seating, spaced at intervals, including ramps and rest areas to ensure the accessibility of events and public spaces. Places and programs that promote active leisure, socialization are also beneficial. Inclusivity within the community also increases social participation. Social cohesion is also integrated and applied greatly through the value and emphasis on the connection between events and activities with accessibility

1.3 Milken Institute Best Cities for Successful Aging 2017

Overview:

The Milken Institute Center for the Future of Aging developed a report and index of the best cities for successful aging, both at the large- and small-scale urban cities based on the following criteria: general livability, healthcare, wellness, financial security, education, transportation and convenience, employment, living arrangements, community engagement.¹⁵⁵

¹⁵⁵ Sindhu Kubendran, Liana Soll, and Paul Irving, “Best Cities for Successful Aging” (Milken Institute, 2017), <https://milkeninstitute.org/sites/default/files/reports-pdf/Best-Cities-for-Successful-Aging-2017.pdf>.

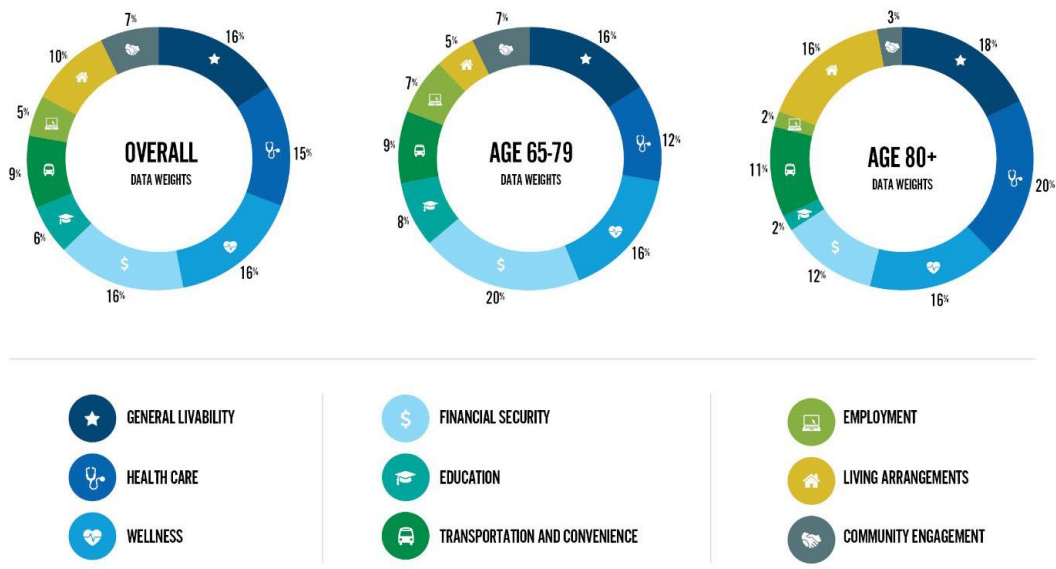


Figure 4-3: Best Cities ranking methodology
Source: Kubendran, Sindhu, Liana Soll, and Paul Irving. "Best Cities for Successful Aging." Milken Institute, 2017.

The top large metro cities include Provo-Orem, Utah, Madison, Wisconsin, Durham-Chapel Hill, North Carolina, and Salt Lake City, Utah.¹⁵⁶ All were ranked high in healthcare, wellness, financial security, education and transportation and convenience. Top small cities included Iowa City, Iowa, Manhattan, Kansas, Ames, Iowa, and Columbia, Missouri.¹⁵⁷ Small cities ranked high in the same categories with the addition of community engagement.

Takeaway:

Accessibility to amenities is paramount to designing for aging, however, when observing smaller cities or neighborhoods, community engagement becomes a higher priority. Both large- and small-scale communities concluded similar values, however the addition of community

¹⁵⁶ Ibid.bes

¹⁵⁷ Ibid.

engagement within smaller urban cities are essential and directly affect the level of inclusive design directed toward kūpuna and their comfort.

1.4 Milken Institute Age Forward cities 2030

Overview:

The Milken Institute Center for the Future of Aging developed a report to address the fast-growing aging population in cities within the next decade, which will not only see an extraordinary demographic change, but also unprecedented advances in technologies and medicine, and cultural and societal shifts.¹⁵⁸ The report identified policy priorities for 2030, which addresses aspects of how cities are built, how the community is maintained and how economic, social and political growth occurs.

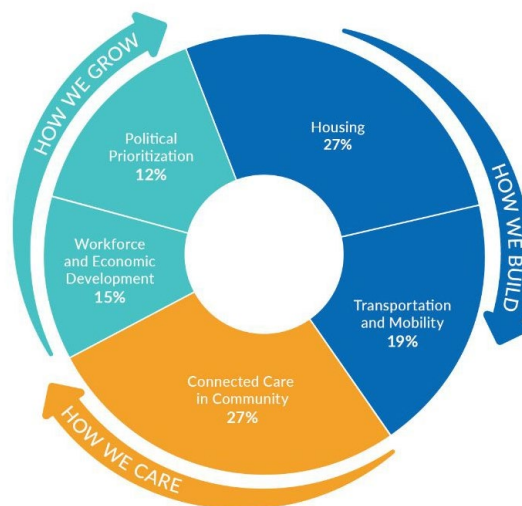


Figure 4-4: Policy priorities for 2030

Source: Servat, Caroline, Nora Super, and Paul Irving. "Age-Forward Cities for 2030." Milken Institute, October 21, 2019

¹⁵⁸ Servat, Super, and Irving, "Age-Forward Cities for 2030."

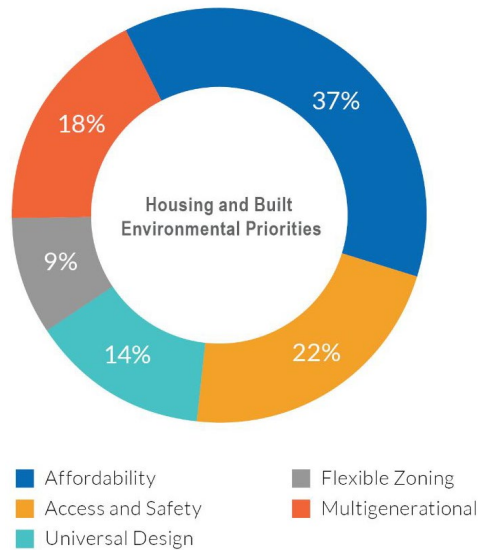


Figure 4-5: Housing and built environmental priorities
Source: Servat, Caroline, Nora Super, and Paul Irving. "Age-Forward Cities for 2030." Milken Institute, October 21, 2019

Takeaway:

Within the "How We Build" stage is housing and built environmental priorities, which are made up of affordability, access and safety, multigenerational, universal design, and flexible zoning. It is important to see that creating spaces that are multigenerational and accessible to all are high priorities moving forward. In addition, all categories further emphasize the need to address these components holistically and in relation to each other.

1.5 Making Honolulu an Age Friendly City

Overview:

The University of Hawai'i Center on Aging's action plan *Making Honolulu an Age-Friendly City* parallels other frameworks, reinforcing values of outdoor spaces and buildings,

transportation, housing, communication and social involvement, civic participation and employment, and community support and health services as major priorities for age-friendly cities.¹⁵⁹



Figure 4-6: Goals for outdoor spaces and buildings

Source: The University of Hawai'i Center on Aging, "Making Honolulu an Age-Friendly City: An Action Plan," June 2015.

Takeaway:

This report suggests introducing intergenerational co-housing communities to address social isolation. Developing a pilot program, where adults pay a reduced rent and in exchange, they help the kūpuna within their co-housing community, can be used as incentive to create these communities. The integration of both the working generation and kūpuna further reinforces intergenerational housing communities which align with both local and native perspectives, and possibly remedy current habits and cultural norms surfaced during the

¹⁵⁹ The University of Hawai'i Center on Aging, "Making Honolulu an Age-Friendly City: An Action Plan," June 2015, http://agefriendlyhonolulu.com/wp-content/uploads/2017/03/Honolulu_Age-Friendly_City_Action_Plan_2015.pdf.

pandemic. Outdoor spaces and buildings should maximize wayfinding and accessibility and promote outdoor fitness and health through introducing gardens and parklets, as an example.

Conclusion

In looking at current frameworks addressing the issues of rising aging populations and aging diversity, it's to be noted that housing, community engagement and connection to transportation is common across all. These reports have further emphasized the existing social and connected environments in association with healthy aging. Engagement within a community and accessibility within a community are vital, and at the center of it all, is where we live.

2 New Concepts for Housing and Community Engagement

Research gathered regarding population density and aging are at the forefront of culminating healthy environments for kūpuna. As life expectancy continues to increase, the concept of “elderly” is evolving, not only encompassing those with limited mobility, but the diverse range of groups present regarding aging. In review of the research so far, housing, community engagement and accessibility become key contributing factors that remain consistent throughout. This section reviews strategies that build on these topics, and specifically address intergenerational living and designing for social inclusion.

2.1 Design Strategies for Active Aging

Overview:

Gensler developed their active aging strategies from a culmination of research findings from documents produced by various organizations and industries.¹⁶⁰ Gensler identified innovations and trends in senior-living housing types to create successful active aging communities. In their research, they identified that today's 50- and 60-year-olds don't view themselves as "old" and don't just associate aging with physical decline.¹⁶¹ Seniors are prioritizing autonomy and independence to continue living life to the fullest. Seniors are becoming more active in their later years, and want housing options that support active, independent lifestyles.¹⁶²

¹⁶⁰ Gensler, "Design Strategies for Active Aging," 2015, <https://www.gensler.com/gri/design-for-active-aging>.

¹⁶¹ Ibid.

¹⁶² Ibid.

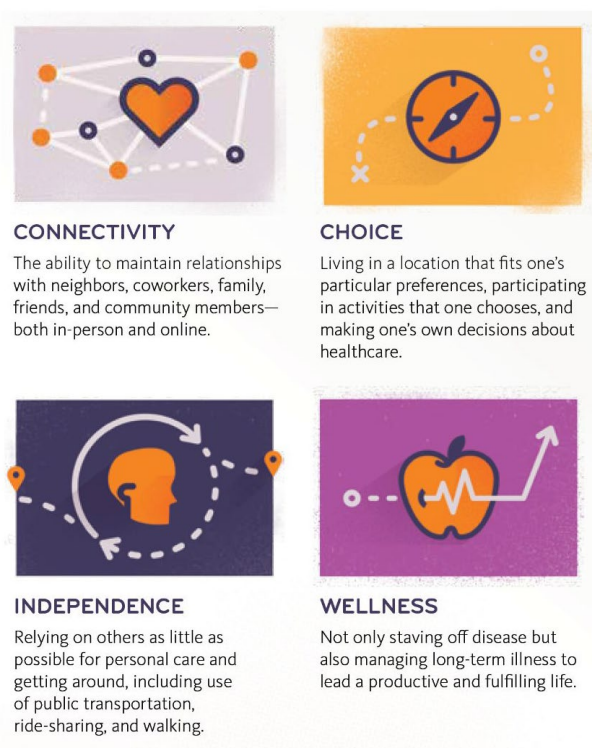


Figure 4-7: Active aging approach
Source: Gensler, “Design Strategies for Active Aging,” 2015.

Takeaway:

Designing for aging is not just designing for those who are experiencing physical decline and mobility needs, but for those who are still mobile and active. Further, it is acknowledging and empathizing their desire for independence. In this development of respect, it will culminate future approaches to community. It is important to also support active lifestyles, which in turn will help keep our kūpuna active and healthy as they continue to age.

2.2 Designing Intergenerational Communities

Overview:

Gensler developed conceptual design tools that expand opportunities for existing communities and encourage intergenerational living and connections.¹⁶³



1

Encourage safe and calm traffic patterns using audible signals and clear pavement transitions for pedestrians. (below)

2

Integrate and coordinate surrounding residential, business, and health care networks for people of all ages throughout their lifetime. (below)

3

Support existing local vendors through designated structures and lighting to create a haven for intergenerational engagement. (above)

4

Provide ample space for the community-conscious programming of events and festivals to minimize isolation and foster social connections. (above)

5

Establish a sense of place through design elements that celebrate the history and culture of the existing neighborhood. (above)

6

Leverage existing transportation infrastructure to access services and area amenities. (above)

Figure 4-8: Design strategies for MacArthur Park, Los Angeles
Source: Gensler, “Designing Intergenerational Communities,” 2019.

¹⁶³ Gensler, “Designing Intergenerational Communities,” 2019, <https://www.gensler.com/gri/designing-intergenerational-communities>.

Takeaway:

The usage of public space and providing spaces for events to connect residents to the greater community, as well as providing spaces that celebrate the existing culture of the neighborhood are effective approaches to ensuring social cohesion and fostering the relationship between kūpuna and the community.

2.3 Third Place Ecologies: Pocket Housing Fabric For Aging in Community

Overview:

University of Arkansas A Community Design Center's *Third Place Ecologies* focuses on designing the in-between spaces, spaces between work and home, and how to enrich the fabric for designing for aging communities. Third places are informal places where social connections are formed.¹⁶⁴ The design strategies for these third places were within the typical suburban block and categorized within three different design scopes: the hyper-porch, the patio mat, and the garage gallery.

¹⁶⁴ University of Arkansas Community Design Center, *Third Place Ecologies: Pocket Housing Fabric for Aging in Community* (University of Arkansas Community Design Center, 2016), https://issuu.com/uacommunitydesigncenter/docs/freeman_housing_book_for_review.

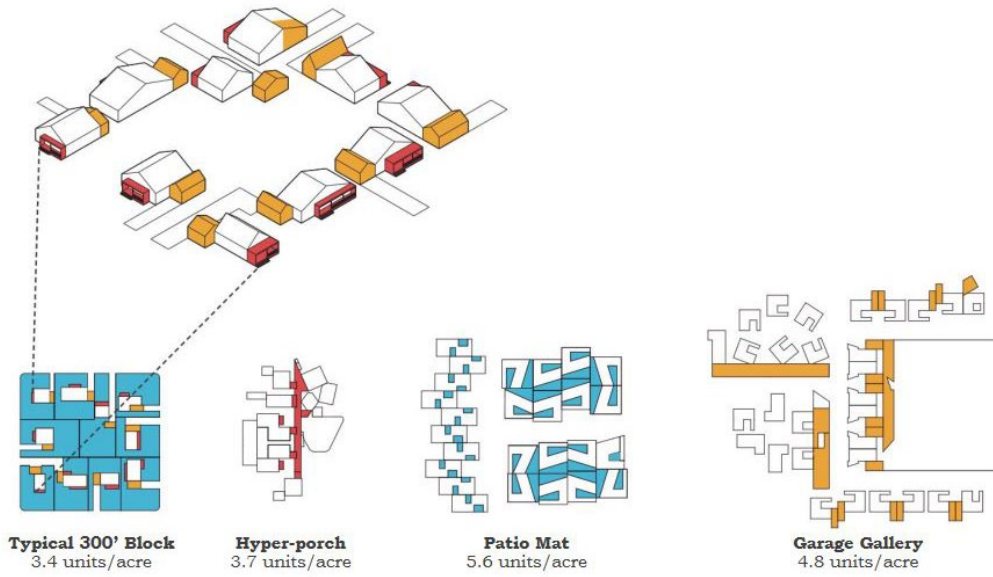


Figure 4-9: Third place micro-fabric typologies

Source: University of Arkansas Community Design Center, *Third Place Ecologies: Pocket Housing Fabric for Aging in Community*.

Illustration: University of Arkansas Community Design Center.

The hyper-porch aims to attach homes to shared spaces, creating stronger social connections, allowing neighbors to feel like family. This can be done through employing third places between residential and non-residential spaces, such as a porch that connects homes and living spaces onto a pedestrian street while balancing privacy and porosity.¹⁶⁵ The patio mat aims to create equal amounts of indoor and outdoor space, such as creating an array of spaces, such as porches, terraces, screened rooms, garage workshops, and gardens.¹⁶⁶ The garage gallery aims to provide work-hobby spaces connected to the community, where garages and living spaces can be designed to change use over time, such as change into workshops, community rooms, and offices.¹⁶⁷

¹⁶⁵ Ibid.

¹⁶⁶ Ibid.

¹⁶⁷ Ibid.

Takeaway:

To identify an unrecognized transitional space and apply programs and function further supports values correlated to aging in place. It not only designs for the personal residents but also increases the sense of community and engagement. These third place ideas are centered around utilizing in between spaces, maximizing spatial and programmatic opportunities.

2.4 Ibasho

Overview:

Ibasho, founded by Emi Kiyota, PhD, is an eldercare model that centers around creating socially integrated and sustainable communities that value elders.¹⁶⁸ The Ibasho model aims to strengthen social ties between the elderly and their community, and utilize their skills and experience to further enrich the community.¹⁶⁹ This is done through partnerships with local organizations and communities and employing a principle-based approach that is replicated and adapted for different cultural and geographical contexts.¹⁷⁰ These principles center around guiding the creation of interdependent support systems and more inclusive and resilient communities.¹⁷¹ Some of these principles include creating informal gathering spaces and fostering multi-generational community involvement and participation.¹⁷²

Ibasho recognizes the need to care for the increasing number of elderly within society. It is also addressed that the most prominent fears of aging are social isolation and loss of respect

¹⁶⁸ "The Role of Design in Promoting Social Connections," Ibasho, January 30, 2021, <https://ibasho.org/blog/20210129-15398>.

¹⁶⁹ Ibid.

¹⁷⁰ "Ibasho Principles," accessed March 13, 2022, <https://ibasho.org/ibasho-principles>.

¹⁷¹ Ibid.

¹⁷² Ibid.

within the community.¹⁷³ These needs directly align with the research issues guiding kūpuna care and design in Hawai'i. To effectively address these issues, Ibasho recognizes that both policy making and practical solutions, stemming from citizen engagement, are needed to create a monumental and positive change.¹⁷⁴

Takeaway:

In reviewing Ibasho's principles and key features, it is clear that policy making and shifting perspectives on aging is key to creating a strong and supportive community for our kūpuna. In addition to igniting cultural shifts, it is also necessary to ensure kūpuna feel valued as they are an asset and contributor to that social capital with their wealth of knowledge and experience. Providing space for informal gathering and placemaking in conjunction with allowing these spaces to be accessible to all generations will guide social connections and further strengthen the infrastructure of communities.

2.5 The Routledge Handbook of Housing Policy and Planning

Overview:

The Routledge Handbook of Housing Policy and Planning is an overview of housing trends, policies, and planning by international scholars. It compiles discussions of social housing, senior housing and future housing policies, among others to highlight various perspectives of both academic and practical applications.¹⁷⁵

¹⁷³ "About Ibasho," Ibasho, accessed March 13, 2022, <https://ibasho.org/about-ibasho>.

¹⁷⁴ Ibid.

¹⁷⁵ Katrin B. Anacker, Mai Thi Nguyen, and David P. Varady, eds., *The Routledge Handbook of Housing Policy and Planning*, 1st ed. (Routledge, 2019), <https://www.routledge.com/The-Routledge-Handbook-of-Housing-Policy-and-Planning/Anacker-Nguyen-Varady/p/book/9781032240848>.

Takeaway:

In reviewing the various housing topics discussed, multigenerational housing and co-housing, particularly for seniors, were introduced as potential housing trends. However, the forefront of multigenerational housing was flexibility. Through co-housing models and studies, it was observed that flexibility was seen as beneficial for seniors as it promotes greater community engagement as well as a sense of purpose when it comes to caring for communal spaces.¹⁷⁶ Pillars of flexibility, ground floor amenities and proximity to public transportation, through this study, enable aging in place.¹⁷⁷

2.6 Intergenerational Living; Housing Summit 2020

Overview:

This conceptual design of the block by Pozzoni Architecture has a variety of urban housing typologies arranged around a central community hub that provides access to shared facilities.¹⁷⁸ Their housing typologies offer co-living, extra care housing, and care homes. Alongside housing is a school, commercial space, co-working offices, fitness facilities and ample open space.¹⁷⁹ The central community hub's shared facilities are a library and flexible spaces that enable community activities and intergenerational relationships.¹⁸⁰

¹⁷⁶ Ibid.

¹⁷⁷ Ibid.

¹⁷⁸ Pozzoni Architecture, "Intergenerational Living: From Concept to Reality across a 12 Month Roadmap' Presented by Nigel Saunders at the Housing LIN Summit 2020," Pozzoni Architecture, December 10, 2020, <https://www.pozzoni.co.uk/news/intergenerational-living-from-concept-to-reality-across-a-12-month-roadmap-presented-by-nigel-saunders-at-the-housing-lin-summit-2020>.

¹⁷⁹ Ibid.

¹⁸⁰ Ibid.

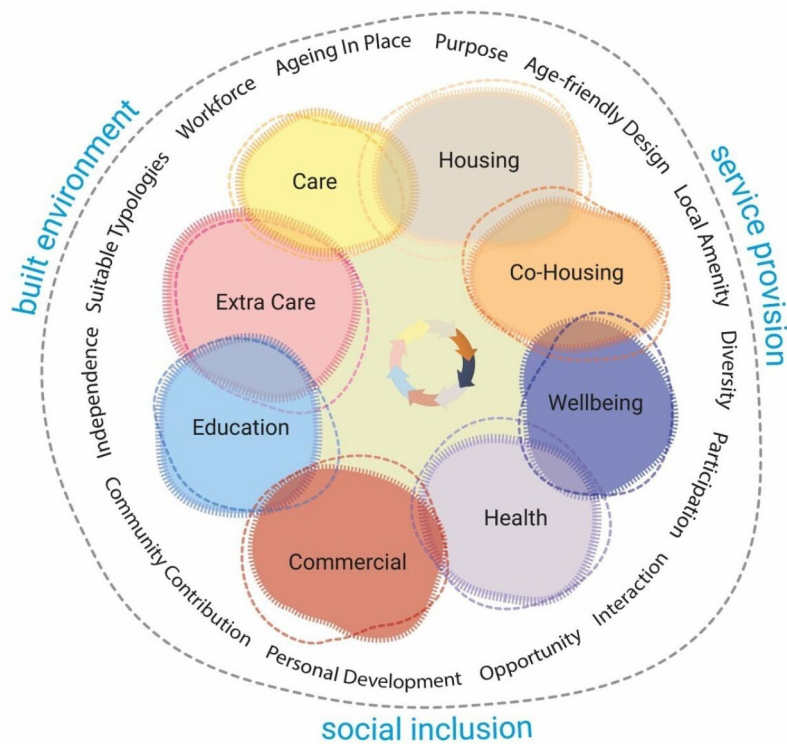


Figure 4-10: Collaborative Living Concept
Source: Pozzoni Architecture

Takeaway:

The range of amenities within the block, such as shops, healthcare, and education become the epicenter of this study. With an elaborate range of programs at the ground floor and lower levels with residential above, co-living among typical residential units are then introduced. This concept is centered in methods of intergenerational inclusivity and providing necessities for all ages and needs within a single block.

2.7 Silverwood Corp Homes

Overview:

In 2019, Japan launched a national strategy for dementia focusing on community engagement.¹⁸¹ Silverwood Corp is a private senior-living chain that focuses on physical support needs, emphasizing well-being, autonomy and freedom.¹⁸² A Silverwood Home in Urayasu City runs an open-door policy, where the front door is unlocked to encourage the rest of the community to stop by and interact with the elderly in their shared spaces and visit the snack shop, which is staffed and run by the home's residents.¹⁸³ This open door policy allows people to stop by during the day, which naturally results in chats with the elderly living in the home.¹⁸⁴



Figure 4-11: Silverwood Corp.'s Urayasu home for the elderly
Source: Japan BrandVoice

Takeaway:

The extreme integration of elderly living with the community ensures opportunities for intermingling through shared spaces, dining areas and small shops that are run by elderly

¹⁸¹ Japan BrandVoice, "Living Better Together: Japan's Bold Move To Fight Dementia Means Adapting To It," Forbes, January 30, 2020, <https://www.forbes.com/sites/japan/2020/01/30/living-better-together-japans-bold-move-to-fight-dementia-means-adapting-to-it/>.

¹⁸² Ibid.

¹⁸³ Ibid.

¹⁸⁴ Ibid.

citizens. Multiple aspects of social cohesion are highlighted throughout this case study as elderly are able to actively avoid neglecting daily activities and social isolation. It brings continuity to both the community and elderly care progression.

Conclusion

This chapter defined concepts and perspectives on aging strategies, including designing for active aging and providing public, informal spaces that connect kūpuna to the community and further define place making. These concepts also reiterated aging in place strategies, such as providing amenities within the block, but additionally introduced the idea of co-living, which contributes to the encouragement of social connections and sense of purpose within communal spaces. Incorporating amenities, providing informal gathering spaces, and introducing co-living units to residential spaces are existing and initial approaches to connecting kūpuna within the neighborhood block. This is built on through the review of architectural case studies that display and analyze these elements.

Chapter 5: Case Studies

This chapter overviews some of the built and conceptual architectural case studies that work as guides for the framework and design for this thesis. The case studies reviewed fall into three categories: intergenerational residential and co-living projects, landscape projects, and public space projects. The goal of the case study research is to extract various design strategies focused on aspects related to the block, building, and circulation spaces related to increasing social connections. This chapter concludes with design strategies that are extracted from the following case studies.

1 Intergenerational Residential & Co-living

1.1 Project: STA Zwei + Plus

Designer: trans_city TC

Location: Austria

Overview:

STA Zwei + Plus is a social housing project with units that host a set of two cooperating, intergenerational households.¹⁸⁵ This project provides tandem households that give families, or even friends, the opportunity to live together in the same estate: units are paired, but are spatially separate, balancing privacy with proximity.¹⁸⁶ Unit floor

¹⁸⁵ "STA | Zwei+plus Intergenerational Housing / Trans_city TC," ArchDaily, accessed February 23, 2022, https://www.archdaily.com/940835/sta-zwei-plus-plus-intergenerational-housing-trans-city-tc?ad_source=search&ad_medium=search_result_all.

¹⁸⁶ Ibid.

plans vary, where two units share a living and dining room, or one unit will include a separate access to a studio for an elderly relative.¹⁸⁷ The rest of the community provides shared amenities for the residents, such as gardens, a communal gallery, a cafe, a laundry with an adjacent play room, and an assisted living center.¹⁸⁸



Figure 5-1: STA Zwei + Plus
Source: ArchDaily

1.2 Project: New Housing on Briesestrasse

Designer: EM2N

Location: Berlin, Germany

Overview:

New Housing on Briesestrasse is built on centralized courtyards facing the circulation spaces. The central courtyard is programmed as the social center of the

¹⁸⁷ Ibid.

¹⁸⁸ Ibid.

housing development and is a combination of both planned and open surface.¹⁸⁹ The circulation deck allows a blurred program development of circulation space and balcony which overlooks the courtyard. The circulation decks are wide to accommodate the open balcony space and sliding glass doors allow for the opportunity for the living space to flow and connect to the balcony space.¹⁹⁰



Figure 5-2: New Housing on Briesestrasse
Source: ArchDaily

1.3 Project: Social Housing in Aigues-Mortes

Designer: Thomas Landemaine Architects

Location: Aigues-Mortes, France

Overview:

This housing project is defined by its construction and materiality. The wood slat facade and form emphasize feelings of warmth and balances opportunities of privacy

¹⁸⁹ "New Housing on Briesestraße / EM2N | ArchDaily," accessed February 3, 2021, https://www.archdaily.com/951196/new-housing-on-briesestrasse-em2n?ad_source=search&ad_medium=search_result_all.

¹⁹⁰ Ibid.

and porosity.¹⁹¹ This benefits the balcony spaces, that are inset and protrude from the facade, creating a variety of small sub spaces that are intimate, yet porous.¹⁹²



Figure 5-3: Social Housing in Aigues-Mortes
Source: ArchDaily

1.4 Project: Hanham Hall

Designer: HTA

Location: Bristol, UK

Overview:

Hanham Hall is a large-scale, sustainable, affordable suburban housing community. It is the first large scale housing community in England to achieve the zero-

¹⁹¹ "Social Housing in Aigues-Mortes / Thomas Landemaine Architectes," ArchDaily, January 1, 2021, <https://www.archdaily.com/771854/social-housing-in-aigues-mortes-thomas-landemaine-architectes>.

¹⁹² Ibid.

carbon standard.¹⁹³ Its sustainability, affordability, and its wide range of accommodative units have attracted a predominantly senior demographic, forming a naturally occurring retirement community, though that was not the initial target demographic.¹⁹⁴



Figure 5-4: Hanham Hall
Source: HTA Design LLP

Overall Takeaways:

Key features within these projects are the variety of unit typologies, connections and spatial additions to circulation space, usage of materials to balance privacy and porosity, and incorporating ample green spaces. Units that accommodate various stages of life and family demographics, such as co-living and tandem units, and extending the unit to increase connection to circulation space attract seniors and support social connections. Green spaces and material selection also create healthy and biophilic experiences.

¹⁹³ “A Hallmark for Naturally Occurring Intergenerational Living - Hanham Hall, South Gloucestershire,” Housing LIN, October 28, 2020, <https://www.housinglin.org.uk/Topics/type/A-hallmark-for-naturally-occurring-intergenerational-living-Hanham-Hall-South-Gloucestershire/>.

¹⁹⁴ Ibid.

2. Landscape & Accessibility

2.1 Project: 10 World Trade

Designer: Sasaki

Location: Boston, MA

Overview:

The 10 World Trade highlights a network that links pedestrians and transportation to the podium at multiple levels. This research and development building is seen as a connector of numerous crossroads which serve as a center and piece regulating movement.¹⁹⁵ The urban fabric of the site is pushed out from all directions to establish urban spaces and elevated pedestrian pathways on multiple levels and sides.¹⁹⁶ Human scale is emphasized through the design of the sloped elevated pathways and covered public spaces.¹⁹⁷



Figure 5-5: 10 World Trade, Sasaki
Source: Sasaki

¹⁹⁵ “10 World Trade,” Sasaki, accessed February 24, 2022, <https://www.sasaki.com/projects/10-world-trade/>.

¹⁹⁶ Ibid.

¹⁹⁷ Ibid.

2.2 Project: Chulalongkorn University Centenary Park

Designer: Landprocess, N7A Architects

Location: Bangkok, Thailand

Overview:

The Chulalongkorn University Centenary Park is Bangkok's newest ecological urban park.¹⁹⁸ In addition to the green infrastructure, detention areas, and treatment systems, the park maximizes spatial flexibility through incorporating outdoor rooms, active edges, and various walking paths. The material changes reflect programs to encourage opportunities for social engagement.¹⁹⁹



Figure 5-6: Chulalongkorn University Centenary Park
Source: World Landscape Architecture

¹⁹⁸ Damian Holmes, "Chulalongkorn University Centenary Park - Green Infrastructure for the City of Bangkok," *World Landscape Architecture* (blog), April 19, 2019, <https://worldlandscapearchitect.com/chulalongkorn-centenary-park-green-infrastructure-for-the-city-of-bangkok/>.

¹⁹⁹ Ibid.

2.3 Projects by Bjarke Ingels Group

- Fuse Valley
- T-22
- Adelaide Contemporary Gallery
- Audemars Piguet Hotel
- 8 Tallet

Overview:

Multiple projects from Bjarke Ingels Group (BIG) feature sloped pathways that connect the street to multiple levels within residential developments. The most prominent example is the 8 Tallet, or the 8 House. Signature features highlighted in the design are the continuous sloped pathways, connecting all vertical spaces from the ground level to the top.²⁰⁰



Figure 5-7: Fuse Valley
Source: BIG



Figure 5-8: T-22
Source: BIG



Figure 5-9: Adelaide Contemporary Gallery
Source: BIG



Figure 5-10: Audemars Piguet Hotel
Source: BIG



Figure 5-11: 8 Tallet
Source: BIG

²⁰⁰ "8 House / BIG," ArchDaily, October 20, 2010, <https://www.archdaily.com/83307/8-house-big>.

Overall Takeaways:

All case studies highlight the improvements and association of landscape and community accessibility. In this, green spaces serve as connecting points further emphasizing the need for its incorporation within kūpuna and aging neighborhoods. The case studies showcase how the careful contouring interweaves green space and accessibility. Paths that connect multiple levels within a residential block through contoured surfaces provide greater opportunities for connectivity and accessibility.

3 Public Space & Accessibility

3.1 Project: 105 Victoria Street

Designer: Henning Larsen

Location: London, UK

Overview:

105 Victoria Street is a prototype of the ideal active and social office of the future through the priority of health and wellness amenity spaces, such as bicycle parking, gyms, and multipurpose event rooms.²⁰¹ The winding staircase and bicycle ramp is a prominent feature within the building.²⁰²

²⁰¹ “Our First Project in London to Be an Active Hub for Westminster,” Henning Larsen, accessed February 24, 2022, <https://henninglarsen.com/en/news/archive/2021/06/07-victoria-street/>.

²⁰² Ibid.



Figure 5-12: 105 Victoria Street
Source: Henning Larsen

3.2 Project: Seoul Valley

Designer: Henning Larsen

Location: Seoul, South Korea

Overview:

Seoul Valley introduces a reformed patchwork of traditional villages and gardens into the podium level of a large three tower high-rise development.²⁰³ Breaking down the podium into these smaller masses creates the sense of human scale and community, it further connects pathways allowing visitors to traverse through terraced levels of shops, cafes and gardens.²⁰⁴

²⁰³ "Seoul Valley," Henning Larsen, accessed February 24, 2022, <https://henninglarsen.com/en/projects/featured/1990-seoul-valley>.

²⁰⁴ Ibid.

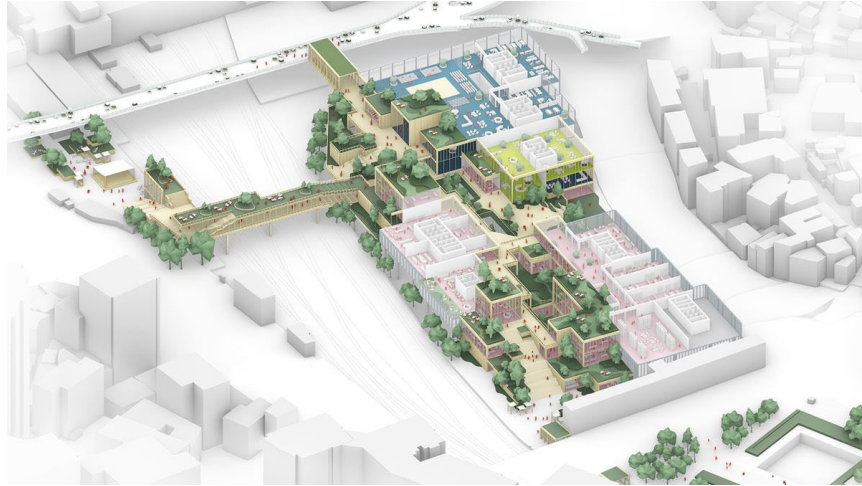


Figure 5-13: Seoul Valley
Source: Henning Larsen

3.3 Project: Salud Digna Campus Headquarters Master Plan

Designer: Sasaki

Location: Culiacán, México

Overview:

The Salud Digna Campus Headquarters Master Plan features pockets of open space and circulation that connect and form gathering spaces within the campus.²⁰⁵

There are six open space typologies: green chains, main streets, gathering nodes, urban green, recreational green, and green buffers.²⁰⁶ The green chains connect people across the site through plantings and pockets of outdoor seating, and the main streets are corridors connecting the buildings with the external landscape and open space.²⁰⁷

Gathering nodes are located at the intersection of the green chains and main street

²⁰⁵ “Salud Digna Campus Headquarters Master Plan,” Sasaki, accessed February 24, 2022, <https://www.sasaki.com/projects/salud-digna-campus-headquarters-master-plan/>.

²⁰⁶ Ibid.

²⁰⁷ Ibid.

corridors.²⁰⁸ The urban green is a linear plaza with an alley of trees that welcome users and encourage movement.²⁰⁹ The recreational green is an active park for the university and the surrounding community, and green buffers provide biodiversity, introduce native plantings, and mitigate level changes across the site.²¹⁰

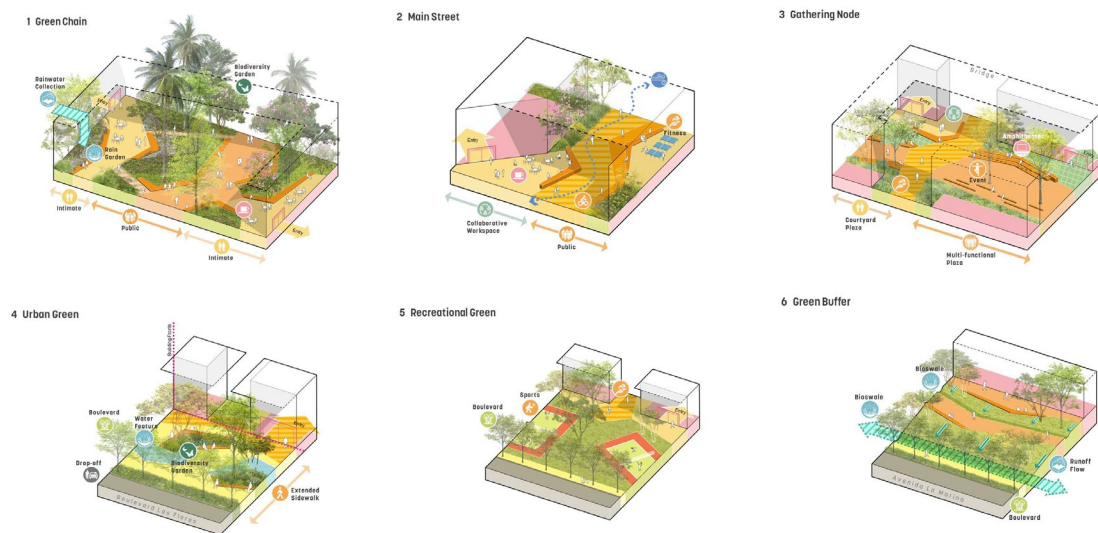


Figure 5-14: Salud Digna Campus Headquarters Master Plan
Source: Sasaki

3.4 Project: Footbridge of Chang'an Experimental Primary School

Designer: Zhutao Architecture Design Studio

Location: Guangdong, China

²⁰⁸ Ibid.

²⁰⁹ Ibid.

²¹⁰ Ibid.

Overview:

The Footbridge of Chang'an is intended to offer both students and residents access to the north campus by bypassing the traffic of a major roadway.²¹¹ In addition to a normal staircase, a long serpentine ramp weaves through the trees before reaching the ground level, creating a path that lets children feel like they are running through a forest.²¹² Ramps, as opposed to elevators, were employed as it is less susceptible to maintenance accidents, bringing a revitalized and more practical, active solution.²¹³ The main bridge is cylindrical that slowly opens towards the south. The west facing openings have small balconies that overlook the canal, and the east opens to the weaving ramp.²¹⁴



Figure 5-15: Footbridge of Chang'an Experimental Primary School
Source: ArchDaily

²¹¹ "Footbridge of Chang'an Experimental Primary School / Zhutao Architecture Design Studio," ArchDaily, accessed February 24, 2022, https://www.archdaily.com/967880/footbridge-of-changan-experimental-primary-school-zhutao-architecture-design-studio?ad_source=search&ad_medium=search_result_all.

²¹² Ibid.

²¹³ Ibid.

²¹⁴ Ibid.

3.5 Project: The End of Sitting

Designer: RAAAF

Overview:

“The End of Sitting” is an experimental installation that explores forms and approaches of pausing to work beyond conventional seating.²¹⁵ This installation explores engagements with various surface and spatial arrangements that allow for standing, leaning, or lounging. Varieties of forms bring new interactions between people and include other surfaces to rest tools and furniture on to aid the necessities of a work environment.



Figure 5-16: The End of Sitting
Source: DesignBoom

²¹⁵ “RAAAF + Barbara Visser Reject Seating in the Workplace with Faceted Installation,” designboom, December 2, 2014, <https://www.designboom.com/design/raaaf-barbara-visser-the-end-of-sitting-12-02-2014/>.

Overall Takeaways:

These case studies emphasized human scale and introducing programmatic zones to public spaces and courtyards, such as green spaces, parks, and active edges. Associations with public spaces and forms allow users to rethink interactions with conventional programs. The responses to these case studies redefine lounging, sitting, and other typical functions that elderly and aging populations may benefit from to ensure a more cohesive, healthy and community-centered environment. Like the landscape case studies, there is an emphasis on how users traverse and engage with the space at multiple levels. These concepts surface new opportunities that can be reapplied to Hawai'i's communities as central points of contact that link and highlight typical programs or large public spaces.

4 Key Precedents

4.1 Mithun

During the research process, I was able to talk with architects and designers at Mithun for greater insight on some of their projects. Mithun is a firm based in Seattle, San Francisco and Los Angeles, and their mission is to design for positive change in people's lives.²¹⁶ Their designs center around user needs and experiences, and connection to place. In talking about their project, Enso Village, I was able to understand the design process and important elements that were considered in designing an elderly community.

²¹⁶ "About Us," Mithun, accessed April 11, 2022, <https://mithun.com/people/about-us/>.

4.1.1 Project: Enso Village

Location: San Francisco, CA

Overview:

Enso Village is a zen-inspired senior living community for the San Francisco Zen Center, aimed to fulfill their commitment to their long-time teachers by providing lifetime room and board once they reach 70.²¹⁷ At the core of the community there is the practice of mindfulness, and cognitive, emotional well-being benefits for aging adults.²¹⁸ The community provides independent living, assisted living, and memory care units, along with a meditation hall, a community room, and a wellness center.²¹⁹ The community is connected through walking trails and a community garden.²²⁰



Figure 5-17: Enso Village
Source: Mithun

²¹⁷ Tricycle: The Buddhist Review, “Aging Mindfully at Enso Village,” Mithun, May 20, 2020, <https://mithun.com/2020/05/20/aging-mindfully-at-enso-village/>.

²¹⁸ Ibid.

²¹⁹ Ibid.

²²⁰ Ibid.

Key Elements:

The development of the design of this senior community was discussed with the Mithun team that worked on this project.²²¹ This discussion centered around three key elements of the project: Wayfinding, Equity and Experience, and Safety and Comfort.

1. Wayfinding:

In designing for wayfinding, building massings were broken down into smaller volumes and further into clusters, creating the sense of an intimate neighborhood or village. Secondary programs, such as gardens and seating, were woven in with primary and larger circulation paths between buildings to act as connection points. Bridges and pathways were added, stitching the spaces together, as if one thread connected the entire community. Unique programming was added to each courtyard and visual connections were prioritized to encourage and promote movement.²²²

2. Equity and Experience:

In designing for equity and experience, it was important to provide choices and ample opportunities to interact in both indoor and outdoor shared spaces, having spaces to connect as well as observe. It was also important to choreograph spatial transitions, layering public to private spaces seamlessly. Establishing the connection to the outdoors equitably was done through defining outdoor spaces, indoor spaces and covered spaces that stem directly from the outdoors. These programs created inclusive

²²¹ Discussion with Mithun, December 7, 2021.

²²² Ibid.

experiences for all as they were all sewn in through the experiential and individual connection to the outside. It is also a necessity to interconnect living typologies instead of separating them to allow opportunities for community connections to occur. Lastly, providing spaces to create a sense of purpose is key. As many are able to wind through these interior and exterior spaces, the importance of destination and purpose also reinforces the continuity of circulation.²²³

3. *Safety and Comfort:*

Sense of community can be formed through providing ample covered elements, especially in outdoor spaces and pathways, along with having consistent ground surfaces throughout to help increase safety and comfort. Having one consistent path flowing through the site is not only beneficial for wayfinding, but also increases safety. Comfort levels vary for seniors, further emphasizing the need to have a strong visual connection to the outdoors to ensure both comfort and experience is maintained.²²⁴

4.1.2 **Project: Yesler Family Housing**

Location: Seattle, WA

Overview:

Yesler family Housing is a multi-family housing project for low-income families that focuses on bringing essential amenities closer to home.²²⁵ Recognizing the

²²³ Ibid.

²²⁴ Ibid.

²²⁵ Casey Huang, Kristen Belt, and Tammy Lee, "Affordable Family Housing: Designing for Social Resilience," Mithun, accessed November 5, 2021, <https://mithun.com/2021/05/19/affordable-family-housing-designing-for-social-resilience/>.

importance of accessible childcare for low-income families, a six-classroom on-site childcare is provided on the ground level of the housing project.²²⁶ Additional key amenity spaces are also clustered at the ground floor, increasing convenience and social encounters.²²⁷ A centralized laundry room near the elevators features folding tables with casual seating, and a corridor nook outside to encourage interactions and conversations among neighbors.²²⁸ Seating is also ergonomically designed, including back and arm rests, or simple flat-tops that accommodate the needs of youth, adults and elders to sit, chat and play.²²⁹

4.1.3 Project: Sequoia Belle Haven

Location: Menlo Park, CA

Overview:

Sequoia Belle Haven is a senior housing project with a heavy focus of amenity spaces and programs.²³⁰ Spread across the ground level, these amenities are connected via a walking path to promote physical health and social interaction.²³¹ For example, the project includes a community room which opens toward a courtyard, allowing events to flow through both the interior and exterior further blurring the line between the designated amenity and courtyard outdoor lobby. This reiterates the added level of interaction among residents.²³² Post-occupancy evaluations showed that many

²²⁶ Ibid.

²²⁷ Ibid.

²²⁸ Ibid.

²²⁹ Ibid.

²³⁰ Ibid.

²³¹ Ibid.

²³² Ibid.

residents care for grandchildren on weekends and after school, which both enriches social connections among the senior residents, vibrancy and energy throughout the community.²³³ This observation again emphasizes the progressing community that stems from the existing residents, along with how the housing project itself is able to be a cohesive supporter of the community's growth.

4.1.4 Project: 1180 Fourth Street

Location: San Francisco, CA

Overview:

1180 Fourth Street is another multi-family housing project, which features a split-level courtyard, creating a central focal point that allows for greater visual connections.²³⁴ The courtyard contains a communal barbeque and food-prep area that can be utilized for community gatherings in the courtyard and the adjacent community room.²³⁵ The courtyards are connected with a generous stairway and wrapped with amenity spaces, further emphasizing this central focal point.²³⁶

²³³ Ibid.

²³⁴ Ibid.

²³⁵ Ibid.

²³⁶ Ibid.



Figure 5-18: Yesler Family Housing
Source: Mithun



Figure 5-19: Sequoia Belle Haven
Source: Mithun



Figure 5-20: 1180 Fourth Street
Source: Mithun

These projects are mentioned and expanded on in their article *Affordable Family Housing: Designing for Social Resilience*.²³⁷ The article discusses the significance of amenities within affordable family housing, such as childcare and access to open space. Connection to the outdoors allows for moments of respite and for community gatherings, barbecues and kids' play, which help to strengthen the bond within the local community.²³⁸ Children also benefit from kinetic movement and are often found running around open spaces and up and down the stairs.²³⁹ As open spaces and shared amenities are again recurring components in successful housing design, it emphasizes its necessity to be standardly incorporated into future design. It is also important to incorporate a balance of open spaces, both at the large scale such as spaces for recreation, and smaller spaces such as nooks along corridors, and acknowledging stairs and circulation space as occupiable spaces.²⁴⁰

In another article, titled *Design for Health: The Next Decade of Positive Change*, discussion focuses on the importance of biophilic design, and how it is beneficial for cognitive function, physical health and psychological wellbeing.²⁴¹ Movement is also beneficial in these

²³⁷ Ibid.

²³⁸ Ibid.

²³⁹ Ibid.

²⁴⁰ Ibid.

²⁴¹ Erin Christensen Ishizaki, "Design for Health: The Next Decade of Positive Change," Mithun, April 19, 2021, <https://mithun.com/2021/04/19/design-for-health-the-next-decade-of-positive-change/>.

aspects, and design should provide opportunities for active stairs, walking paths, and integrated play.²⁴² Open spaces also bring opportunity for connections and social inclusion through careful design of stairs, clustered amenities, lounge space, and attention to materiality and patterns.²⁴³ Components, such as these, bring a formula or base of comprehension to creating a more cohesive and inclusive social space for housing.

Programs and design moves that are most influential include amenities, open spaces within affordable housing, and especially when understanding and attracting intergenerational communities. It is important to have a variety of open spaces that accommodate for a variety of social gatherings and interactions. The promotion of movement through biophilic design and utilizing circulation space, such as designing active stairs and corridor nooks also become extremely important. Wayfinding, equity and experience, and safety and comfort are key components when designing communities for kūpuna and should be prioritized in designing any residential space.

4.2 Vista Living

During the research process, I was also able to talk with a developer who co-founded a senior care development company called Vista Living.²⁴⁴ The senior care homes are based in Phoenix, Arizona, and support assisted living, memory care, dementia care, and Alzheimer's care modules.²⁴⁵ The discussion revolved around best practices in designing courtyards and great rooms (which are shared living areas), providing third places like fitness and wellness rooms, pros and cons of single and double loaded unit layout types, and parking usage in senior communities.

²⁴² Ibid.

²⁴³ Ibid.

²⁴⁴ Discussion with Vista Living, October 29, 2021.

²⁴⁵ "Vista Living Senior Care," Vista Living, accessed April 12, 2022, <https://vistaliving.net/>.

1. *Prioritizing the Courtyard vs Great Room:*

Great rooms, or centrally located shared living, dining and kitchen areas, are a central component to senior care homes. Bedroom units face and open up to these spaces, rather than a courtyard. Courtyard spaces are important, but are not a priority, when considering cost and affordability. The spaces are appreciated more when residents or users are within the space or viewing it from the unit or adjacent shared spaces. After the first couple floors, the connection to the courtyard is at times lost, meaning for mid- or high-rise scenarios, there is less of a need to prioritize courtyard views from unit spaces. When designing great rooms, or shared communal spaces, dividing the space into programmed zones then creates purpose and facilitates activities and interactions. Keeping these spaces open is key, as visual connections are important for both the elderly and for caregivers.²⁴⁶

2. *Single vs Double Loaded Unit Layouts:*

Single- loaded corridor layouts for units are often seen as beneficial, as it allows for cross ventilation, which is highly valued in warmer climates. However, it is less financially feasible, and is rarely affordable. Double loaded corridor typologies increase unit count and have a higher cost benefit. It also provides unit variety, with units facing both the courtyard and the street. There are also multiple design strategies that introduce openings for visual connections, daylight, and cross ventilation.²⁴⁷

3. *Introducing Third Places:*

Introducing third places, or amenities geared towards social encounters, which are designed to appear similar to that of a public or commercial space and can be

²⁴⁶ Discussion with Vista Living.

²⁴⁷ Ibid.

distinguishable from the residential component. New experiences are now achievable without leaving the residential community, in this, there is possibility for a new destination while remaining secure and accessible. These third places can include a fitness room, a self-care room like a barbershop, tele-health rooms, and rooms for service providers or administrators.²⁴⁸

4. *Parking Usage:*

Parking usage depends on how the project is marketed and operated, in terms of senior communities. If the experience is curated, then loading areas for vans or buses should be prioritized. If it is an independent and public community, then seniors may still be dependent on cars and require parking. Within the design, it is critical to consider future care use within the neighborhood, as well as the target residents and their needs.²⁴⁹



Figure 5-21: Arcadia Senior Housing
Source: Vista Living

²⁴⁸ Ibid.

²⁴⁹ Ibid.

Eight Design Strategies for Inclusive Social Interactions

This compilation of case studies surfaced a standardized set of values and ideals that form positive and healthy environments. These applications may then be incorporated, highlighted and applied to programs to ensure housing communities in Hawai'i are suitable and inclusive for the aging population. To further boost social cohesion and create stronger housing communities, themes throughout these case studies could then be incorporated through spatial typologies, such as pockets, nooks and gathering spaces; through supportive elements, such as interventions that allow for sitting, leaning, and playing; and finally, through outdoor connectors, such as biophilic elements and walking trails. The learnings from the case studies have been translated to these eight elements, becoming pillars for inclusive design for kūpuna.

1. **Pockets:** These spaces provide opportunities to meet, pass by, incorporate planters and programs, or allow places for pauses and rest among heavy circulation, pockets becoming a primary factor for aging communities. Similar to elements found in *gathering nodes* along the intersections of Salud Digna Campus Headquarters Master Plan. These designated elements provide stops and moments of open space among the high traffic urban fabric.
2. **Nooks:** Within the neighborhood or building scale, nooks provide breaks in circulation and opportunities for pausing, meeting or activity. This element can be reapplied at various scales to ensure moments for communities to incorporate informal gathering and meeting. In this, applicable to spaces seen in Yesler family housing, as a space along the corridor across from the laundry room encouraging interactions and conversations among neighbors, landings, or as smaller outlets or balconies with places to sit and meet. On the contrary, it is also seen within a large community scale such as Seoul

Valley's elevated patchwork of traditional villages where different programs are interlocked and connected via bridges.

3. **Sit:** With the intention of creating spaces to pause, rest or regroup, it is essential to all generations and users that this element be seamlessly incorporated into any design. Chulalongkorn University Centenary Park, for example, includes a variety of outdoor rooms and pavilions throughout the main walkway and within various parts of the park, allowing guests to pause. Sitting, as an element, evokes a variety of programs with benches, chairs, greater rooms and spaces to rest along walking paths, roadways, busy streets and large corridors.
4. **Lean:** Both dramatic and subtle opportunities to evolve a typical resting space are able to change user responses, circulation and interactions. For example, the case study "The End of Sitting" incorporates an opportunity to pause and engage with spaces through leaning. The forms evoke various human responses to further provide opportunities to continuously change programs and uses. In this, it is clear that it can also evoke different types of interaction spanning different age groups, from becoming a barrier to a meeting space to a resting point, or a place to play. Spaces to lean are both critical and dynamic elements to be incorporated in community circulation as it further provides accessibility to those who are unable to walk for longer distances, such as kūpuna.
5. **Play:** Spaces that are incorporated in both housing and amenities, and suitable for all ages provide opportunity for social cohesion to further strengthen community interaction. Similar to design elements offered throughout the case study, 105 Victoria Street, users are guided down a multitude of winding, sloped circulation paths. The materiality and vibrancy also attract a wider range of age groups to further celebrate intergenerational living. The Footbridge of Chang'an is another good example, with its bright tunnel, serpentine paths, and playful lookout points. Spaces to play, be it small interventions or

playgrounds, or even at the scale of recreational programs and care facilities, can be reincorporated into other housing typologies or neighborhood typologies in Hawai'i.

6. **Gather:** As an essential element of residential communities, especially for intergenerational living and housing for kūpuna, it is important to incorporate spaces that allow both informal and formal gathering. This is incorporated in a variety of ways, from courtyards to corridors and amenity spaces. As it has such diverse applications, this element can be highlighted in New Housing on Briesestrasse as a form of informal gathering. The extended and widened corridor can be incorporated throughout a variety of housing communities as it becomes a part of the circulation fabric. In contrast, Sequoia Belle Haven highlights a community and amenity centric design. This project holds a designated community center, which has an extremely open access to the central courtyard. In this, an abundance of gathering types is accommodated. Both formal and informal circulation is able to link to these spaces while also addressing various types of meeting.
7. **Biophilic:** Landscape and biophilic elements in design, as mentioned previously, has a multitude of health and community benefits. In this, biophilic interventions are seen through public spaces along the 10 World Trade, which incorporates biophilic design through walkways, active edges, and other outdoor elements to boost community and social engagement. Another example is in Enso Village, where various gardens are woven throughout the site along a major circulation corridor. Applications for biophilic designs within residential communities in Hawai'i are vast, as it both boosts health and social interaction. Because of Hawai'i's strong cultural landscape, biophilic intersections become key elements of healthy housing environments and cultural incorporation.
8. **Trails:** Trails, also seen as walking paths and mediums of circulation are highlighted intensely throughout many of the case studies. As this component is similar to the others in its range of applications, trails can guide users while boosting physical health, mental

health and interaction between people and spaces. As many other elements provide opportunity to pause, trails, in contrast, are connectors and points of movement and wayfinding. Studies, such as the various Bjarke Ingels Group projects, highlight wayfinding and connections in a variety of ways. Through the gradual looping path of the 8 House to the massive scale of Fuse Valley, trails can provide strong moments of community connection and space definition.

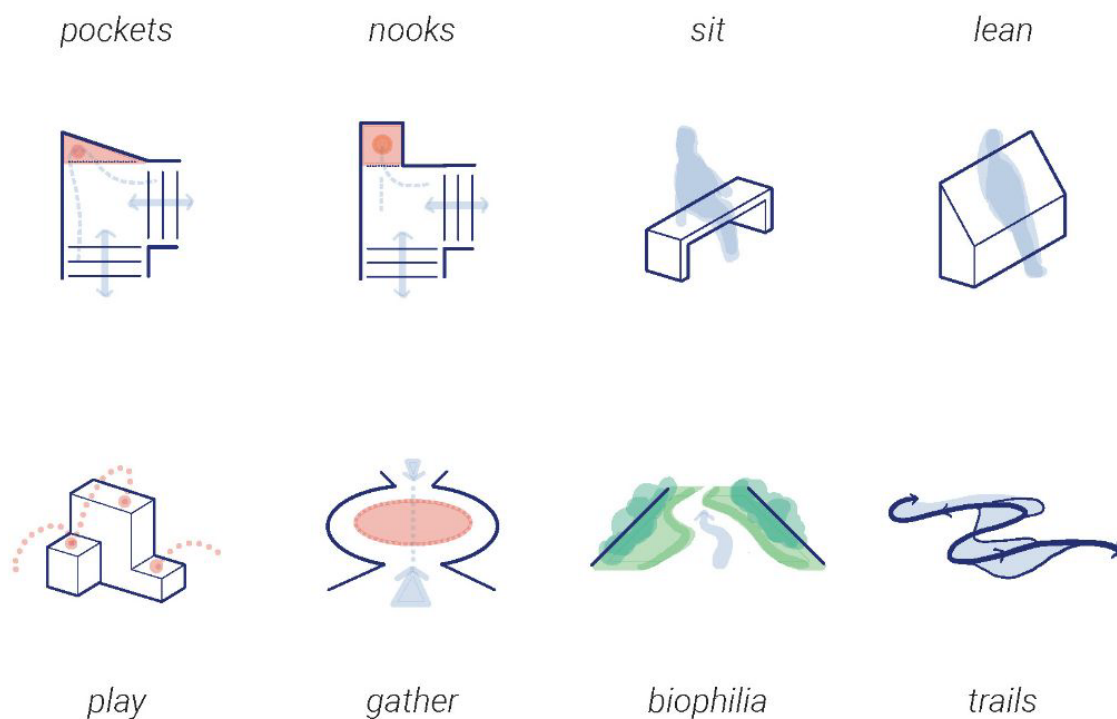


Figure 5-22: Design strategies extracted from case study research
Source: Author

Conclusion

This chapter reviews multiple built and conceptual architectural case studies, typologies, and design perspectives from architectural designers and a senior care developer. The goal of the case study research is to extract various design strategies focused on aspects related to the block, building, and circulation spaces, to ultimately increase social connections. This results in the basic strategies that are stretched over housing program design: pockets, nooks, places to sit and lean, places to play, gather, biophilic elements, and walking trails. These components contribute beyond a physical social connection, as they also foster an ideal perspective of community for kūpuna and builds a framework based on values that aging considers. Ultimately, the design must consider the block to better connect kūpuna to daily resources and amenities, to their neighbors and to promote daily activity and mobility. Overall, this will build a stronger foundation for elderly care and a more cohesive and considerate community.

Chapter 6: User Needs

Previous chapters discussed a general overview of the evolving aging demographic along with physical and social health needs for our kūpuna. Concepts and case studies were also reviewed to support aging and increasing social connectivity. However, the viewpoints of kūpuna, their caregivers, service providers, and the community at large is the most valuable in gaining insight into how to design to accommodate needs at the user and the community scale. In this chapter, a community outreach studies conducted by both the Department of Planning and Permitting and Kamehameha Schools, and a needs assessment conducted by the Department of Urban and Regional Planning at the University of Hawai'i at Manoa are reviewed. The goal is to extract specific needs at the individual and the community level, as well as daily activities that the design interventions could support. The scope of the design is the circulation spaces that connect the unit to the block, and it is important to understand the perspective of users of the speculative design.

Community Surveys

To gain insight on community needs, this section reviews the Kalihi Community Survey conducted by the Department of Planning and Permitting, and the results of the public outreach and community engagement for Kamehameha Schools' Kapālama Kai Plan.

Kalihi Community Survey

The Department of Planning and Permitting (DPP), Planning Division of the City and County of Honolulu contracted National Research Center, Inc. (NRC) to conduct a survey to

capture and assess the perspectives of existing residents within the planned Middle Street, Kalihi, and Kapālama transit-oriented development neighborhoods.²⁵⁰ The results of this survey break down into topics related to Civic Connection, Neighborhood Mobility, Community Amenities, and Development Opportunities. The following is a summary of key findings that will contribute to the insight for this thesis's framework.

Civic Connection:

Residents valued convenience to work, transit and shopping within the neighborhood.²⁵¹ Amenities that were of high demand for preservation among residents included parks and landscapes, schools, local retail and markets. Residents also valued quietude, safety, and affordability in the neighborhood.²⁵²

Neighborhood Mobility:

Residents frequently commute by alternate travel modes, with half of the respondents utilizing public transit, carpooling, walking, or biking.²⁵³ However, residents felt sidewalk conditions could use improvements. Residents also intended to utilize the new transit system once complete.²⁵⁴

Community Amenities:

Residents valued existing recreational amenities but felt that safety could be improved.²⁵⁵ Residents also felt that their neighborhood lacked family amenities, such as

²⁵⁰ Department of Planning and Permitting and National Research Center, Inc., "Kalihi Community Survey" (City and County of Honolulu, October 2011).

²⁵¹ Ibid.

²⁵² Ibid.

²⁵³ Ibid.

²⁵⁴ Ibid.

²⁵⁵ Ibid.

theaters.²⁵⁶ In this, many noted that higher quality affordable housing options were lacking in their neighborhood. Existing childcare and senior services were also adequate in quality and service but presence was minute and missing within the community and culture.²⁵⁷

Development Opportunities:

Residents pointed out that sidewalks and streetscapes were top priority for development, and that adding landscape and ground level retail along major streets would prove beneficial.²⁵⁸ Residents also noted that in future developments, they did not want to see hotels, office towers, or residential towers over 8 stories.²⁵⁹

Community Engagement for Kamehameha Schools' Kapālama Kai Plan

In 2018 Kamehameha Schools conducted extensive outreach and community engagement activities to learn more about the Kapālama community and their needs and views about future development.²⁶⁰ The findings revolve around commute preferences, and what in the neighborhood is most important and what is most in need of attention, and what would like to be included in future developments. Almost half of the residents of the Kapālama commute to their jobs Downtown, and the rest commute within the Kalihi area.²⁶¹ Currently, half the population are ages 30-49.²⁶² This fact indicates that the majority of the respondents, who rely

²⁵⁶ Ibid.

²⁵⁷ Ibid.

²⁵⁸ Ibid.

²⁵⁹ Ibid.

²⁶⁰ "Community Outreach Activities," Kapālama Kai, accessed April 17, 2022, <https://www.kapalamakai.com/community-outreach-activities>.

²⁶¹ "Outreach Findings," Kapālama Kai, accessed April 13, 2022, <https://www.kapalamakai.com/findings>.

²⁶² Ibid.

on public transit already, will be approaching the age of 65 by 2050, and will make up the kūpuna population in the area.

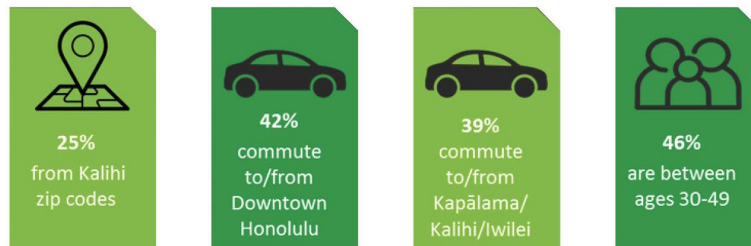


Figure 6-1: Outreach findings on commute and demographics
Source: Kamehameha School's Kapālama Kai, "Outreach Findings"

Kapālama residents also noted that affordable housing is most important to them, along with public safety, parks and public space, quality education, and job opportunities.²⁶³ The greater community of Kalihi is within a short proximity to the Downtown area, making it an ideal location for those who work in outlying neighborhoods, however, affordable housing seems to be lacking in the area, and the infrastructure itself needs improvement.²⁶⁴

Q16 Please rank the following from 1 to 5 in order of importance to you:

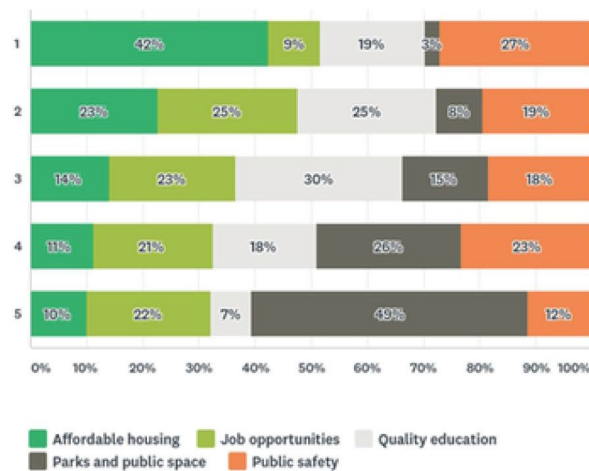


Figure 6-2: Outreach findings neighborhood opportunities
Source: Kamehameha School's Kapālama Kai, "Outreach Findings"

²⁶³ Ibid.

²⁶⁴ Ibid.

Kapālama residents wished to see more cultural activities, restaurants and cafes, fitness activities, kūpuna and child care and programs, and afterschool activities.²⁶⁵ In regards to open and recreation space, residents prefer to see more walking and jogging paths, community gardens, children's playgrounds, and benches.²⁶⁶ Therefore, in addition to affordable housing, residents felt that there is a lack of open spaces, as well as cultural activities that kūpuna and the children within the community can enjoy. Intergenerational spaces, connecting all generations should be prioritized in future developments as well.

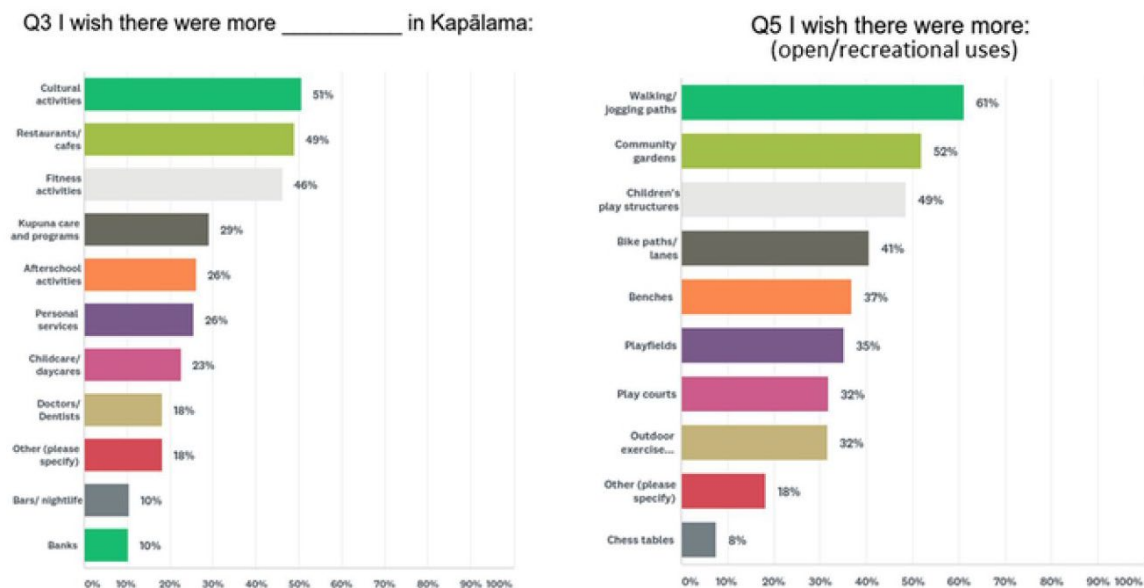


Figure 6-3: Outreach findings on neighborhood needs
Source: Kamehameha School's Kapālama Kai, "Outreach Findings"

²⁶⁵ Ibid.

²⁶⁶ Ibid.

Conclusion

Residents valued accessibility to transportation and amenities, but also understood the necessity for maintaining a strong community. What they felt was missing from their communities were affordable housing, child and senior care, cultural activities, walking paths, gardens, and fitness activities. In this, it is apparent that the diversity of generation and cultural population within the site is vibrant and broad, but many public amenities that cater to this directly are outdated or are not present. To further understand community and neighborhood needs, it is critical to understand from residents directly what their needs, daily life and responsibilities are. It is also important to see their values and hopes for the community's future.

Lana'i Long-Term Kūpuna Care Facility Needs Assessment Report

In a report, prepared by the Department of Urban & Regional Planning at the University of Hawai'i at Mānoa, Lana'i's long-term kūpuna care facility needs were assessed through interviews with service providers, family caregivers, and kūpuna.²⁶⁷ This needs assessment report was used to further analyze and address critical programs and components needed for developing the framework for this thesis. As the assessment is done on Lana'i, the population is smaller, yet values and insights are similar. Many perspectives surrounding respite care, telemedicine rooms and spaces and learning about daily activities of aging were accounted for and addressed.

Interviews w/ service providers:

²⁶⁷ Priyam Das, "Lana'i Long-Term Kupuna Care Facility Needs Assessment Report" (Department of Urban & Regional Planning, n.d.).

Service providers addressed the need for respite care to address the need to relieve responsibilities of family caregivers.²⁶⁸ Social halls or adult daycares within the community were addressed and suggested among service providers to alleviate some of the stressors and burdens put on family caregivers.

Tele-medicare rooms and spaces were also mentioned as a necessity and are often overlooked.²⁶⁹ Currently, as telehealth is becoming a popular medium for immediate and initial stages of medical care services, workers on Lana'i have addressed this issue commonly. As currently, there is one small hospital on the island, immediate healthcare may be an issue for those who are not as mobile. Through changes enforced throughout the pandemic, designated space for telehealth can be used on O'ahu as well to ensure those who do not have immediate access to health services are able to have the opportunity.

Interviews w/ Family Caregivers:

Caregiver burnout is a recurring concern. Available and accessibility respite care services are the highest in influence as it allows family members to avoid burnout.²⁷⁰ This relief also brings opportunity for kūpuna to become integrated with others in the community beyond those in their immediate family, again through providing social halls, daycares, or community centers. As adjustments to aging become continuously evolving, it is important to have respite care to ensure all services necessary are accessible.

Weekly check-ups from service providers were also mentioned to be a high priority.²⁷¹ A consistent checkup done by staff can be accomplished through employing a dedicated space, similar to the tele-medicare rooms, within a community. As the healthcare of kūpuna, both

²⁶⁸ Ibid.

²⁶⁹ Ibid.

²⁷⁰ Ibid.

²⁷¹ Ibid.

physically and mentally have room for improvement, it is critical among service providers to address solutions that are immediate and accessible for patients and residents.

Within the community, finding a way to ensure there is a connection despite forced isolation throughout the pandemic, is vital. With the lockdowns and mandates put in place during the pandemic, kūpuna not only were disconnected from health services, but daily activities that connected them to the community both in Lana'i and on Maui, which in turn took a heavy toll on their mental wellbeing.²⁷² Mobility and access to treatment and facilities have increasingly become difficult, along with mental burdens of isolation from community interaction. Ways to re-integrate kūpuna to reverse negative effects from the pandemic will overall improve mental health. As learned, mental and physical health are deeply intertwined, which further emphasizes the need for boosting community interaction.

Finally, it is equally as important to ensure kūpuna have a sense of place. This can be accomplished through the inclusion of convenient and easy means for home-modifications. Families are aware that their kūpuna want to stay in their homes and within their communities, as they age and home-modifications ensure that they can remain where they feel most comfortable.²⁷³ And when it comes time to transition to a care facility, it is important that kūpuna can retain that same sense of place. Ensuring that each person has a respectable and adequate amount of privacy while also welcoming community interaction becomes a balance that kūpuna can ideally have to age best in place.

Family caregivers allowed insight toward living and understanding kūpuna as individuals with the perspective of how they are comfortable at home. In this, it is vital to see how they interact and what they value in terms of short- and long-term care. Both the transition from being under personal family care to long term care is not only difficult on the kūpuna but also a large

²⁷² Ibid.

²⁷³ Ibid.

transition for the family. Because of this, they are able to provide views on best ways to understand how kūpuna interact and move, where assistance is needed, and the level of comfort and means that should be provided.

Interviews w/ Kūpuna:

Throughout the interviews, it was common that many kūpuna value social interaction as it can sometimes be inaccessible due to the proximity of community programs or in light of the recent pandemic, social isolation has dominated many lifestyles.

In understanding day to day lifestyles, most active hours are noted at 7am to 3pm. It is common to have similar daily activities such as watching tv, talking with friends and family, volunteering, reading, knitting, sudoku and puzzles, walking, laundry, yard work, exercise, and hosting family.²⁷⁴ Elements within their lifestyle beyond daily or regular activities also include shuttles for day trips to Maui, gardening, playing games, watching movies, and doing arts and crafts.²⁷⁵

Various levels of social interaction to ensure dynamics becomes a priority to aging communities and residents as they prefer not to live with their families. It is seen that many felt they were a burden, and that caregiving was a chore.²⁷⁶ Interdependence or fully dependent on caregivers brings levels of complexity with intergenerational living that can be both beneficial and inadequate if spaces and facilities do not accommodate. In this, prioritizing healthy interactions between residents, families and amenities are being driven to balance.

²⁷⁴ Ibid.

²⁷⁵ Ibid.

²⁷⁶ Ibid.

Nine Activities to Support Aging and Intergenerational Connections

Learning from the Kapālama community engagement and outreach findings along with insights extracted from the interviews conducted with service providers, caregivers and kūpuna for the Lana'i Long-Term Care Facility Needs Assessment are translated into nine activities that best fit Hawai'i's aging population needs. These activities are in tandem with the extracted strategies and are aimed to be addressed in the upcoming framework and design.

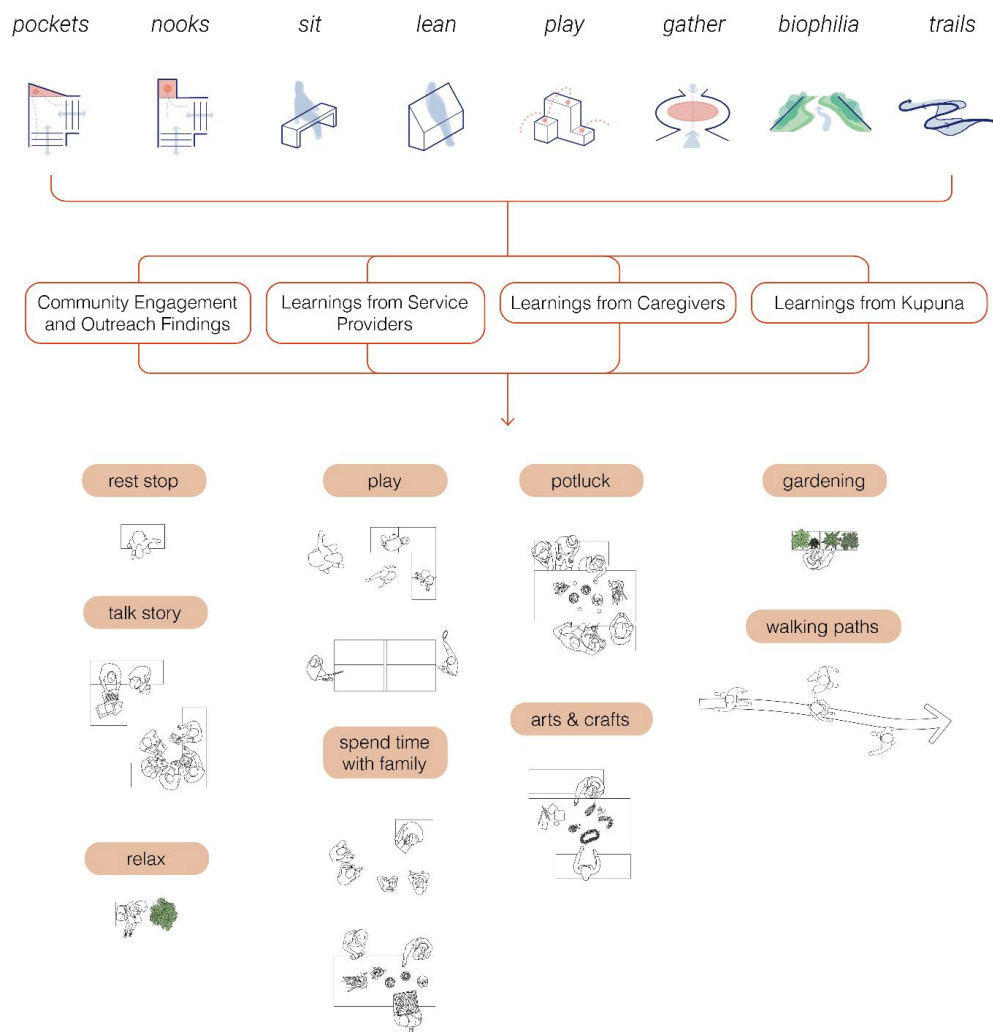


Figure 6-4: Extracted activities
Source: Author

In reviewing the needs and perspectives of the community, the kūpuna, and their family caregivers and service providers, it is apparent that social connections form within the home as well. Through this, unit design becomes interrelated and in support of circulation spaces. Entry nooks bridge the connection between the unit and primary circulation path while providing both a buffer and a transition from the private to the public. It welcomes space for a bench to offload items while entering and exiting, a place to sit, and regroup. Residents can also control ventilation through doorways and openings. When applied to co-living typologies, these nooks may also offer extensions to the typical unit space.

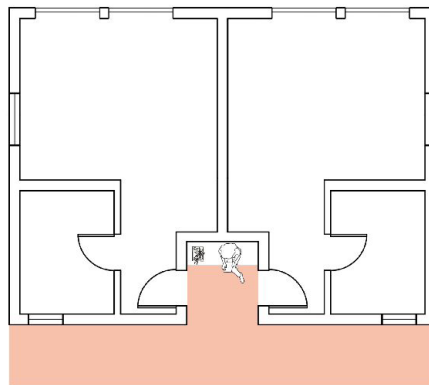


Figure 6-5: Entry nooks
Source: Author

Co-living units can accommodate a variety of user typologies. This can pair kūpuna with other community members that can offer physical assistance, support, and meaningful relationships that both encourage and motivate them to uphold long and short-term tasks. Members of the community suitable to co-live with kūpuna may be any person from a student to service provider or another kūpuna. In this, it ensures a personal connection to the community while also connecting resident lifestyles to that as a community member.

Entry nooks are also seen throughout typical residential communities joining units. These two neighboring unit entries allow new connections to form, or to join and extended

family or kūpuna. Residential entry nooks bring new community opportunities that are both informal and intimate as they are at a two-unit scale. It serves as a secondary catalyst for personal community connections through the formation of a small avenue to enter one's apartment.



Figure 6-6: Kūpuna Narrative
Source: Author

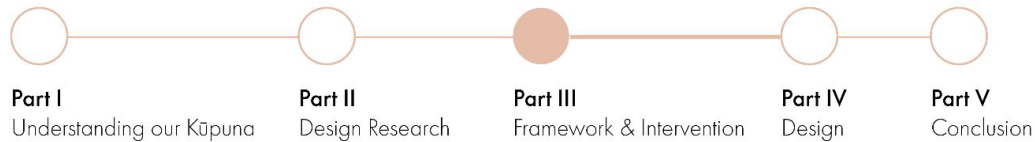
Ways kūpuna are able to be integrated into daily life and community rather than neglected and overlooked include opportunities within clusters and aggregates of units. As discussed, spaces, amenities, and the community must be accessible and seamless.

Conclusion

Research through community surveys, insights, interviews and action plans have been noted and analyzed to understand demographic-oriented needs when addressing elderly short- and long-term care. In that, the future shift of lifestyle to allow opportunities for incorporating kūpuna into the community. Sources including Kalihi Community Survey, Community Engagement for Kamehameha Schools Kapālama and Lana'i Long-Term kūpuna Care Facility become pillar references in understanding not only how kūpuna are able to age well within the community, but also how to equip and prepare communities to welcome them in. Surveys and responses were conducted before and after the recent COVID-19 pandemic, ensuring that perspectives of both social norms are accounted for and considered.

Throughout this outreach process, activities, perspectives, and design actions can be directly implemented. Extracted Activities highlights how entry nooks and moments to pause along main circulation paths can be beneficial for social connectedness. Rest stops, programs, and areas for various levels of interaction promote both intimate friendships between community members while also fostering the community at large. Through these minute design intentions and incorporations, consideration and inclusive design catered to the aging population arise.

Part III: Framework & Intervention



To preface the design development process, the research and design spanned three academic semesters. The first semester focused on initial research and concluded with the first design iteration. This included the development of the block, the units, and the various shared spaces in between, such as ground level public spaces, second level courtyards and shared spaces for the residents, and initial design of circulation spaces. A tentative framework was also developed during this time, focusing on implementing shared spaces and co-living. The framework and designs were simple and conceptual, which lead to narrowing the focus to circulation spaces in the following semesters.

This focus shift led to a second set of research conducted during the second semester, which included the review of literature and case studies that were relevant to the focus of circulation spaces. Additional research through discussions with professionals were conducted, and the analysis and extraction of strategies and activities were carried over to the third and final semester where the second design iteration was completed, resulting in the development of the final framework and design strategies.

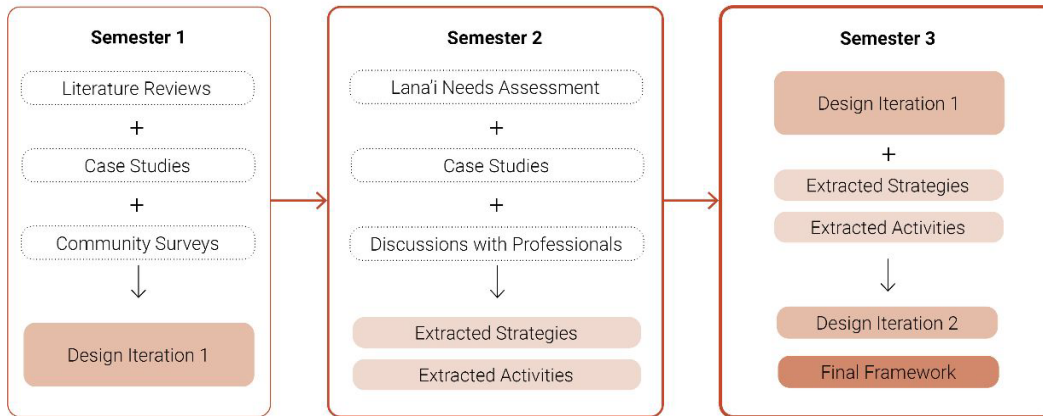


Figure 7-0: Design Sequence
Source: Author

This third part of the dissertation reviews the finalized framework and design strategies developed from the previous research and design process. Chapter 7 reviews the final framework, and Chapter 8 expands on the design strategies. Each step in developing and implementing the design strategies are explained in the following chapters.

Chapter 7: Framework

Overview

Four strategies were identified from the research and design activities conducted for this project: 1. Identify, 2. Plan, 3. Connect, 4. Populate. These strategies guide the final design proposal presented in the next chapters.

The framework scope varies. *Identify* aims to address the community and specific user needs. *Plan* addresses the neighborhood and block level, where after *Connect* is implemented at the building scale. Lastly, through *Populate* small interventions along the site and building circulation can be implemented.

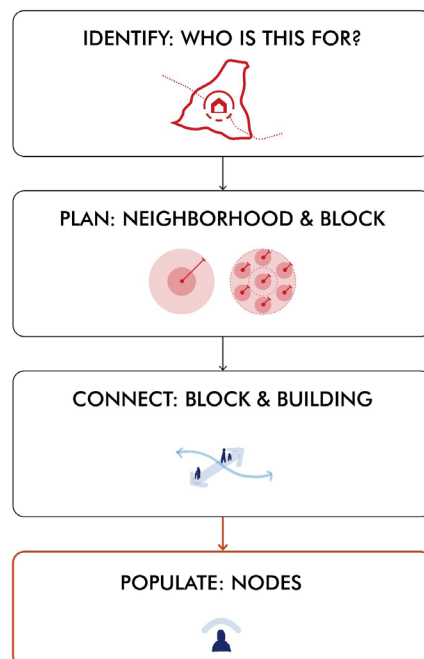


Figure 7-1: Framework Overview
Source: Author

1. Identify.

Identify sets the premise to understand the existing site, community, and goal of the design. Further, as this thesis aims to encourage social interaction between kūpuna and the community, it will directly address aging, multigenerational community members within a TOD neighborhood. The community is also elderly but geared toward promoting activity and movement.

IDENTIFY: WHO IS THIS FOR?



*Who make up the community?
Who lives in this neighborhood?
What lifestyle is being
addressed?*

Figure 7-2: Framework: Identify
Source: Author

1) **An aging multi-generational community.**

Focus is on the increasing elderly population in conjunction with their families and close supporters.

2) **A TOD neighborhood**

Prioritize usage of rail and public transit, along with shared services. The neighborhood is walkable, inclusive and accessible.

3) **An active elderly community.**

Promoting movement and an active lifestyle for the physical, mental, and social health of our kūpuna.

Ultimately, identifying the goals and users of this framework is critical to the design and application process. The framework is a supportive tool and guide rather than a directly translated means to end or conclusion. Through this, the framework becomes a foundation for further research and study to promote next steps in design for social cohesion and aging in place.

2. Plan.

Plan includes strategies to cluster, connect, and support the block. The aim is to increase walkability and accessibility at the block and building scale. This is done through sloped pathways to increase connectivity between the street and courtyard level, connecting residents to public amenities along the street level and resident support services within the building.

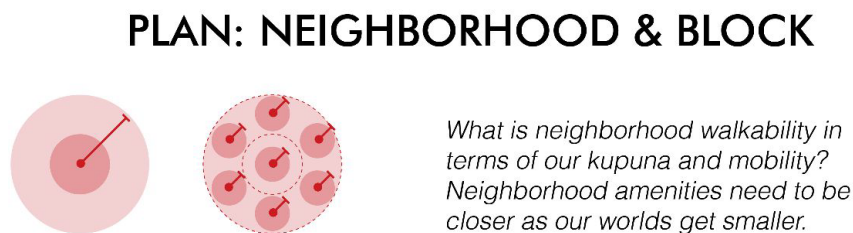


Figure 7-3: Framework: Plan
Source: Author

1) Huddle

The first strategy for the block is to huddle together. Multiple clusters break down the block, and the buildings are huddled together facing inward. These clusters help create smaller, closer communities.

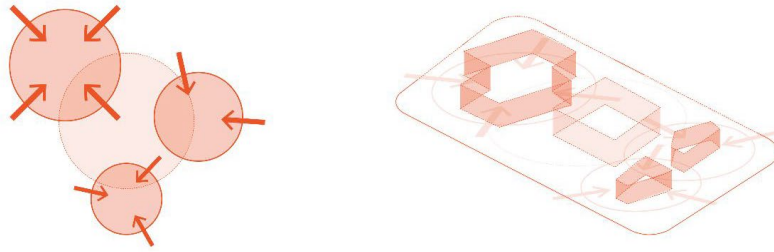


Figure 7-4: Plan: Huddle
Source: Author

2) Raise & Connect

The second strategy for the block is to raise and connect. The street level open space and circulation extends to the courtyard level via sloped pathways. This allows for greater connectivity between the street and courtyard level.

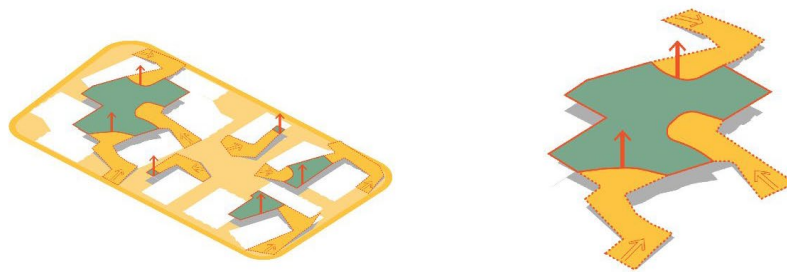


Figure 7-5: Plan: Raise and Connect
Source: Author

3) Provide Support

The third strategy for the block is to provide support. Amenities are provided at the ground level, which may include restaurants, a grocery store, or a pharmacy. Shared spaces and resources for residents are provided on the second level, which may include telehealth rooms, co-working space, or an activity room.

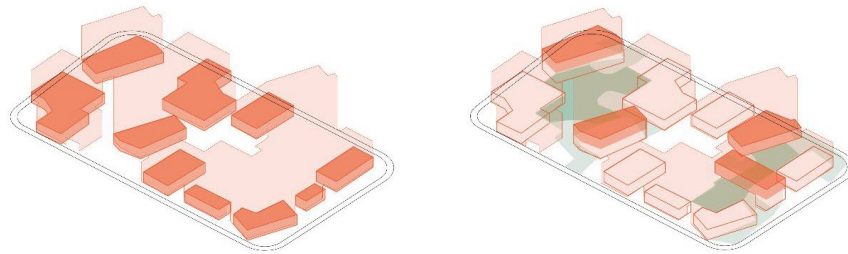


Figure 7-6: Plan: Provide Support
Source: Author

Ultimately, planning the block is critical in creating supportive and connected communities. Huddle typologies can vary and be adapted for various urban densities. Blocks can create a single huddle, or multiple smaller huddles, which can foster different connections depending on community needs and goals.

Employing sloped pathways can easily be done within larger blocks, but as the site becomes smaller, new creative ways of incorporating accessibility must be further explored. It is key to cultivate inclusive accessible experiences within the site and its connection between the street and raised courtyards. Kūpuna should be encouraged to explore their neighborhoods safely and comfortably.

In further analysis of providing amenities within the neighborhood, resources can be provided within a single block, across a neighborhood and beyond. In this, each block can provide a key component that is able to sustain the community. For example, each block can have access to food, whether it is a mini mart or market, but another block would include a

dedicated grocery store. As all blocks would have community rooms for elderly to spend time, it can also be elevated to the block scale where dedicated daycare and caretakers can have individual facilities.

3. Connect.

Connect prescribes strategies within huddle clusters to unify paths, introduce zones, and support residents along circulation and increase connections at the building level.

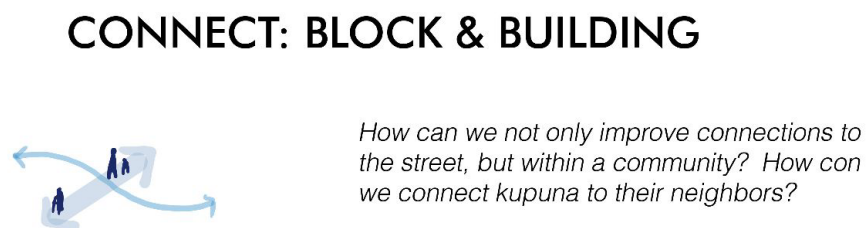


Figure 7-7: Framework: Connect
Source: Author

1) Unify Paths

To improve connections from the street and courtyard level, as well as connecting kūpuna to their neighbors, there should be a singular major artery that connects the resident to unify the street level, courtyard level, and resident spaces.

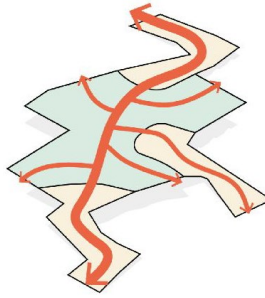


Figure 7-8: Connect: Unify Paths
Source: Author

2) Create Zones

Create zones within the shared space and along path to encourage movement and a variety of usage. Plantings and soft surfaces can be used to discourage wandering into private spaces.

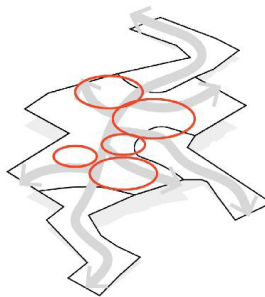


Figure 7-9: Connect: Create Zones
Source: Author

3) Provide Support Nodes

Add places to rest, gather, play and connect along the path. Vary node sizes based on programmatic need. Break down the path so it is easy to explore the “huddle” community.

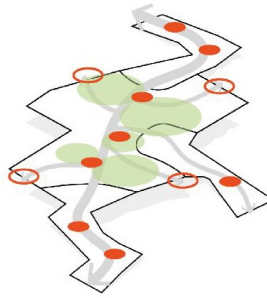


Figure 7-10: Connect: Provide Support Nodes
Source: Author

Ultimately, *Connect* aims to promote wayfinding through employing clear, unified paths and zones, and implementing nodes for ease of navigation and lay the foundation for social connections. Spaces within the building, block and neighborhood that welcome opportunity for social cohesion improve overall stewardship and attention to individuals at a community scale. Through highlighting zones and utilizing open spaces by residents, it brings a greater sense of responsibility for the space and whom it is shared with. Designed spaces that connect people at various scales, such as the building, block, and neighborhood, connect individuals to the spaces and others around them.

4. Populate.

Populate aims to introduce nodes along the circulation path. It is an expansion of the last strategy, within *Connect*. *Populate* provides support nodes such as add places to rest, gather, play and connect along the path. This helps to break down the path so it is easy to explore the “huddle” community. This is the main focus of the design for this thesis, the design of these nodes, as shown below.

POPULATE: NODES



Figure 7-11: Framework: Populate
Source: Author



Figure 7-12: Populate: Nodes
Source: Author

Ultimately, *Populate* can be done in a variety of ways, with nodes supporting the extracted activities being the core concept. The design of the nodes is particular to this thesis but offers a multitude of design opportunities to be explored. The same can be said for this framework in its entirety. It is speculative, aimed to inspire designers and inform decision makers on the importance of designing for social cohesion and serve as an example of applied research and design to support aging in place. Through identifying the users and planning the

neighborhood and providing connections throughout the community and populating circulation spaces with various nodes, we can take a step towards improving social cohesion and improving social connectedness.

Chapter 8: A Network of Nodes

This project proposes a network of nodes that aim to improve social connectedness along circulation spaces. There are two overlapping typologies that compose the system: 1. Interventions to vertical circulation, and 2. Interventions to horizontal circulation. This chapter overviews the steps to take to implement these networks, which were all derived from the learnings from the research conducted for this project. In following these steps, the network of nodes is developed.

Typology 1: Vertical Interventions

1.1 Changes to Typical Circulation

Prior to adding nodes, the vertical circulation spaces can be changed in a few ways. These changes are guides to improve the accessibility and usage of vertical circulation, primarily addressing stairwells as they are the most difficult to navigate mobility-wise. These changes are not meant to be limitations, and include:

1) Add a landing, shorten runs.

An extra landing can be added, allowing stair run length to be shortened. This makes ascending and descending stairs more manageable. It is less fatiguing and helps with stability and balance.

2) Add visibility.

Using perforated facades, rather than wall slabs and enclosures, can provide visual connections. Visibility and safety are increased.

3) Add nodes.

Nodes introduce additional program and function to circulation, creating new shared spaces.

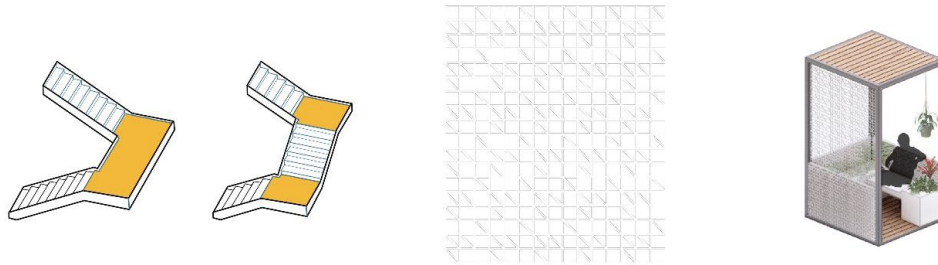


Figure 8-1: Changes to vertical circulation
Source: Author

1.2 Node Parameters

Next, there are a few parameters to follow when introducing them to circulation spaces. These parameters are guides to get started, but are not meant to be limitations:

1) Applies to stairs, landings and connection to corridors.

This means nodes can be placed in a variety of locations to accommodate various levels of mobility and accessibility. Applied to landings, it is accessible to those with greater mobility. Applied to corridors, such as in front of units, or adjacent to elevators, those with low mobility with high accessibility needs can access these spaces as well.

2) One node per floor.

At least one is placed per floor. This can mean one node per level change in the stairwell. The aim is flexibility and accessibility. If at least one is placed per floor, or per landing, then it is accessible to all on that level. There is no limit, more can be added depending on the project, accessibility needs, and number of units per floor.

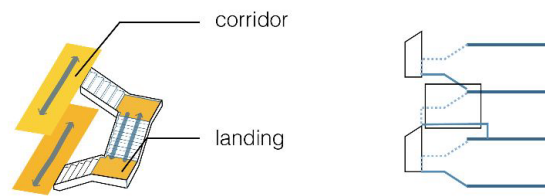


Figure 8-2: Node parameters for vertical circulation
Source: Author

3) Node size dependent on building spacing.

Nodes can increase in size if there is greater space between buildings, maximizing usable space. If buildings are clustered tightly together, it makes sense to keep node footprints small. However, new typologies could arise if larger nodes occur in tight spaces, creating bridge connections.

4) Node size dependent on building height.

Nodes can also increase in size if the building height increases. The higher the building, the further units can be from shared amenities. Residents may also feel greatly disconnected from their neighbors in high-rises, so adding extra shared space can encourage new connections. In contrast, additional smaller nodes can be used in place of larger nodes, another case-by-case typology.

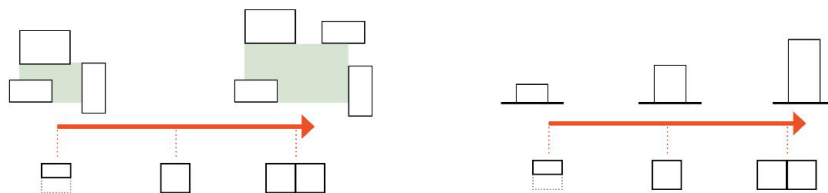


Figure 8-3: Node parameters for vertical circulation
Source: Author

1.3 Modular Variations

Design for modularity, with the main node measured at a 5 ft by 5 ft space, increasing or decreasing depending on the parameters mentioned. Each node can support the various extracted activities within through the inclusion of, but not limited to, planters, seating, tables, or play structures.

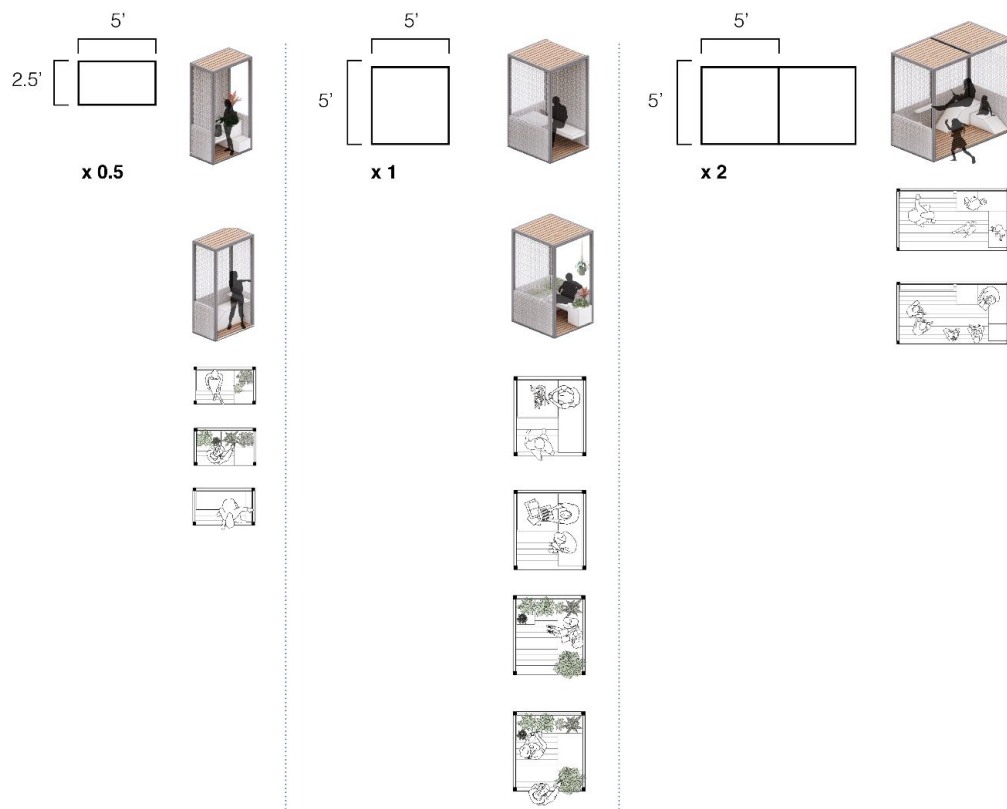


Figure 8-4: Modular variations for vertical circulation
Source: Author

Larger nodes can hold additional or multiple activities to accommodate larger gatherings. This can include a large picnic table, which can double as table tennis. Seating can be adjacent to gardens or play areas or places for exercise. The lanai spaces are a little different, as they are more dependent on the corridors and units they reflect and accommodate for. Lanai spaces may include, but are not limited to, seating and planters.

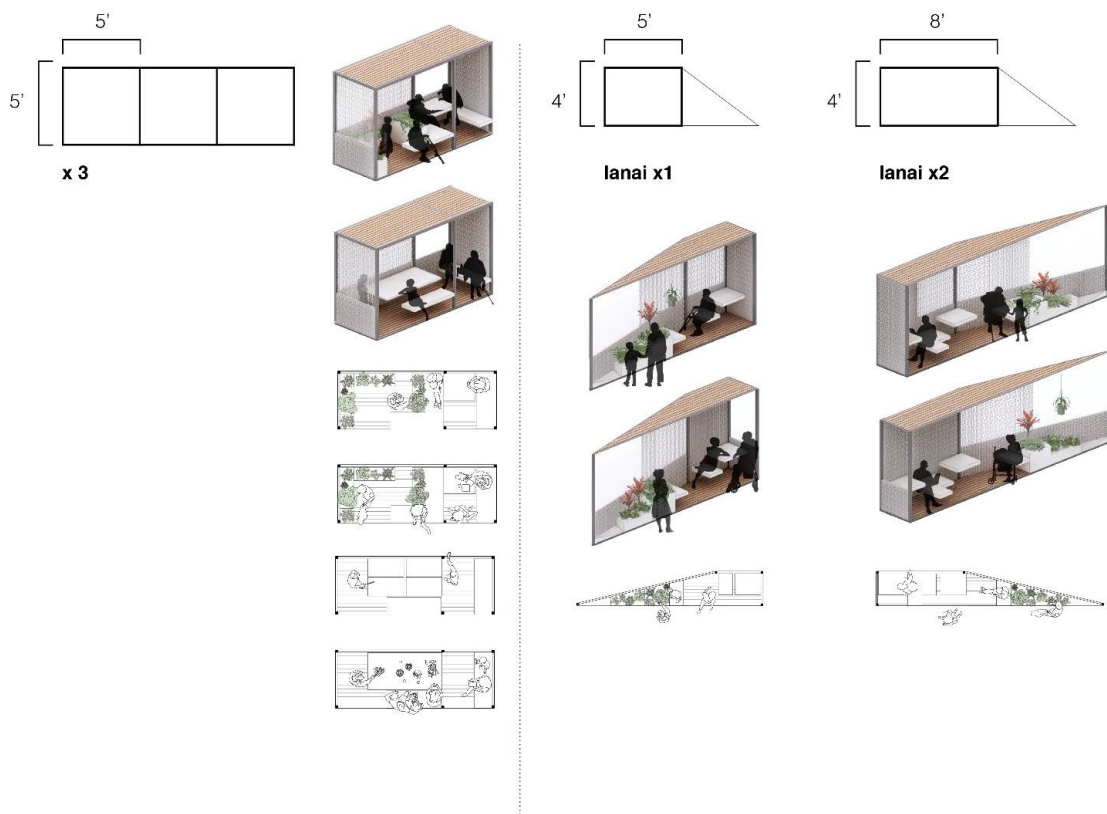


Figure 8-5: Modular variations for vertical circulation
Source: Author

Typology 2: Horizontal Interventions

2.1 Changes to Typical Circulation

The horizontal canopy nodes have a similar process. Before they are added, some changes to typical circulation can be made. Again, they are suggestive, and are not limitations. The goal is to increase accessibility, and some ways to do that are:

1) Add ramps.

Introducing ramps and sloped paths as main circulation paths can increase accessibility and connectivity between the street and courtyard level. Depending on the site and the allowance of space, some may be a mix of stairs and ramps, as long as there is at least one primary ramp. If stairs are included, rest points and vertical nodes should be included where needed.

2) Add rest points.

The inclusion of rest points, for not only stairs but ramps and long pathways, make walking manageable for allowing rest, without breaking off circulation access for others. Rest points should be directly adjacent from paths. Rest points may be nodes, or a safe place to step away from the main path. It may include seating, a place to lean, and/or a railing.

3) Add shade.

Utilizing shading elements make paths safe and comfortable, protecting from sun and rain. Depending on site conditions, paths can be completely covered, or covered where needed.

4) Add activity.

Add functionality and shared space program. This can be done through the addition of nodes.

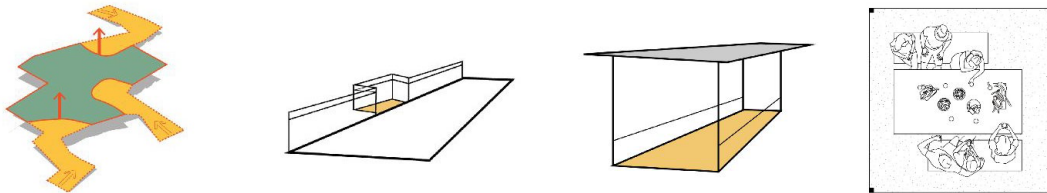


Figure 8-6: Changes to typical horizontal circulation
Source: Author

2.2 Node Parameters

For the horizontal circulation node, canopy nodes, there are also a few parameters to follow when introducing them to circulation spaces. These parameters are guides to get started, but are not meant to be limitations:

1) Applies to paths, edges, and enclosed green space.

These nodes can occur along the path itself, adjacent to the path, or within the spaces that are created when multiple paths intersect.

2) Three typologies: node, cluster, and path.

When considering the first parameter, three node typologies occur. There is a singular node, or multiple forming a cluster, or continuous nodes forming a path. Singular nodes can occur along edges and enclosed green spaces and can hold activities. Clusters can hold activities, as well as remain open to support flexible programming. Paths primarily provide shade, cover, and wayfinding. It can encourage gathering and provide shelter.



Figure 8-7: Node parameters for horizontal circulation
Source: Author

3) Cluster sizes are dependent on building spacing.

Similar to the vertical nodes, canopy nodes can increase in size if there is greater space between buildings, maximizing usable space. If buildings are clustered tightly together, it makes sense to keep node footprints small. However, projects can be case by case and open green space can be prioritized and supported with small clusters or nodes within large building spacing.

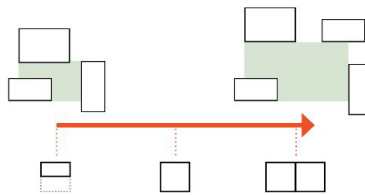


Figure 8-8: Node parameters for horizontal circulation
Source: Author

2.3 Modular Variations

The canopy nodes are also designed for modularity, with the main node measured at a 10 ft by 10 ft, which can be arrayed or clustered into a pavilion or path. Each node can support the various extracted activities within, including but not limited to the inclusion of planters, seating, tables, or play structures.

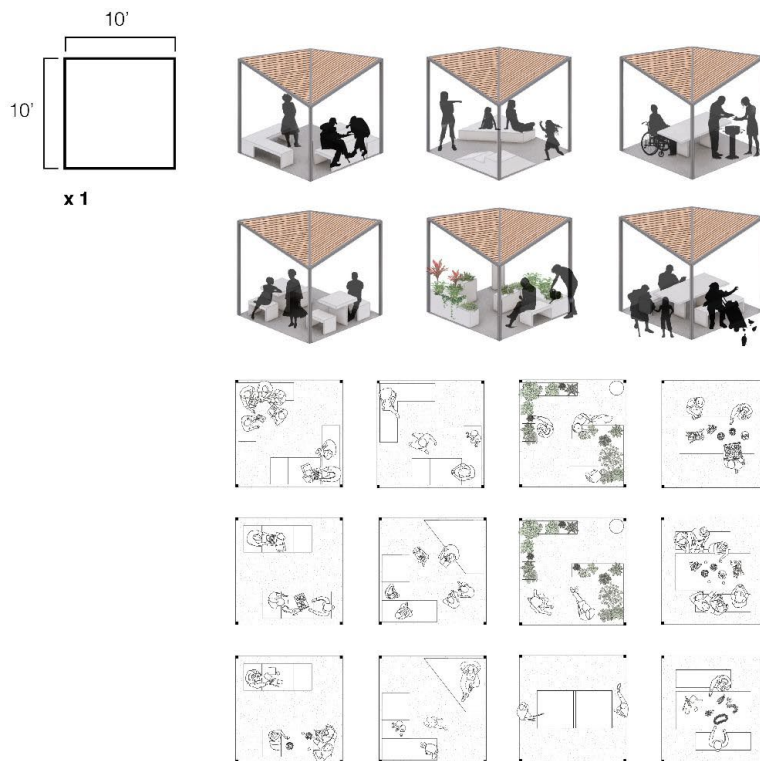


Figure 8-9: Modular variation for horizontal circulation
Source: Author

These nodes allow for a variety of gathering types, allowing residents and neighbors to gather together on a larger scale. The larger the cluster, the greater the opportunity for gathering. There is also the smaller node typology, meant to attach to the paths and provide places to sit and rest. This node can vary in size, depending on the site, the context of the path to the adjacent buildings, and the length of the path.

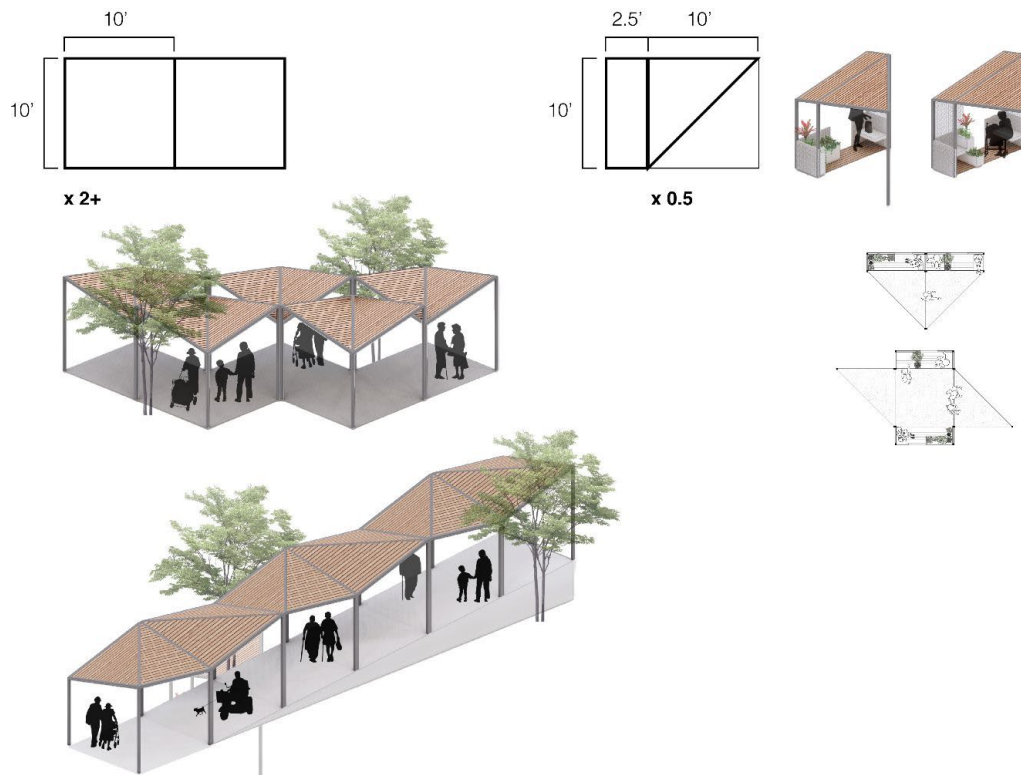
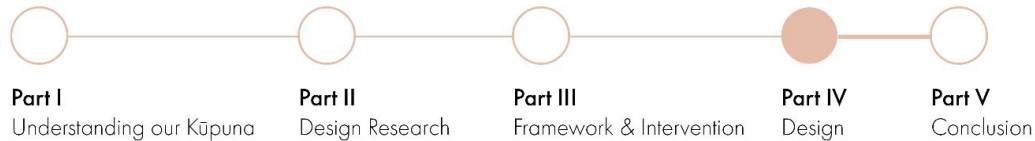


Figure 8-10: Modular variation for horizontal circulation
Source: Author

Part IV: Design



The fourth part of this dissertation reviews the design implementation of the framework and strategies on a sample site. This final design builds on a previous design iteration done at the end of the first round of research. The primary focus of the design are the interventions made to the horizontal circulation from the street to the courtyard level, and the vertical circulation from the courtyard level to the residential units. Floor plans and unit plans are briefly explored; however, the focus of this thesis is the interventions and strategies at the circulation level.

Chapter 9 begins with the research pertaining to site selection, and the design at the block level, with focus on building massings. Chapter 10 reviews the learnings from the first design iteration, and its influence on the final design. From there, the design is depicted through plan, section, and perspective renders to show how the spaces use the node strategies to improve social connectedness within the shared courtyard spaces and vertical circulation space.

Chapter 9: Site Design

This chapter reviews the site selection process of the speculative design. The goal of selecting a site is to simulate the process of the first two framework steps, *Identify* and *Plan*. In selecting a Transit Oriented Development (TOD) Neighborhood, it *identifies* the community and who the design is for. After site selection, the process of the block design implements the framework's *Plan* strategies.

Kapālama: Site Selection & Site Research

TOD Neighborhoods Exploration

The site for this speculative design was chosen from a number of densely populated TOD neighborhoods. As the goal of this thesis is centered on increasing accessibility and connections, and designing for the increasing aging population, sites that have the highest population with future plans surrounding a rail station were considered.

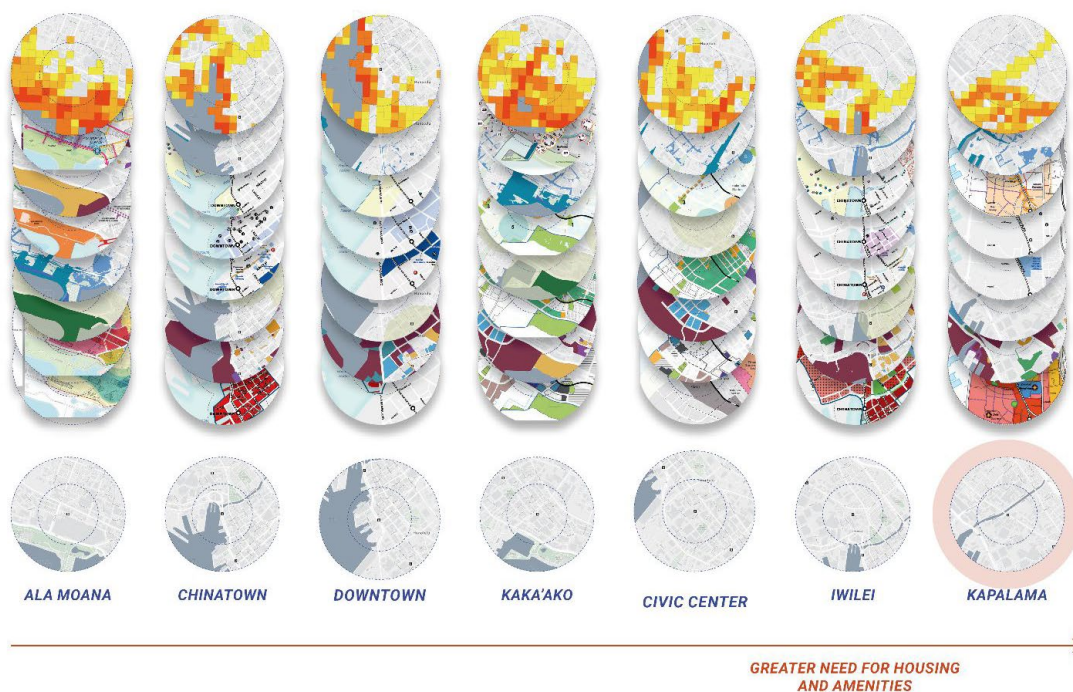


Figure 9-2: Neighborhoods ranked by various data layers
Source: GIS data obtained from Hawai'i State Office of Planning, Hawai'i Statewide GIS Program, Geospatial Data Portal; City and County of Honolulu, Kalihi Neighborhood Transit Oriented Development Plan

Kapālama Neighborhood Overview

A block in close proximity to the rail station and future connections to the Kapālama Canal Promenade was selected. Further site analysis for the selected block was then conducted, covering density, land use, park space, amenities, and ownership. Density is low, due to the commercial and industrial zoning that covers most of this area. Future plans suggest that more residential use will be introduced, along with breaking up these mega-blocks with access roads and green streets to improve connections and add more store frontage. Current

land ownership for not only the selected block, but for the majority of the Kapālama TOD area, is Kamehameha Schools.

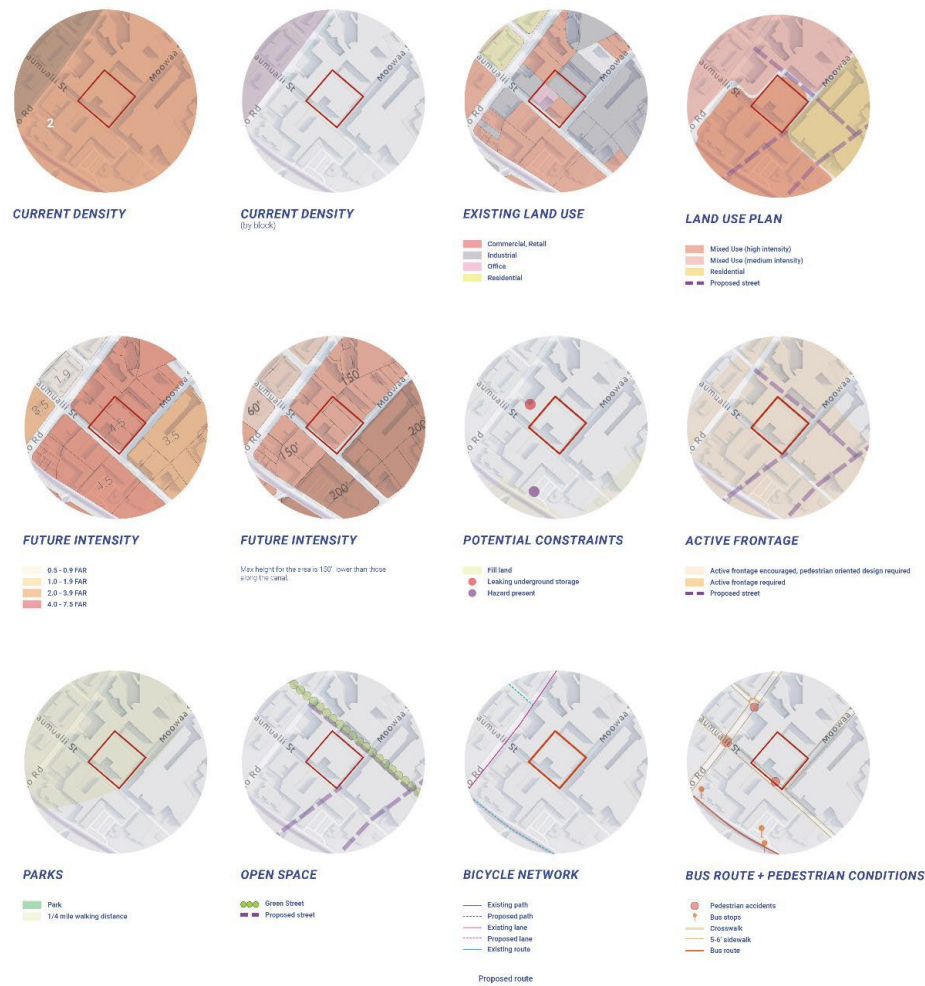


Figure 9-3: TOD plans near site
Source: GIS data obtained from Hawai'i State Office of Planning, Hawai'i Statewide GIS Program, Geospatial Data Portal; City and County of Honolulu, Kalihi Neighborhood Transit Oriented Development Plan



Figure 9-4: Kapālama Canal Catalytic Project
Source: City and County of Honolulu. "TOD Kapālama Station Area."

Existing businesses within the block were identified, as well as adjacent future design projections from Kamehameha Schools. The area, like most of the retail and industrial blocks in the neighborhood, have small mom and pop retail, warehouses for industrial businesses and wholesalers, and small offices. Housing nearby are either three-story walk ups, or a two level walk-up, where residents live above a warehouse on the ground level. Streets are filled with parked cars, however, there seems to be no covered parking areas due to the predominance of the ground level warehouses. It is important to keep in mind that many residents carpool to work and intend to utilize the rail when it is up and running. This may indicate that some residents may not need an abundance of parking, at least near the TOD station.



Small retail, warehouses and offices



Parking along sidewalk



Ample parking / cars



Beginning of street trees



Walkups and Industrial ground level



Large walkups

Figure 9-5: Site Images
Source: Photography obtained from Google Street View



Figure 9-6: Future Kapālama Development
Source: Image sourced from Honolulu Star-Advertiser, courtesy of Kamehameha Schools

The context plan below identifies the site location in proximity to the rail, as well as future improvements such as proposed streets, green streets, a new promenade, and the distance from the block to the rail station. The average walking speed is 3-4 mph, making the sample

site approximately a 6-minute walk from the rail station.²⁷⁸ However, depending on their mobility, elderly can walk 1.8 mph, resulting in a 10-minute walk.²⁷⁹



Figure 9-7: Context plan
Source: Data sourced from City and County of Honolulu, Kalihi Neighborhood Transit Oriented Development Plan
Illustrator: Author

²⁷⁸ "Average Walking Speed: Pace, and Comparisons by Age and Sex," Healthline, March 14, 2019, <https://www.healthline.com/health/exercise-fitness/average-walking-speed>.

²⁷⁹ Telma de Almeida Busch et al., "Factors Associated with Lower Gait Speed among the Elderly Living in a Developing Country: A Cross-Sectional Population-Based Study," *BMC Geriatrics* 15, no. 1 (April 1, 2015): 35, <https://doi.org/10.1186/s12877-015-0031-2>.

Block Design

Massing design for the block utilizes the 26 ideal block massings from the UH CDC *Understanding Density & Local Typologies* study as a launch point. Selection was narrowed down to massings that would fit within the context, as well as with the design framework in mind.

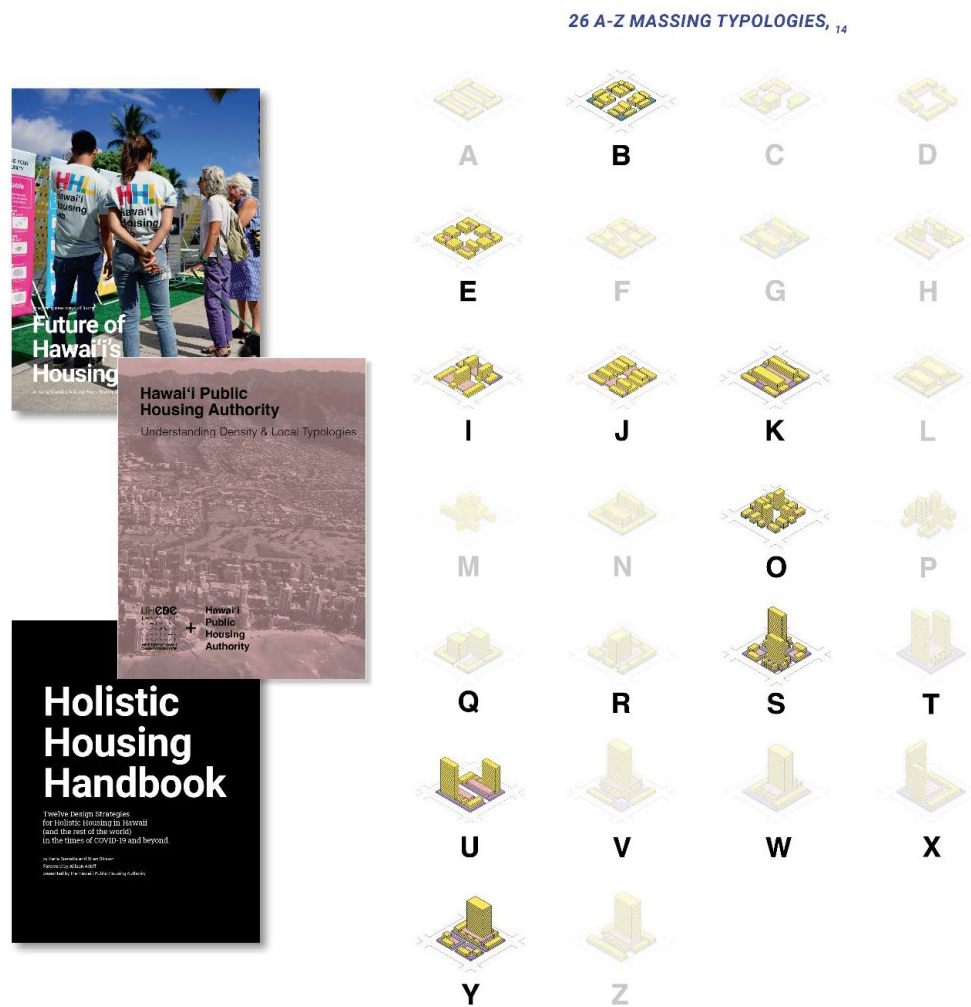


Figure 9-8: Massing Selection
Source: University of Hawai'i Community Design Center

Selected massings were then placed within the context of the neighborhood and adjusted to increase or decrease in density, and to see which would work best in the neighborhood context, and what best fit the framework.

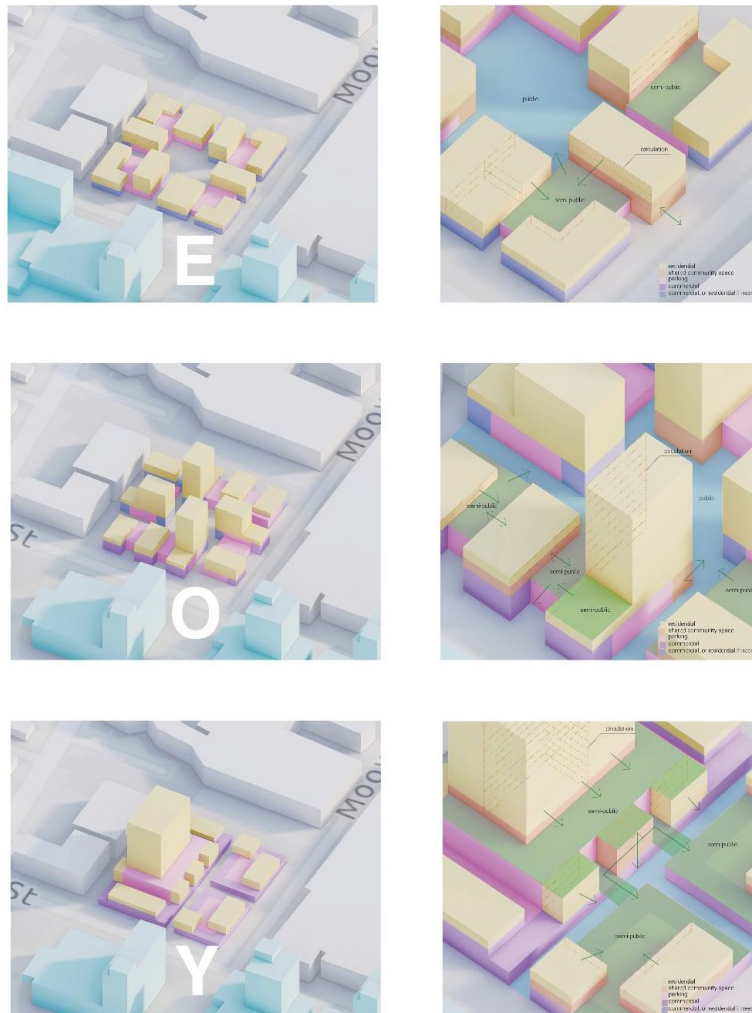


Figure 9-9: Massing exploration
Source: Author

One block typology was selected, and the block size was then expanded. From restricting the block to the typical, 300'x300' square block size to filling the entire extended block

shape. The building density and orientation was then adjusted to respond better to the environmental conditions, such as solar and wind.

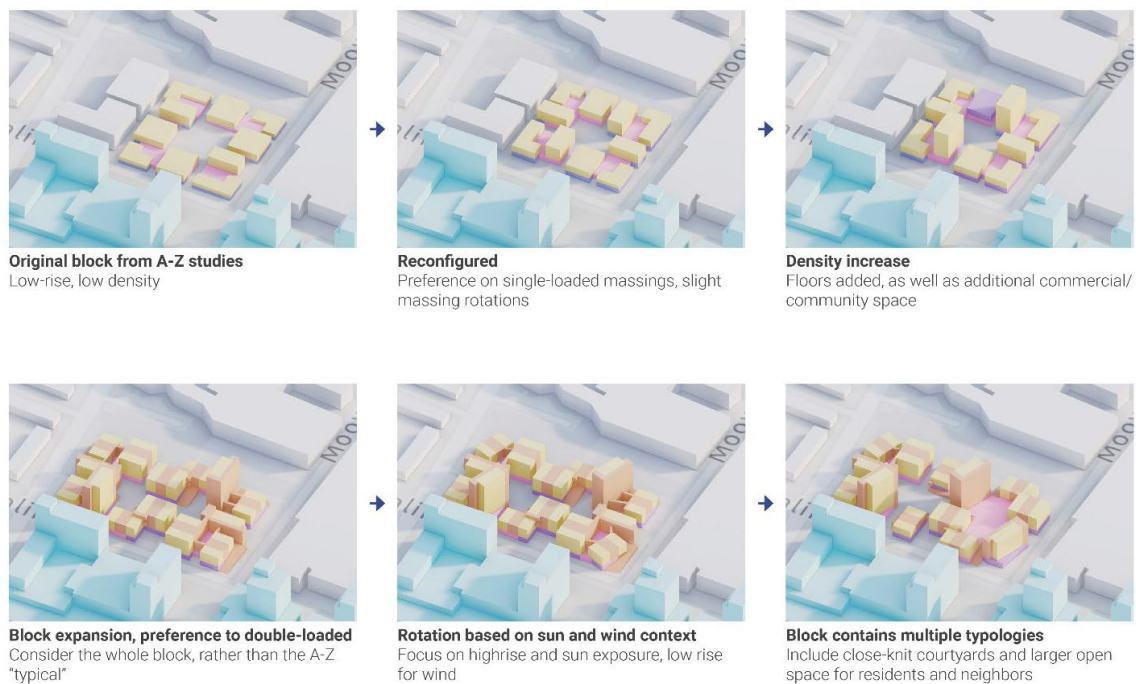


Figure 9-10: Massing exploration
Source: Author

The massings then went through the *Plan* phase of the design framework.

1) Huddle

The first strategy for the block is to huddle together. Multiple clusters break down the block, and the buildings are huddled together facing inward. These clusters help create smaller, closer communities.

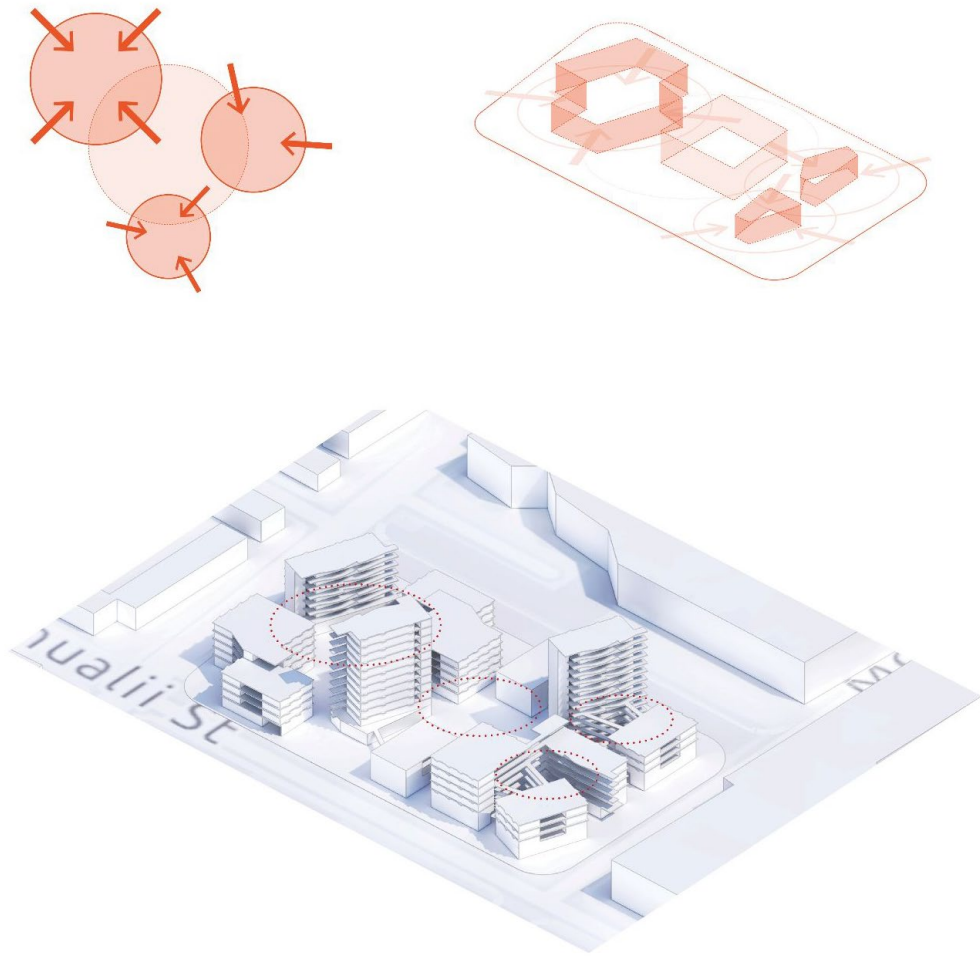


Figure 9-11: Implementing Huddle Strategy
Source: Author

Within the block, there are both larger and small clusters, as well as a central cluster that connects them all. These clusters create varying courtyard sizes and spacing between buildings, providing a unique experience throughout the block.

2) Raise & Connect

The second strategy for the block is to raise and connect. The street level open space and circulation extends to the courtyard level via sloped pathways. This allows for greater connectivity between the street and courtyard level.

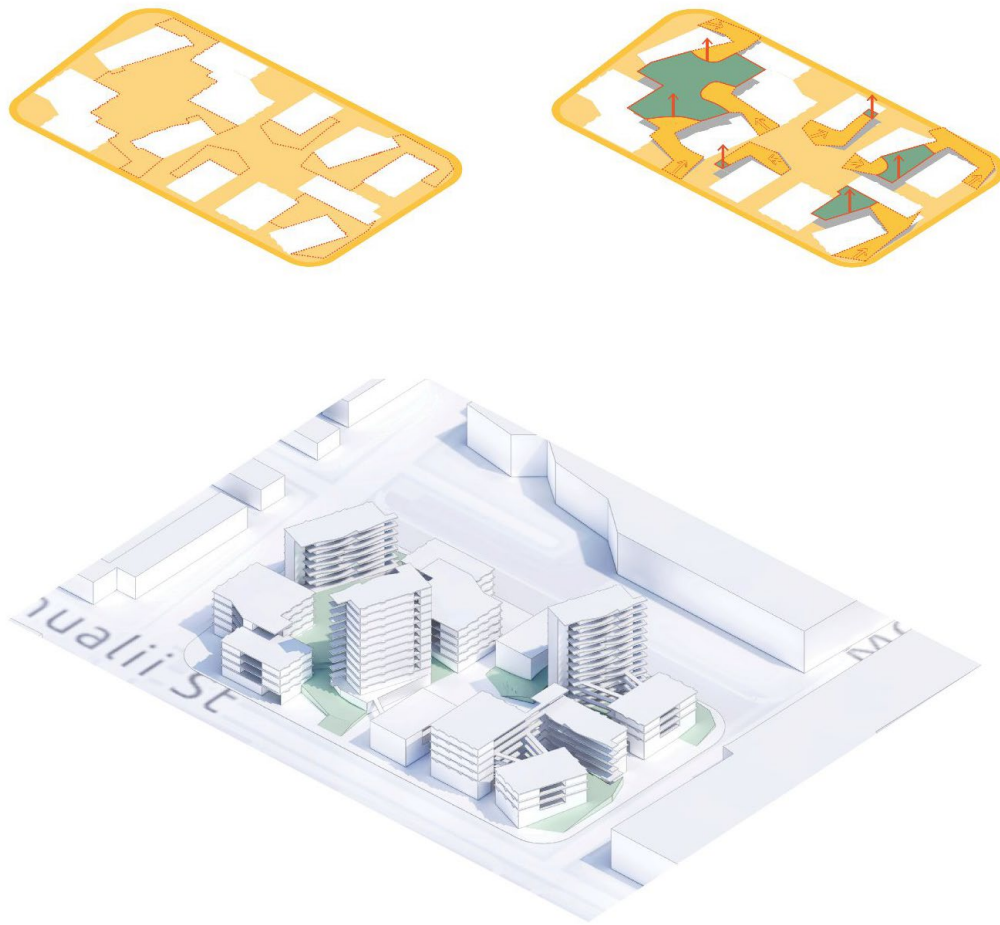


Figure 9-12: Implementing Raise and Connect Strategy
Source: Author

The courtyards for each of the huddle communities are now more connected to the street and the rest of the neighborhood. The sloping pathways vary, providing both long slopes that allow for ramps, and shorter slopes that allow for meandering stairs due to site size constraints.

3) Provide Support.

The third strategy for the block is to provide support. Amenities are provided at the ground level, which may include restaurants, a grocery store, or a pharmacy. Shared spaces and resources for residents are provided on the second level, which may include telehealth rooms, co-working space, or an activity room.

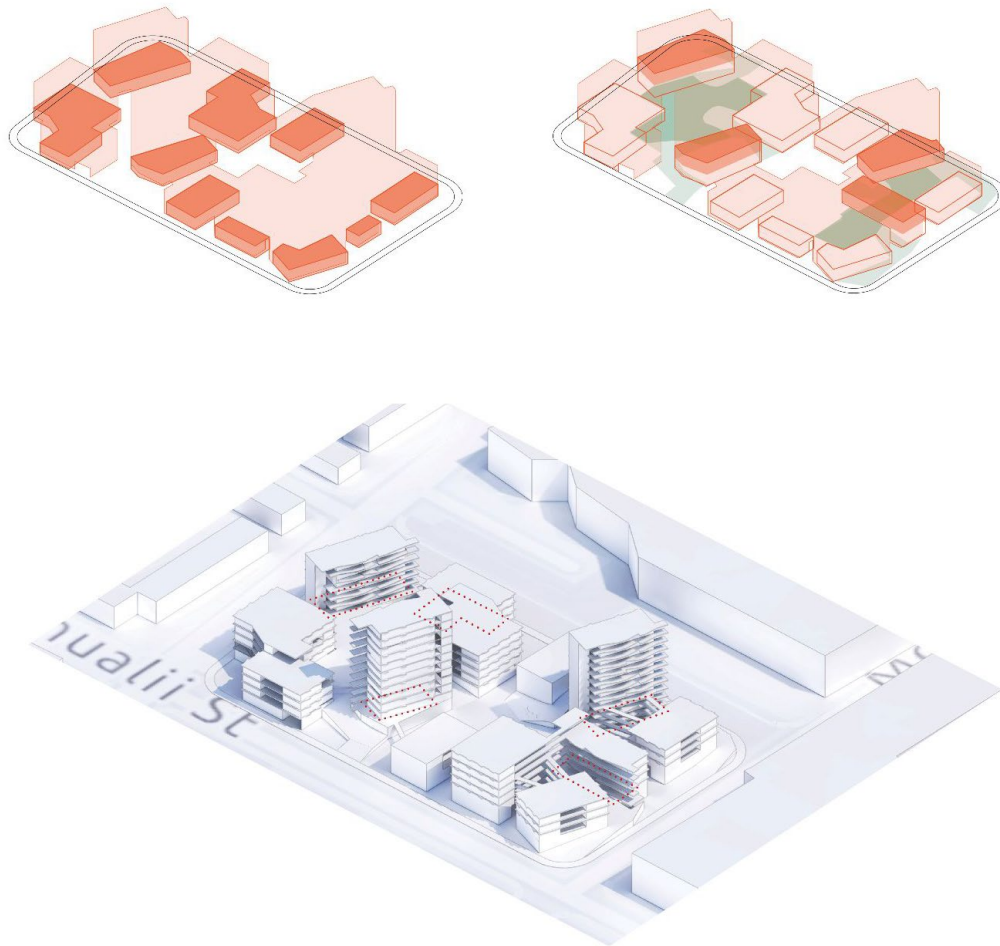


Figure 9-13: Implementing Provide Support Strategy
Source: Author

Kūpuna within the clusters now have access to supporting amenities, not just within the block along the street, but within their residential community.

Chapter 10: Intervention Implementation

This final chapter showcases the final two framework strategies, *Connect* and *Populate*. The focus is on the implementation of the vertical and canopy nodes within the design. The final design was developed through two iterations, and this chapter begins with the outcomes and learnings of the first iteration, after which the final design is showcased.

Design Process and Learnings:

The initial design began after the selection of the block, retaining the 300'x300' block dimensions. The design itself focused on general spatial elements in the residential community, such as courtyard space, stairways, green streets, childcare, community center, units, and co-living spaces.

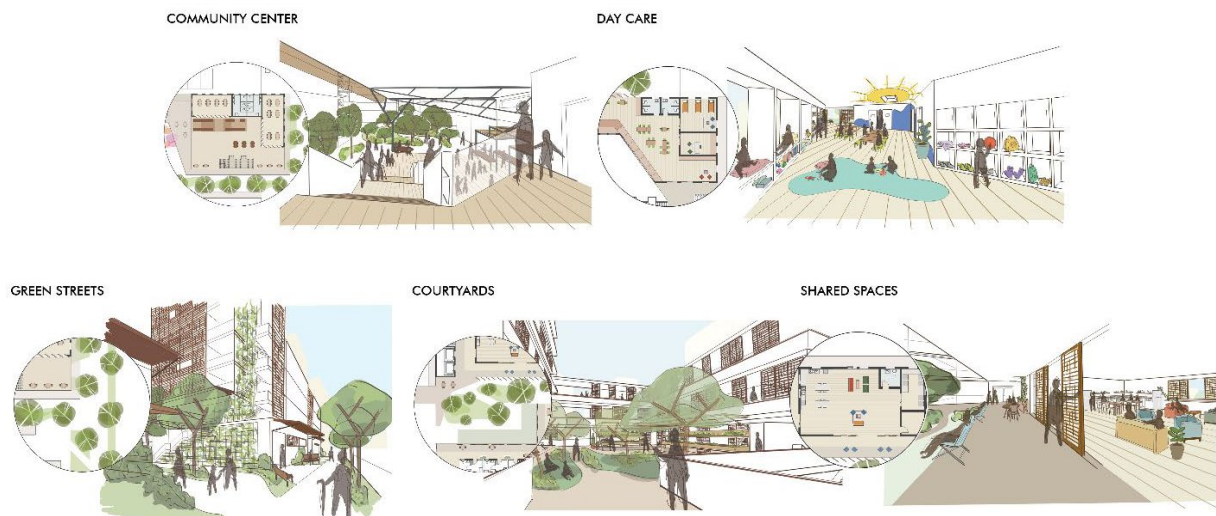


Figure 10-1: Initial design plans and vignettes
Source: Author

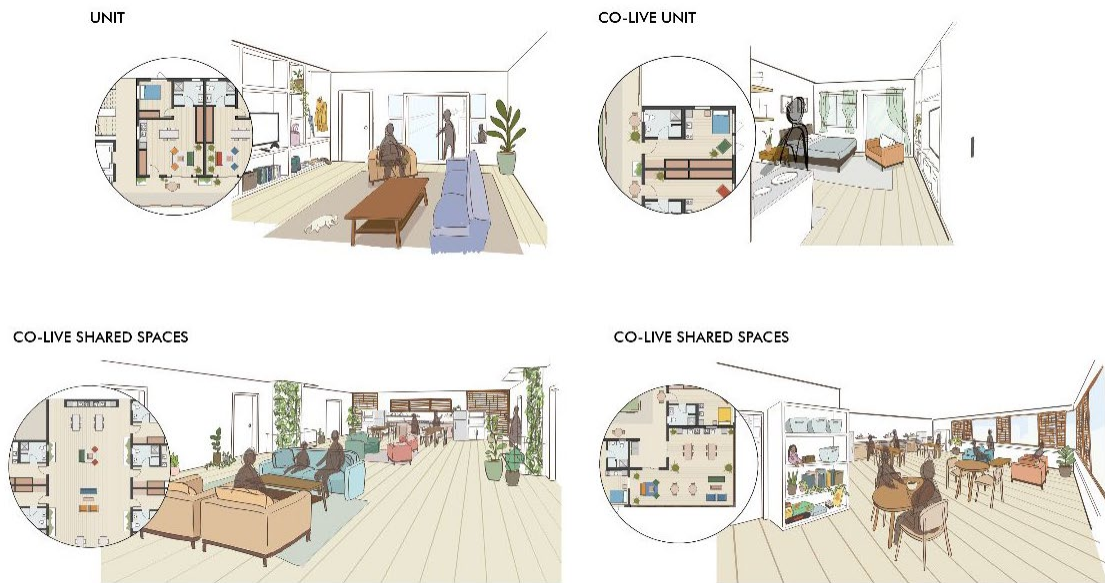


Figure 10-2: Initial design plans and vignettes
Source: Author

In doing the plans vignettes, it's easy to visualize the space, but not so much how the space can encourage social interactions and connections. It was clear that there was a lack of connection between these spaces, and that there was insufficient means to connect the units to these spaces and encourage connections. Circulation spaces play a big part in connecting residents to their neighbors and to their community, therefore the framework shifted to center around these spaces and the opportunities it could provide.

Lanai arrangements were also iterated, as well as various unit and shared space floor plans. Again, the focus shifted to improve social connectedness, so circulation spaces were focused on here after.



Figure 10-3: Lanai and unit plan exploration
Source: Author

This first stage of design was helpful to get a sense of scale and understand the components of all that a residential community contains. It also helped to show the importance of how focusing one designing spatial element, like circulation, could have on the rest of the residential community.

Building Connections

The next framework strategy implemented was *Connect*.

1) Unify Paths

A singular major artery connects the resident to unify the street level, courtyard level, and resident spaces. Given that this cluster is large, it is able to employ accessible ramps along the curve pathway for ample accessibility.

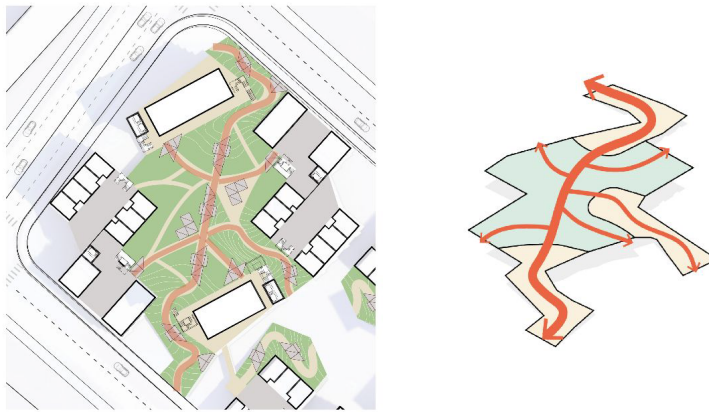


Figure 10-4: Implementing Unify Paths
Source: Author

2) Create Zones

Zones are created through the intersecting pathways, providing gardens, open lawn, and play fields along the path to encourage movement, gathering, and a variety of usage. Plantings and soft surfaces can be used to discourage wandering into private spaces.

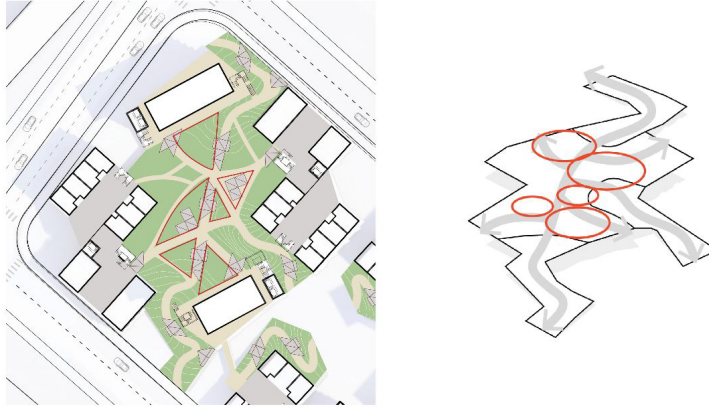


Figure 10-5: Implementing Create Zones
Source: Author

3) Provide Support Nodes

Nodes are added to provide shade and a place to rest, gather, play and connect along the path. Path and cluster nodes vary based on programmatic need. Nodes are able to break down the path, so it is easy to explore the “huddle” community.

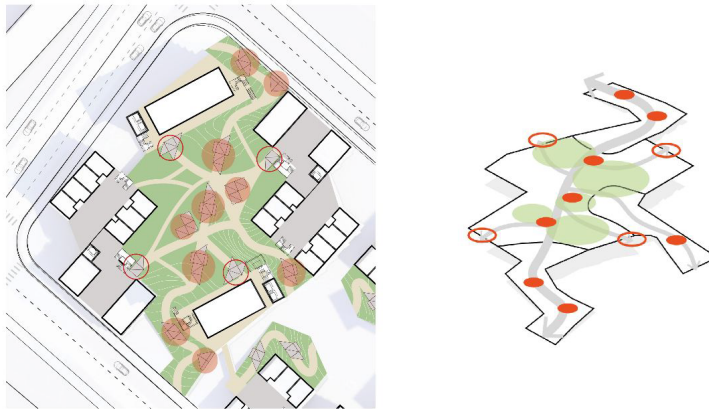


Figure 10-6: Implementing Support Nodes
Source: Author

This can be visualized in the courtyard plan. For the remainder of the design, implementation is focused and shown within the larger huddle cluster on the north end of the site.



SITE PLAN



LEVEL 2 COURTYARD PLAN



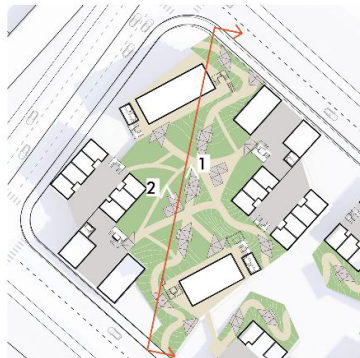
STREET LEVEL FLOOR PLAN

Figure 10-7: Site and floor plans for the block
Source: Author

Looking at the street level, featured in white are public spaces, such as commercial, retail, or the light industrial uses found in the Kapālama area. There is also parking, which is underneath the courtyard level. With the target demographic being active elderly, as well as transit users, the parking could be minimized. Parking in the future could be for ride share services, primarily for residents. Sloped pathways lead users from the street to the courtyard and support services, seen in the courtyard plan and shown in detail in the following section.

Horizontal Interventions: Courtyard Connections

In this zoomed in plan of the larger huddle cluster, you can see the major arterial pathway that connects the street and courtyard level. Along the path are nodes. These nodes provide shade, like tree canopies, along the path leading to the different residential buildings.



LEVEL 2 COURTYARD PLAN



HUDDLE PLAN

Figure 10-8: Courtyard design plan
Source: Author

The courtyard level has shared spaces, such as fitness rooms, laundry, and telehealth rooms for the residents to access and utilize. In the floor plan, you can see the co-living units are centered around a great room, which is a shared living, dining and kitchen area. The focus

of this design is the node canopies, which provide shade and program along the path and within the shared courtyard space. They are along the path at intervals along the level and sloped areas of the path but have the opportunity to populate the entire path.



Figure 10-9: Courtyard design elevation
Source: Author

All the base canopy spaces can hold activities, which include spaces to talk story, rest, relax, and garden. These spaces can also be used for family gatherings, games, and play. These spaces have the opportunity to hold additional activities, depending on community needs.

There is also the smaller node typology, meant to attach to the paths and provide places to sit and rest. This node can vary in size, depending on the site, the context of the path to the adjacent buildings, and the length of the path.

CANOPY SPACES

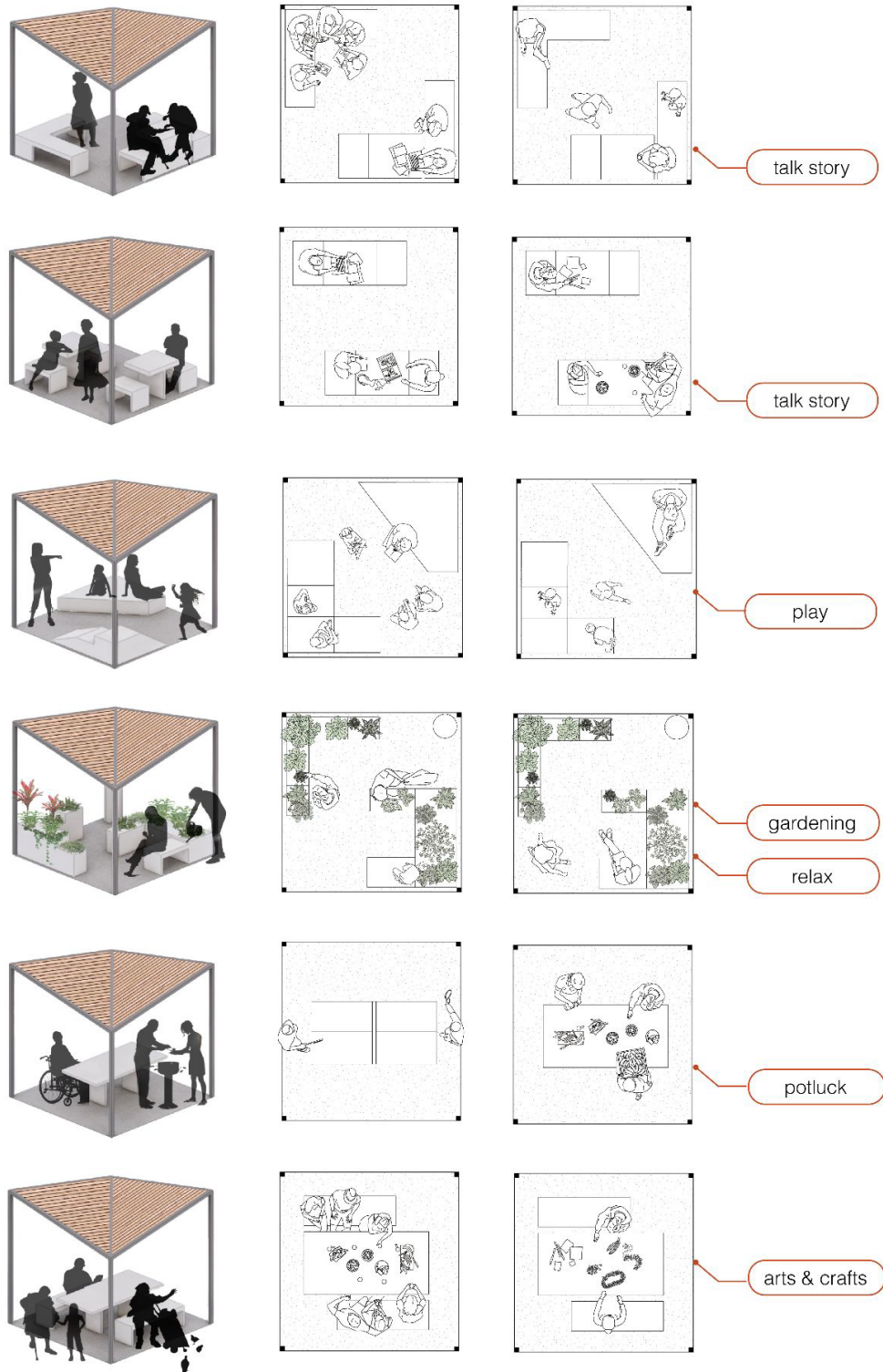


Figure 10-10: Canopy space variations
Source: Author

The canopies provide shade along the paths, which can extend throughout the entire path, fully covered, or it can vary, depending on the site, climate, and need of the community. Smaller nodes can be attached to provide places to sit and rest along the way. Canopy spaces can be configured into pavilions, using the different modular nodes to create open and programmed spaces. It can be a combination of empty and programmed nodes, depending on the needs of the community. The larger the cluster, the greater the opportunity for gathering.

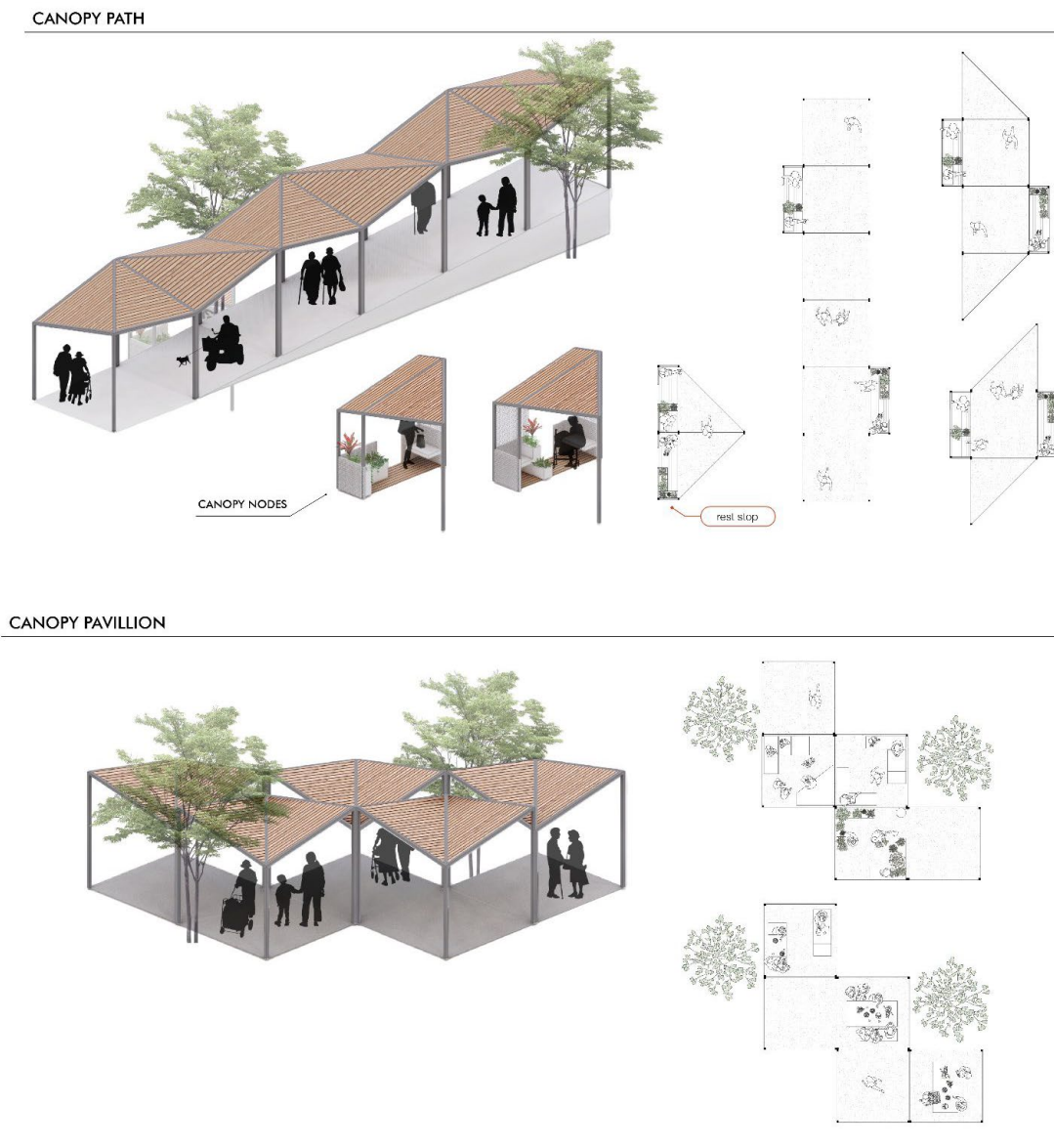


Figure 10-11: Canopy path and pavilion variations
Source: Author

In the next renderings, smaller nodes are seen attached to the canopy paths, providing places to sit, talk story, and garden. These canopies also cluster to form pavilions, which can function as gathering spaces. The paths themselves can become walking paths, encouraging walks within the neighborhood.



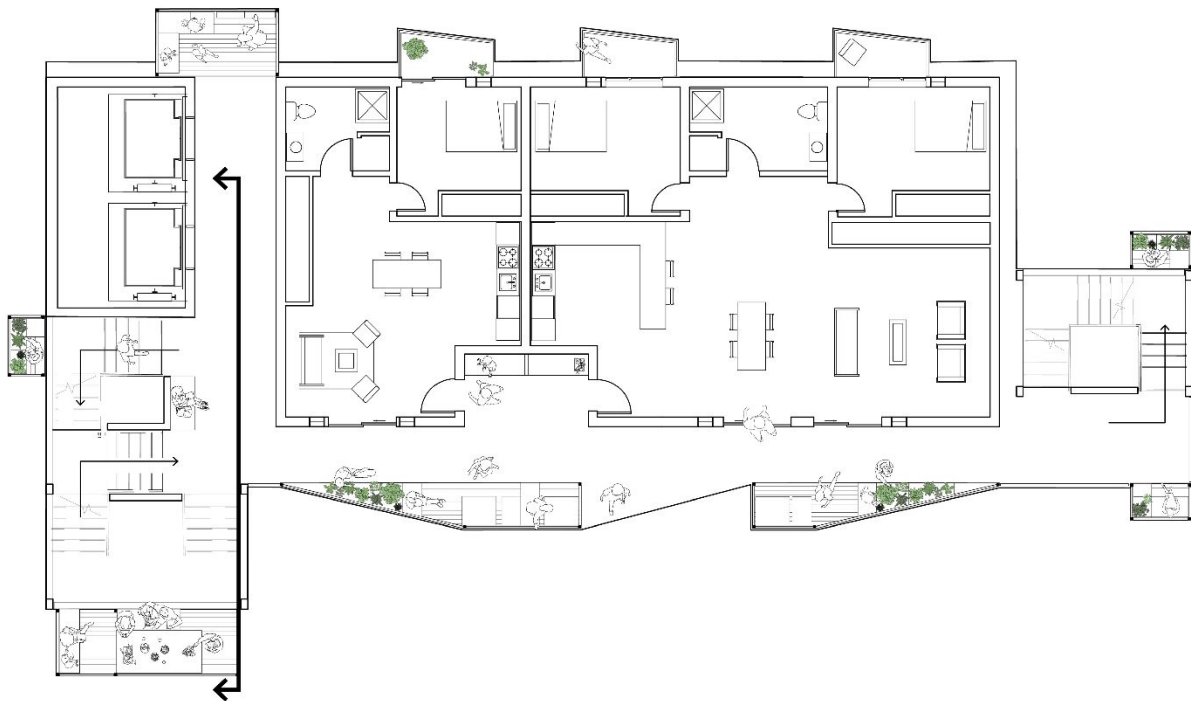
Figure 10-12: Courtyard perspectives
Source: Author

Vertical Interventions: Stair Connections

The second part of the design is the building, focusing on the vertical circulation spaces, which primarily consist of the stairs and the corridors leading to the units. The floor plan for one of the residential buildings shows the units, the shared lanai spaces, and the vertical nodes placed along the stair landings and corridors. These placements are suggestive, showcasing potential locations where nodes can be placed.



FOCUS PLAN



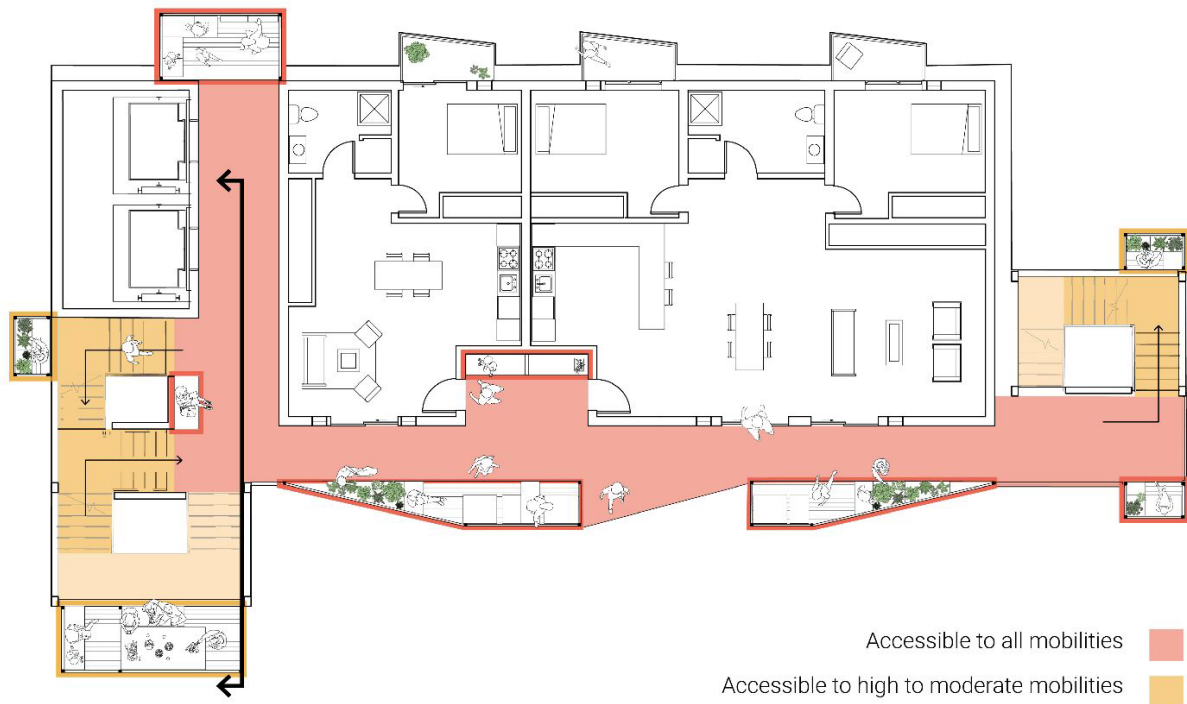


Figure 10-13: Vertical circulation plan
Source: Author

Vertical nodes can be strategically placed along the corridors, such as in front of units and adjacent to elevator entry, to accommodate all levels of mobility. In this, kūpuna who are wheelchair bound, as well as those who walk freely, are able to access various nodes to connect with neighbors. Not only are there the vertical nodes, but small seating interventions near the stairs and the unit entry. Kūpuna with moderate to high levels of mobility can access the nodes located adjacent to stair landings. In this, they are able to connect with their neighbors, as well as be encouraged to navigate the stairs to various levels and encounter different nodes and spark new conversations.

The various nodes that span across levels can be seen in the section and elevation below. These nodes occur on each floor and vary in size and activity.



Figure 10-14: Vertical circulation section and elevation
Source: Author

The nodes for shared lanai spaces are along the corridors in front of the units, and there nodes attached to the stair landings. The nodes, like in the courtyard space, are placed at intervals and are spaces that are accessible to each floor.

The unit plans show what the co-living units, as well as the 1- and 2- bedroom units could look like, with a nook entryway. These, as mentioned in the extracted activities section, can support various household typologies. Co-living units can support a kūpuna and a caregiver, who can be a family member or even a live-in service provider. A 1-bed and a 2-bed unit adjacency can support an extended family.



Figure 10-15: Unit floor plans
Source: Author

Similar to the canopy nodes, vertical nodes can hold the same activities, but differ in size variation. These nodes allow for places to stop and rest, talk story, garden, play, and gather with family and neighbors. Node size can vary depending on building parameters, community needs, or even landing or corridor dimensions.

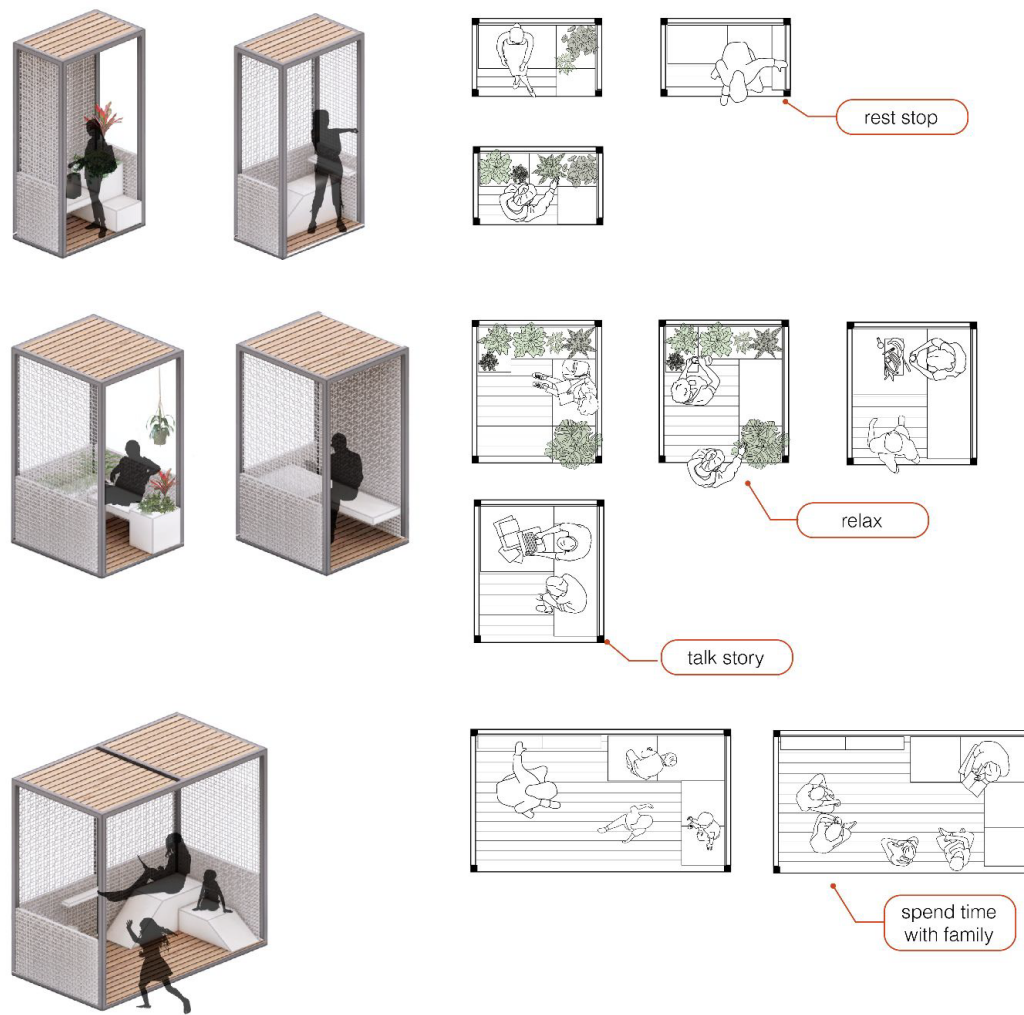


Figure 10-16: Vertical node variations
Source: Author

Larger nodes can hold additional or multiple activities to accommodate larger gatherings. This can include a large picnic table, which can double as table tennis. Seating can be adjacent to garden or play areas or places for exercise. On the contrary, smaller nodes provide spaces for pauses and casual conversations.

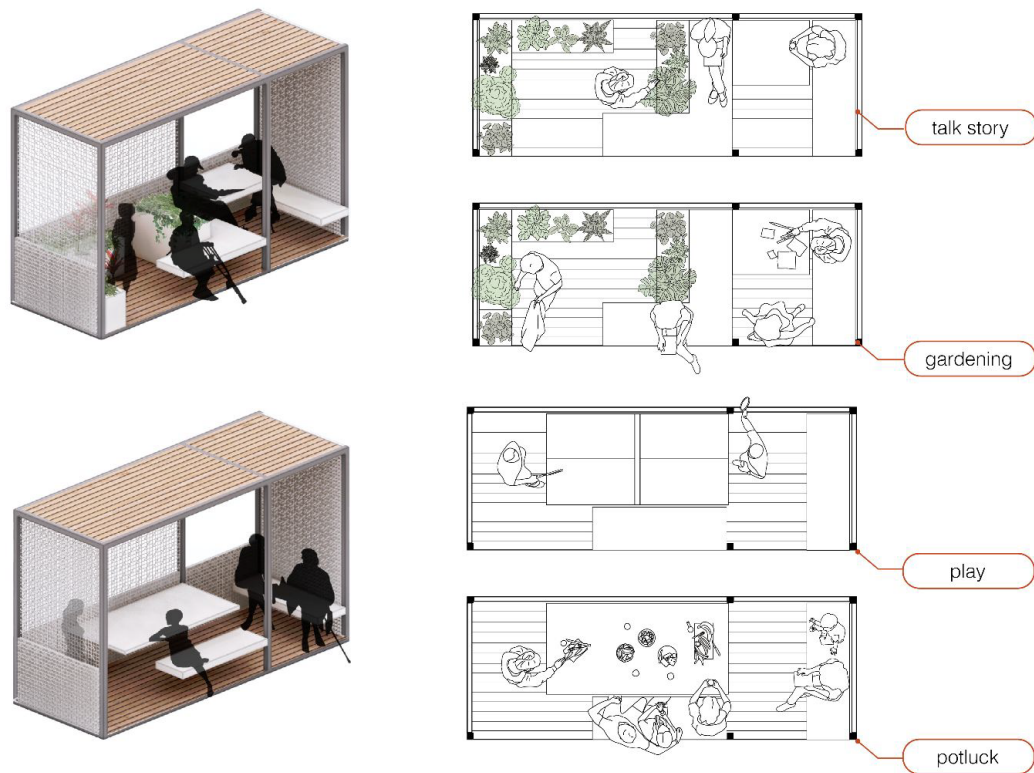


Figure 10-17: Vertical node variations
Source: Author

The lanai spaces are a little different, as they are more dependent on the corridors and units they reflect and accommodate for. Lanai spaces may include, but are not limited to, seating and planters.



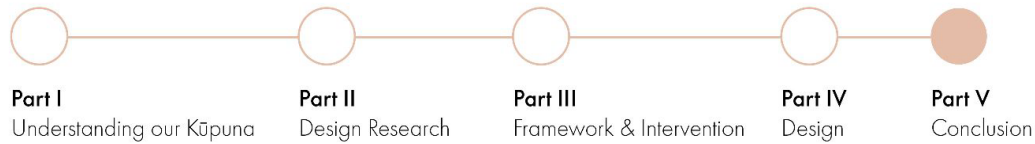
Figure 10-18: Shared lanai variations
Source: Author

The following perspectives show how each floor includes a rest bench at the main floor landing, and a node along the stair landing, between each floor. The shared lanai space, which overlooks the courtyard, and a view of the stairs, which have that rest bench and a smaller node variation.



Figure 10-19: Circulation perspectives
Source: Author

Part V: Conclusion



This thesis centers around improving the quality of life for our kūpuna. Their role is respected and honored, and the built environment should reflect that. Designing to foster social interactions and connections is becoming increasingly important, and this thesis aimed to address this. The framework and design developed for this thesis specifically aim to provide spatial interventions to increase social inclusion and connectivity, specifically addressing circulation space.

Circulation is what connects the resident to their neighbors, to street and amenities, and ultimately to the surrounding neighborhood. This thesis focuses on circulation space because it is often overlooked, but has the opportunity to be better utilized, to not only be a means of egress, but to foster social connections. This thesis aims to rethink the design of circulation spaces and to introduce spaces to better support the social ecosystem for our kūpuna within a residential community.

The framework outlined in this dissertation aims to increase connections to surrounding neighborhoods through accessible sloped pathways to better connect kūpuna to daily resources and amenities. These pathways, and the inclusion of nodes, promote movement throughout the block and provide spaces for gatherings and social connections. The guiding questions at the beginning of this thesis are resolved through the developed framework.

The first part of this dissertation identified physical and mental needs that arise during the aging process, with a specific focus on social cohesion and isolation and aging in place. The importance of addressing social cohesion became even more apparent, as the effects are widespread, affecting mental and physical health decline. The second part of this dissertation began to set the stage for the framework, extracting design strategies and activities to support increasing social cohesion.

The framework and design developed in this thesis provides strategies at the block and building level, focusing on the circulation space that weaves through the site. The design of the nodes are modular and come in a variety of typologies to accommodate various needs. It successfully provides means of social interaction at various scales throughout the site. However, it is still only speculative, and only begins to address ways to improve social cohesion for our kūpuna. The framework can be expanded further, as it serves as a base for a multitude of design opportunities and interpretation. Sloped paths and ramps could be further utilized and introduced to the building level, continuing to connect past the second level, connecting units to one another. There are also limitations to the framework, such as the idea of affordability. When designing for affordable housing, space is often limited. Employing generous ramps, paths, and ample nodes could compromise the affordability of units, something that is important when considering kūpuna and their need to age in place. Creative solutions are needed to balance affordability and designing for social connections.

Another aspect that has not been explored in this thesis is layering privacy. Privacy and connections go hand-in-hand. When increasing social connections in design, privacy is often compromised to an extent. In this, there is the opportunity to further research how to find the balance between privacy and connectedness.

The core idea of the framework and design is modularity and adaptability, so there are many avenues still left to explore, regarding the balance of adaptability and the balance of privacy. The success in this project is the application of the framework, as it is a case study of how to employ the strategies and nodes. Nodes have the opportunity to fully cover paths, expand pavilions, and increase or reduce nodes along vertical circulation. There are endless possibilities and combinations that can be achieved by the node options suggested in this thesis. It is my hope that this thesis and speculative design helps to contribute to future conceptual designs and decision making within the architecture and design practices and can be used as a tool of reference for architecture students to continue to explore ways to increase social cohesion within residential communities. Though my design is only speculative, I hope it can inspire designers and inform decision makers on the importance of designing for social cohesion as we age and serve as an example of applied research and design to support aging in place.

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