Socioeconomic Inequalities, Housing and Neighbourhood Influences on Older Adults' Mental Health in Aotearoa

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Health Science in Psychology

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List of Abbreviations

ACC	Accident Compensation Corporation
CESD-10	10-item Center for Epidemiologic Studies Depression Scale
ELSI-SF	Economic Living Standard Index – Short Form
GAI-SF	Geriatric Anxiety Inventory – Short Form
HART	Health and Ageing Research Team
HWR	Health, Work, and Retirement study
WHO	World Health Organization

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Abstract

The social and physical environment in which we live daily has significant implications for our mental health and overall well-being, especially for older adults who are entering new stages of life. The current study examined the influence of socioeconomic status, housing and neighbourhood qualities (tenure, satisfaction, accessibility, safety and trust) on the mental health (depression, anxiety and loneliness) of older adults in Aotearoa. The study utilised cross-sectional data collected from 5514 participants (M = 66.2 years) as part of the Health, Work, and Retirement study's 2022 survey. The data was analysed using correlation tests and hierarchical regression. Older adults who were of lower socioeconomic status were more likely to rent and have significantly poorer perceptions of their housing and neighbourhood environment, while also having higher depression, anxiety and loneliness scores. Home ownership, perceived neighbourhood safety and trust moderated the relationship between socioeconomic status and depression and loneliness scores, but not anxiety scores. These findings contribute to the existing knowledge about material deprivation and mental health, while also highlighting the critical aspects of housing and neighbourhood features on the well-being of older adults, especially for poorer populations. The results may provide insightful evidence for health, housing, and social policy.

Keywords

Older adults, depression, anxiety, loneliness, socioeconomic status, housing, neighbourhood

Chapter 1 - Introduction

Where we live and settle down in our older age is largely dependent on what we can afford. ‘Ageing well’ is likely a highly subjective experience among older adults; many factors in our home environment support older adults’ increasing needs and resources, which largely impact well-being (Qiao et al., 2024). Aotearoa New Zealand (NZ) has an increasingly older adult population, with more people working past the retirement age of 65 (Te Pou, 2019). With this in mind, the overall quality of life in older age becomes increasingly important. Individuals with poorer mental health are more likely to experience poorer overall quality of life and life satisfaction, which have significant social and economic disadvantages (Bandyopadhyay, 2024). The advantages of a healthy, happy population far outweigh the costs of people struggling, especially at a time in life where a comfortable living situation is paramount.

This study will be analysing data provided by the New Zealand Health, Work and Retirement Study (HWR). HWR is a longitudinal study of New Zealand residents aged 55 years and over, led by Professor Christine Stephens and Professor Fiona Alpass (Massey University, 2025a). This study started in 2006, providing NZ residents with the opportunity to share their experiences to help inform national and international discussions on the important issues of health, work, retirement and housing. The study is therefore examining factors that influence health deterioration before and during retirement to help people “age well” which is vital to adapting to a future with a higher proportion of older citizens (Massey University, 2025a). The 2006 cohort reached ages between 71 and 86 during the 2022 wave, which enables tracking of long-term health, social and economic trajectories. This thesis carried out a quantitative study examining the relationships between socioeconomic position, housing and neighbourhood characteristics, and mental health outcomes among older adults in

Aotearoa New Zealand. The researcher for this thesis was not involved in data collection or survey design; they used only the 2022 dataset, provided by the HWR team.

Research findings can help show how the housing and neighbourhood context can potentially be advantageous to the mental well-being of older adults, especially those of lower socioeconomic standing. Moreover, findings can contribute to the notion that the government has a responsibility to look after its ageing population through ensuring equitable housing and environmental living conditions are present in health and housing policy. Being aware of the negative effects the living environment has on well-being leads to prioritising these variables when considering the well-being of older adults.

The specific gap being addressed here is focusing on the relationship between an individual's socioeconomic status (SES) and their living conditions on mental health outcomes. Thus, the overarching research question is how does SES, housing and neighbourhood characteristics impact the mental health of older adults in Aotearoa? What are the relationships between all variables, how do they interact or influence one another? It is predicted that older adults of low SES will perceive their housing environment more negatively, and have poorer mental health outcomes than older adults of higher SES. These hypotheses will be tested through quantitative statistical tests.

This thesis will begin with an extensive literature review, examining the prevalence of poor mental health, specifically depression, anxiety and loneliness symptoms, among samples of older adults. The role of socioeconomic disparities on mental health outcomes will be reviewed, outlining how individuals of differing SES are exposed to different social and environmental factors that affect their well-being in different ways. The role of SES is then delved into more deeply, specifically looking at the relationships between housing and neighbourhood variables on mental health outcomes. Theoretical perspectives on housing and

neighbourhood environments and their impact on older adults' mental well-being will be discussed. The methods used in the current study will be outlined, followed by this study's findings. Lastly, a discussion of the findings will be presented in relation to the relationships among the measured variables.

Chapter 2 – Mental Well-being

Flourishing physical and mental well-being is vital to high life satisfaction, with the variety of experiences we encounter shaping us into the individuals we become (Bandyopadhyay, 2024). Many significant changes accompany ageing. For instance, people entering retirement may experience changes in their social life and encounter new or additional physical impairments, which can significantly impact their mental well-being and overall quality of life (National Institute on Aging, 2021). The population of older individuals is rapidly growing worldwide, with the proportion of people over 80 years old increasing the fastest (Wilkinson et al., 2018). The World Health Organisation (WHO) indicates that by 2030, one in six people will be 60 years and over (WHO, 2025). The average life expectancy in New Zealand/Aotearoa (hence fourth: Aotearoa) is rising to approximately 82 years (Te Pou, 2019). Consequently, it is becoming more common for a larger proportion of people's lives to be spent in older age.

An ageing population signifies that the mental health and well-being of older adults are becoming an increasingly crucial topic to address. Studies have clearly outlined a high prevalence of mental disorders among the older population, with anxiety and depression being the most common (Te Pou, 2019; WHO, 2025). It is estimated that globally, 14% of adults aged over 60 experience a mental disorder, and over a quarter of global deaths can be attributed to suicide among older adults (WHO, 2025). In conjunction with depression and anxiety, loneliness is also a prevalent issue among older adults and is associated with an overall decrease in life satisfaction (Bandyopadhyay, 2024; Lay-Yee et al., 2022; Silva et al., 2024).

The population of older adults in Aotearoa is expected to grow by 40% within the next 10 years, with one to two in every six older people possibly experiencing mental health

or substance abuse issues (Te Pou, 2019). Ageing populations increase pressure on health systems and resources (WHO, 2025); therefore, findings indicate a growing need to address the mental health of older adults. Along with this exponential growth, Aotearoa's ageing population is becoming more ethnically diverse (Social Wellbeing Agency, 2023; Te Pou, 2019), underscoring the need for culturally appropriate services for Aotearoa's population.

Individuals in lower socioeconomic conditions face a greater risk of mental distress (Zhang et al., 2022). The WHO (2025) emphasises that older adults are particularly vulnerable to anxiety and depression due to factors like inadequate living conditions, poor health, and limited access to effective support services. Research has shown that being female, belonging to a lower-income group, being unemployed, and identifying as part of a minority population all heighten the risk of developing poor mental health in older age (Social Wellbeing Agency, 2023; Te Pou, 2019; WHO, 2025).

Depression in older age

Depression among older adults can be a challenging condition to navigate and provide support for, negatively affecting not only the individual but also their surrounding support networks. This mental disorder is marked by detrimental psychological and physiological symptoms, including persistent low mood and energy levels, alterations in sleep and appetite, difficulty concentrating, diminished self-esteem, and thoughts of suicide (Chapman & Perry, 2007; Mental Health Foundation, 2022; Pocklington, 2017). Late-life depression refers to the onset of depression in individuals aged 65 and older who have no previous history of the condition (Pocklington, 2017; Sekhon et al., 2023).

Depression is considered the most prevalent mental disorder in older adults (Pocklington, 2017). Although rates of depression are generally lower in older adults compared to younger adults (Chapman & Perry, 2007; Haigh et al., 2018), substantial

research indicates that it remains highly common (Cahoon, 2012; Huang et al., 2024; Lu et al., 2023; Wilkinson et al., 2018). The concern grows with depressive disorders in older adults, as they significantly predict suicide within this age group, which has higher suicide rates than any other demographic (Chapman & Perry, 2007; Pocklington, 2017). Therefore, depression poses a serious health risk for older individuals.

Depressive symptoms can manifest differently among various population groups. The literature suggests that symptoms may present differently among older people. Low mood and sadness are less common symptoms, with apathy and fatigue being more prominent (Pocklington, 2017). Depression and dementia are closely linked, with depression sometimes being an early indication of dementia (Wilkinson et al., 2018). Depression can often be misdiagnosed as dementia among the older population. This misdiagnosis can frequently occur because depression in older adults is associated with greater functional and cognitive impairments compared to younger adults (Wilkinson et al., 2018). Furthermore, late-onset depression is said to be linked with more structural brain changes and cognitive deficits (Pocklington, 2017). Thus, older individuals may display memory issues rather than feelings of low mood and sadness. Conversely, meta-analyses indicate that depression may not be significantly different symptomatically (Haigh et al., 2018). Nonetheless, depression in older adults may be more likely to influence structural brain changes than in younger populations.

Risk factors for depression in older age

Various factors increase the likelihood of developing and maintaining depression, including gender and socioeconomic status (SES). There is a heightened likelihood of depression among older individuals who are of lower SES, female, have poor self-rated health, and reside in rural areas (Badrasawi & Zidan, 2021; Chai et al., 2024; Nguyen et al., 2024; Xue et al., 2021). Those who have experienced depression earlier in life are more susceptible to experiencing depression as older adults (National Institute on Aging,

2021). Findings also indicate that age-related biological processes contribute to developing depression in later life (Haigh et al., 2018). Furthermore, the impact of age is independent of other sociodemographic variables such as gender and years of education (Ribeiro et al., 2020). Therefore, dementia, a common illness, also raises the risk of depression (Pocklington, 2017).

The implications of high depression rates

The implications of depression among older people are severe and long-lasting. Outcomes are worse compared to younger adults, with more severe physical issues and impaired recovery (Wilkinson et al., 2018). Findings indicate that depression symptom severity worsens with advancing age (Wilkinson et al., 2018). Older adults are more likely to relapse, likely moderated by an increased probability of medical comorbidity (Haigh et al., 2018). Consequently, higher morbidity and mortality rates contribute to increased healthcare and economic costs at individual and societal levels (Pocklington, 2017). Depression is associated with comorbidity, impaired functioning, excessive use of healthcare resources, and increased mortality (Sekhon et al., 2023).

Older individuals with depressive symptoms often report lower overall self-rated health and reduced quality of life compared to those without depression (Cahoon, 2012; Chapman & Perry, 2007; Huang et al., 2024). Depression can lead to a loss of independent function, resulting in withdrawal and social isolation (Pocklington, 2017). Additionally, older adults face an increased risk of seizures and falls when treated with antidepressants (Wilkinson et al., 2018). Therefore, depression represents a significant cause of disability for many older adults (Chapman & Perry, 2007). Family members frequently serve as unpaid carers for older patients; however, caring for these patients can impose a physical and mental burden (Wilkinson et al., 2018). Treatment for depression can be costly for individuals, families, and the health system (Chapman & Perry, 2007; Wilkinson et al., 2018). Healthcare

costs tend to be higher for those with depression, and they are highest for those with depression accompanied by a comorbid physical illness (Pocklington, 2017).

Anxiety in older age

Experiencing anxiety is a normal part of being human, protecting us from dangers that may pose a threat to our survival (Mental Health Foundation, 2022). However, anxiety becomes unhelpful when symptoms such as excessive and persistent worry are distressing and difficult to control. These symptoms of anxiety, which are disproportionate to the situation at hand, can start to interfere with daily functioning (Mental Health Foundation, 2022). Symptoms of anxiety can manifest as psychological (e.g., excessive worry), physiological (e.g., trembling hands, difficulty breathing, fast heart rate), or a combination of both (Goncalves et al., 2011). In older adults, anxiety symptoms may present differently, often arising as somatic problems, such as pain, rather than psychological distress (Bassil et al., 2011).

Studies from around the globe have shown that the prevalence of anxiety is high among older populations (Bryant et al., 2008; Curran et al., 2020; Goncalves et al., 2011; Lu et al., 2023; Richardson et al., 2011; Wolitzky-Taylor et al., 2010), with some samples even indicating anxiety as the sole mental health issue of concern (Curran et al., 2020). A comprehensive review of the literature on anxiety in older adults identified high rates of anxiety disorders and symptoms in both community and clinical samples (Bryant et al., 2008). In both contexts, anxiety symptoms were significantly higher, ranging from 15% to 56%, compared to disorder rates of 10% or lower (Bryant et al., 2008). Moreover, health anxiety is a prominent type of anxiety experienced by older individuals due to a higher risk of physical morbidities in older age (El-Gabalawy et al., 2013). It was found that medical morbidity is a key risk factor for severe health anxiety in later life (El-Gabalawy et al., 2013).

Gasteiger et al. (2021) found that during the first 10 weeks of Aotearoa's COVID-19 pandemic, those more vulnerable to COVID-19 (which largely encompasses the older adults) were more likely to report higher rates of anxiety. Conversely, some studies have found anxiety prevalence rates to be low among older individuals (Huang et al., 2024), specifically low rates of health anxiety for those over 65 who lived independently in Aotearoa (Boston & Merrick, 2010). However, the adverse implications of anxiety persisted despite the low prevalence in the sample (Huang et al., 2024).

Risk factors for anxiety in older age

The literature outlines many factors that increase the likelihood of developing anxiety in older age. Factors such as being female, unemployed before retirement, experiencing physical pain, having a history of depression and living in more deprived areas have been linked to a higher likelihood of anxiety symptoms among older adults (El-Gabalawy et al., 2013; Gasteiger et al., 2021; Goncalves et al., 2011; Lu et al., 2023; Richardson et al., 2011; Wang et al., 2023).

The implications of high anxiety rates

High anxiety rates have significant implications for individual health and the broader economy. Healthcare costs associated with improving mental well-being are higher for those experiencing anxiety than for those who are not (Bassil et al., 2011; Goncalves et al., 2011; Vasiliadis et al., 2013). For individuals, this includes increased healthcare expenses such as insurance, medication, and doctor or therapy appointments. Furthermore, higher rates of anxiety result in a greater demand for resources. Hospitalisation rates are notably higher in people aged 65 and older with an anxiety disorder compared to younger patients (Bassil et al., 2011), suggesting that the need for mental health outpatient resources may be greater in the older demographic. Moreover, poorer self-rated health and reduced overall functioning in life

are often linked to those who experience higher levels of anxiety (Goncalves et al., 2011; Huang et al., 2024). Adverse effects such as cognitive decline, memory impairment, and loneliness are also strongly associated with individuals who have experienced elevated anxiety levels (Bassil et al., 2011; Smith et al., 2021; Wolitzky-Taylor et al., 2010).

Comorbidity

Various studies have found anxiety and depression symptoms to be highly correlated (Jacobson & Newman, 2017; Huang et al., 2024; Kircanski et al., 2017; Richardson et al., 2011; Van der Weele et al., 2009; Wang et al., 2023; Wolitzky-Taylor et al., 2010). Anxiety and depressive symptoms significantly predict one another (Jacobson & Newman, 2017; Schoevers et al., 2005). In particular, depression and generalised anxiety disorder are commonly presented together (Schoevers et al., 2005). One of the most extensive studies examining anxiety and depression comorbidity in patients aged 55-85 found that approximately half of the sample with major depressive disorder (MDD) also had comorbidity for an anxiety disorder, and pre-existing anxiety disorders made individuals more susceptible to developing depression (Bassil et al., 2011). Older adults with anxiety and depression comorbidity experience more chronic and severe symptoms, leading to greater functional impairment and overall worse outcomes than having either disorder alone (Bassil et al., 2011; Huang et al., 2024; Schoevers et al., 2005; Yu & Chen, 2024). Anxiety and depression comorbidity is highest among individuals with chronic illness, particularly men with sensory impairment (Curran et al., 2020). Additionally, anxiety and depression comorbidity increases with age (Bassil et al., 2011).

Having a comorbid physical illness

Older adults with physical illnesses, such as sensory impairments or reduced mobility, are more vulnerable to developing depression (Chapman & Perry, 2007; Hamrah et al., 2024;

Pocklington, 2017; Wilkinson et al., 2018). The loss of independent function leads to withdrawal, social avoidance, and loneliness, which are all contributing factors to poor mental health (Pocklington, 2017). Furthermore, older adults are less inclined to seek mental health treatment, possibly due to the social stigma they might encounter from their past experiences growing up and the discussions surrounding mental health (Pocklington, 2017).

Loneliness in older age

Loneliness is one of the most significant health issues confronting older individuals today (Origin et al., 2021). Loneliness and mental health are closely intertwined, often serving as both a cause and a consequence of mental health challenges; however, they are not the same (Bandyopadhyay, 2024). Loneliness may be considered as an associated symptom of depression (National Academies of Sciences, 2020), representing a distressing emotional experience stemming from a lack of quality social relationships relative to what the individual desires (Bandyopadhyay, 2024). Social connections may exist in this person’s life, yet their perceived quality may not be meaningful enough to alleviate feelings of loneliness (Ogrin et al., 2021). Therefore, self-assessed loneliness reflects individuals' satisfaction with their social relationships (Ministry of Social Development, 2016).

Research indicates that high rates of loneliness occur among older adults in Aotearoa, with the highest rates among those aged 75 and older (Hamish et al., 2018; Ministry of Social Development, 2016; Tapia-Munoz et al., 2022). Lay-Yee et al. (2022) reported similar results, which did not significantly vary between ethnic groups. Adults over 65 are particularly at risk of loneliness and social isolation due to various life transitions that occur in later years, such as retirement (National Academies of Science, 2020; Silva, 2024). Employment offers a social environment and identity for workers; thus, disruptions to these structured routines can make it challenging to form new social networks (National Academies of Sciences,

Engineering, and Medicine, 2020). Thus, the loss of significant social connections and reduced opportunities to engage with others socially can lead to feelings of redundancy and unimportance (Ogrin et al., 2021).

Implications of loneliness

High loneliness is often associated with emotional instability and poor well-being (Conn et al., 2024; Hawkins-Elder et al., 2018; Lay-Yee et al., 2022; Stephens et al., 2010). This is not surprising, as research shows that loneliness is closely related to depression, social isolation, increased substance use, and suicidal ideation (Bandyopadhyay, 2024; Domenech-Abella et al., 2018; Gerino et al., 2017; Ogrin et al., 2021; Sanchez-Moreno et al., 2024; Silva et al., 2024; Wen et al., 2024; Wright-St Clair et al., 2017). The risks associated with loneliness and adverse health outcomes increase with age, making older individuals more susceptible to chronic loneliness and its implications (Silva, 2024). Furthermore, loneliness in older adults is a significant risk factor for poor physical and cognitive health (Gerino et al., 2017; Wright-St Clair et al., 2017). It can lead to an increased likelihood of developing dementia, cardiovascular disease, heart disease, stroke, and malnutrition (Bandyopadhyay, 2024; Ogrin et al., 2021), with conditions like dementia contributing to faster cognitive decline (Silva, 2024). Similar to anxiety and depression, greater levels of loneliness are linked to higher use of healthcare resources due to the strong connections between psychological and physiological health (Ogrin et al., 2021).

In summary, research clearly shows that depression, anxiety, and loneliness are widespread among older adults (e.g., Lu et al., 2023; Origin et al., 2021; Pocklington, 2017). Deteriorating mental health can have negative consequences for individuals as well as society as a whole, and it frequently occurs alongside physical health problems, making older adults

more vulnerable because of the heightened incidence of physical health issues in later years. Older individuals who face mental distress are more likely to experience higher mortality rates, particularly due to a greater risk of suicide compared to younger populations. Moreover, it is essential to acknowledge the significant role that socioeconomic disparities play in mental health, where more disadvantaged populations are subjected to higher vulnerability to anxiety, depression and loneliness outcomes. The role of SES will be explored in the upcoming chapter.

Chapter 3 – Socioeconomic Disparities and Mental Health

We all deserve the right to quality essential resources in life; however, not everyone has equal access or opportunities to obtain them (McMaughan et al., 2020). Resources such as safe housing, quality education, and healthcare should be accessible to all populations to ensure flourishing health and well-being (Marek et al., 2021). However, there are significant differences in health outcomes among populations of varying social standing worldwide (WHO, 2025). These differences, shaped by factors such as income, education, and ethnicity, are commonly avoidable and unjust. WHO (2025) states that there is an 18-year difference in life expectancy between high and low-income countries. This figure highlights that, although life expectancy has increased, it has done so unequally, with widening gaps between populations experiencing positive and negative health and well-being outcomes.

Health Inequalities and Inequities

Health inequalities describe the observable differences in health outcomes between groups (WHO, 2025). In contrast, health inequities can be defined as the systematic differences in opportunities that groups have to achieve physical and mental well-being, leading to avoidable and unfair disparities in health outcomes (National Academies of Sciences et al., 2017; WHO, 2025). In this thesis, disparities are initially described as *health inequalities* to maintain consistency in terminology. However, later sections will consider how underlying structural determinants contribute to transforming these inequalities into *inequities*. The fundamental reason for health disparities between population groups lies in the systemic distribution of power and resources, which results in unequal socioeconomic and environmental conditions (Woolf & Braveman, 2011). Notably, the literature suggests that

social determinants may play a more significant role in health outcomes than healthcare or genetics alone, accounting for more than half of health and well-being outcomes (WHO, 2025). Therefore, the socioeconomic environment we are surrounded by significantly influences individuals' choices related to health behaviour, impacting mental health outcomes.

Health and illness follow a social gradient, with lower SES linked to worse health outcomes (WHO, 2025). Extensive literature shows that health disparities are evident among individuals with differing educational and income levels. For instance, adults who have not graduated from high school are three times as likely as those with a tertiary education to die before age 65 (Woolf & Braveman, 2011). These populations are more likely to be unemployed and lack access to essential resources for their basic needs (Meixia et al., 2025). Consequently, population groups of varying social standing encounter differing levels of access to social and economic resources, resulting in disparities in health outcomes. The social determinants of health are closely interconnected, where adverse social and economic consequences further worsen health disparities between population groups, perpetuating cycles of disadvantage (Institute of Health Equity, 2014).

Socioeconomic Status (SES)

Simply put, SES summarises access to social and economic resources. Common indicators of SES include individual measures of educational attainment, annual income, and occupation (APA, 2025; Conway et al, 2019; Navarro-Carrillo et al., 2020). Income captures the ability to obtain desired resources, while wealth represents the accumulated income passed down over time and may be inherited by future generations (Foster et al., 2019). Education is often measured by the highest degree earned or the total number of years completed, and occupation is typically measured by the current or most recent job title

(Conway et al., 2019). An individual with a tertiary degree, a high-status occupation, and a high income is considered to have a high SES. Therefore, low SES refers to individuals or groups with lower income, educational achievement, occupational status, and limited access to resources or opportunities (American Psychological Association, 2010; Azizabadi et al., 2022; Bazargan et al., 2023; Lorant et al., 2007; Nunes et al., 2022; Silva et al., 2016; Steptoe & Zaninotto, 2020).

Research consistently shows that SES strongly predicts health outcomes throughout the lifespan (Institute of Health Equity, 2014; Reiss, 2013; Silva et al., 2016; Srivastava et al., 2021; Steptoe & Zaninotto, 2020). However, insufficient attention is given to the role of inequalities regarding depression, anxiety, and loneliness outcomes among older adults. Understanding the impact of socioeconomic factors on mental health disparities within this demographic is crucial for identifying ways to reduce these potentially preventable disparities.

Mental Health Inequalities

Being subjected to social disparities highly increases the likelihood of experiencing poor mental health and well-being in older age (Wang et al., 2024). The stressors related to poverty, including financial instability and housing insecurity, directly contribute to the development and exacerbation of mental illness (Zhang et al., 2022). Thus, populations from lower socioeconomic backgrounds are more likely to experience and be significantly impacted by mental illness. Approximately 54% of older adults in Aotearoa report good health and well-being; one-third face challenges in one aspect of their lives, while 13% encounter difficulties in several areas, indicating a significant need for support and resources (Social Wellbeing Agency, 2023). The investigation by Aotearoa's government into mental health and addiction highlighted that mental health challenges and addictive behaviours

among the population arise from issues such as poverty, trauma, and discrimination (He Ara Oranga, 2018). Poverty is a significant risk factor for a decline in mental health in older age, especially (American Psychological Association, 2010; He Ara Oranga, 2018; Zhang et al., 2019; Zhang et al., 2022).

Populations of low SES tend to have worse mental health outcomes. Numerous studies have indicated that the risk of depression is elevated among older individuals with low SES (Azizabadi et al., 2022; Brinda et al., 2016; Lorant et al., 2003; Lorant et al., 2007; Muhammad et al., 2022; Sanchez-Moreno et al., 2024; Sanchez-Moreno & Gallardo-Peralta, 2022; Wang et al., 2024). This pattern is similarly observed with anxiety, especially generalised anxiety disorder (Mwinyi et al., 2017; Nunes et al., 2022). Importantly, the impact of low SES on depressive and anxiety symptoms is more pronounced in individuals with coexisting physical conditions such as hypertension (Wang et al., 2023). It is not surprising that individuals with low SES are at a greater risk for loneliness as they age, as loneliness is frequently intertwined with depression and anxiety (Algren et al., 2020; Domenech-Abella et al., 2017; Szabo et al., 2024; Tapia-Munoz et al., 2022; Victor et al., 2005). Additionally, the combination of low SES and loneliness substantially increases the likelihood of experiencing depression (Meisters et al., 2021; Wang et al., 2024). The degree of loneliness individuals experience is significantly influenced by their social surroundings, with those residing in communities that offer more resources being less likely to feel lonely (Algren et al., 2020; Domenech-Abella et al., 2017). Thus, having greater access to resources serves as a protective factor against poor well-being.

Limited access to social and economic resources, such as income, low educational achievement, and poor living conditions, can accelerate the decline of physical abilities, sensory and physiological functioning, emotional health, and social interactions (Araya et al., 2003; Institute of Health Equity, 2014; Navarro-Carrillo et al., 2020; Srivastava et al., 2021;

Steptoe & Zaninotto, 2020). It remains uncertain whether income or education has a more significant impact on mental health outcomes in later life, as the existing literature presents varying results (Araya et al., 2003; Utomo et al., 2023); nonetheless, it is evident that these factors are closely linked and must be recognised for their contribution to well-being.

Role of Income

Wealth plays a crucial role in shaping health outcomes. Household income is a significant socioeconomic factor linked to mental health, with a stronger correlation observed in females than in males (Domenech-Abella et al., 2018; Jatrana & Blakely, 2014; Meixia et al., 2025; Verra et al., 2024). Income levels primarily determine access to essential goods and services, such as housing, food, and healthcare. Research shows that for older adults, total wealth accumulation (e.g., savings, real estate) represents a more meaningful indicator of socioeconomic resources than income alone, as it reflects an individual's ability to invest in their future (Steptoe & Zaninotto, 2020). Older adults with lower wealth are consequently more vulnerable to adverse life events, as they have restricted resources to navigate these challenges and often rely on external sources (such as government help) for primary income, leading to increased psychological distress (Lorant et al., 2007; McMaughan et al., 2020; Shim et al., 2024; Srivastava et al., 2021). Individuals in middle and upper-income brackets typically do not encounter considerable differences in mental health outcomes (Shim et al., 2024), implying that once basic needs for a comfortable life are met, income has a reduced impact on mental health. Additionally, the literature indicates that individuals from higher SES utilise health services more frequently and gain greater benefits from medical interventions (Henking et al., 2023). Therefore, higher income and wealth are generally linked with improved mental health outcomes due to enhanced access to resources.

Role of Education and Occupation

Education plays a significant role in predicting later-life health outcomes, as educational attainment has a considerable impact on future employment and income opportunities (Social Wellbeing Agency, 2023). Generally, a higher level of education is associated with more lucrative jobs, greater job security, and improved prospects for professional advancement (Sperandei et al., 2023). The effects of educational achievements may be shaped by a better understanding of health-related behaviours and overall enhanced physical health (Kondirolli & Sunder, 2022). Individuals with higher education levels typically experience fewer symptoms of anxiety and depression, which have been shown to significantly mediate the impact of income (Araya et al., 2003; Green & Benzeval, 2013; Sperandei et al., 2023). Kondirolli and Sunder (2022) found that increased educational attainment had a lasting influence on mental health, even two decades later, demonstrating its enduring effects.

Research suggests that education is a crucial factor strongly linked to poor mental health in older adults (Domenech-Abella et al., 2018; Utomo et al., 2023). Individuals from lower socioeconomic backgrounds are more often found in manual jobs, which tend to offer lower wages, fewer benefits, and a greater likelihood of physical injuries (Araya et al., 2003). Wahrendorf et al. (2013) emphasise the significance of work conditions during middle age (40-55 years) on mental health in later life. Adverse work environments, including high stress, job insecurity, unexpected job loss, and inadequate pay, are linked to a higher risk of experiencing depressive symptoms post-retirement. The impact of occupation on mental health may be even more pronounced for men; those with fluctuating job status demonstrated higher levels of depressive symptoms in their older years (Llena-Nozal et al., 2004; Wahrendorf et al., 2013). Moreover, unemployment is associated with an increased risk of deteriorating mental health (Batic-Mujanovic et al., 2017; Nunes et al., 2022; Pinto-Meza et

al., 2013). Batic-Mujanovic et al. (2017) discovered that unemployed individuals of working age exhibited significantly worse mental health compared to their employed counterparts. However, those with over five years of prior job experience faced even greater mental health challenges upon losing their job, suggesting that previous employment history plays a crucial role in mental health outcomes. Therefore, increased educational attainment and secure, safe employment that adopts healthy work environments protect against poor mental well-being in later life.

Disparities in Access to Resources

Populations with lower SES face poorer access to mental healthcare (Park et al., 2019). An Aotearoa study revealed that the mental health needs of nearly one in five older adults are not being adequately addressed, and a similar number expressed dissatisfaction with mental health services due to long wait times and high costs (Peterson et al., 2025). Higher income and education levels lead to increased accessibility and utilisation of healthcare services, which mitigates against poor mental health (Gao et al., 2022; McMaughan et al., 2020; Peterson et al., 2025; Utomo et al., 2023). Regarding long-term care for older populations, access heavily depends on financial resources and social support (Domenech-Abella et al., 2018). Lower income levels among older adults are linked to a reduced likelihood of using nursing home care (Jenkins, 2002), which negatively impacts mental health. In Aotearoa, those with severe mental illnesses often navigate healthcare services in more complex ways due to having a higher prevalence of coexisting physical ailments and limited economic resources (Wheeler et al., 2014). Reduced access to resources creates a cycle of disadvantage, while populations with greater access to resources can improve their circumstances and, in turn, their well-being (Peterson et al., 2025).

Similarly, social and environmental living conditions significantly impact individuals' well-being (Zhang et al., 2024). Generally, those with higher SES can enjoy a better quality of life by residing in neighbourhoods with fewer disadvantages and better social resources, such as secure housing and favourable community attributes (Foster et al., 2019; Yeung et al., 2022). Older adults experience a notably reduced risk of poor mental health when they are in a supportive social environment, which helps in forming meaningful support networks, serving as a buffer against feelings of loneliness (Stephens et al., 2010). Populations with lower SES are more likely to live in poorer-quality housing and social conditions, heightening the risk of poor mental well-being (Zhang et al., 2022). Overall, more socioeconomically disadvantaged populations are particularly vulnerable to poor mental health and have fewer resources to cope with adversity. The roles of income, education, and occupation strongly influence one's position within the social gradient.

Chapter 4 – The Impact of the Housing and Neighbourhood Environment on Well-being

The housing and neighbourhood environment is a critical context for health outcomes, as it is where we spend most of our time and directly shapes our well-being (Stevenson et al., 2009; Qiao et al., 2024). Findings consistently underscore the importance of neighbourhood and housing variables on the quality of life for older people, where increased perceptions of housing and neighbourhood quality and accessibility are associated with a higher quality of life and better mental health (Stephens et al., 2020; Stephens & Allen, 2022; Stephens & Bakhshandeh Bavarsad, 2025). A safe and stable housing and neighbourhood environment provides stability and familiarity, which have significant positive influences on well-being, loneliness and depression, especially (Bond et al., 2012; Holding et al., 2020; Jones-Rounds et al., 2014; Pevalin et al., 2017; Wright & Kloos, 2007; Zhang et al., 2024).

The Housing Environment

Housing Tenure

Housing tenure refers to whether a household rents (privately or socially) or owns its accommodation (Social Well-being Agency, 2023). Studies consistently indicate that socioeconomic deprivation is strongly associated with housing tenure, where a higher proportion of renters are socioeconomically disadvantaged compared to homeowners (Baker et al., 2013; Bentley, 2021; Courtin et al., 2018; Telfar-Barnard et al., 2017; Witten et al., 2017). Additionally, research commonly shows that housing tenure significantly impacts housing vulnerability (Carter et al., 2005; Social Well-being Agency, 2023).

International housing literature frequently suggests that compared to renting, owning a home is associated with higher stability, increased belonging and overall better well-being among its occupants (Acolin, 2022; Courtin et al., 2018; Huang et al., 2015; Kang, 2021; Li

et al., 2022; Qiao et al., 2024; Szabo et al., 2018; Talmatzky et al., 2023). Conversely, renters are more vulnerable to housing disadvantages such as unaffordability, instability, and lack of autonomy over their housing environment (Chisholm et al., 2017; Pollack et al., 2010; Rolfe et al., 2020; Singh et al., 2019). Housing instability can be defined as not knowing whether and when one has to move, with moving often unchosen due to external factors outside of the tenant's control (Morris et al., 2021).

To illustrate, renters often have less choice over where and what kind of housing they live in, and can be required to leave their homes or increase their rent on short notice (Social Well-being Agency, 2023). Conversely, renters experiencing stability have been associated with increased well-being compared to renters experiencing instability (Li et al., 2022). Private renters often perceive a lack of control over their housing futures; however, they keep the thought at the back of their minds (Morris et al., 2021). It is essential to highlight that low-income tenants are most affected by residential instability (Howden-Chapman, 2021). The capacity to respond to sudden changes in circumstances requires resources that are often unattainable for low-income tenants compared to higher-income tenants (Telfar Barnard et al., 2020).

There are various barriers to homeownership in Aotearoa. Homeownership has become less attainable due to insecurity and lack of affordability derived from rising housing costs (Chrisholm et al., 2017). According to the 2018 census, over 40% of households were renting their homes (Prakash, 2023). Aotearoa's housing affordability is worsening, making renting a more common long-term tenure type for many households, especially in Auckland (Prakash, 2023). As seen globally, the burden of housing costs on renters tends to be particularly heavy among low SES groups, who often face high rental rates and high heating costs (Barrett, 2023). It is noted that both renters and homeowners express a preference for owning a property over renting, citing the lack of stability, independence, and poor well-

being associated with renting (Chrisholm et al., 2017; Prakash, 2023; Witten et al., 2017). The unfortunate reality for renters is the additional burdens and increased insecurities that come with renting a home. There is limited housing choice, and renters often describe themselves as ‘lucky’ to secure a safe, healthy rental with an efficient landlord (Prakash, 2023). The lack of affordable housing contributes to the financial pressures of everyday living costs (Chrisholm et al., 2017). Conversely, the economic advantages of increasing property values are expected to enhance well-being for individuals with higher socioeconomic status and homeowners, rather than impede it (Grewal et al., 2024).

Planning and settling down for the future is highly relevant to older adults; however, renting can inhibit the ability to make long-term plans due to the uncertainty of housing circumstances (Chrisholm et al., 2017). Housing security enables greater planning and involvement in the neighbourhood community, which is a significant protective factor for positive health and well-being in older age (Morris et al., 2021). However, there is undoubtedly a shortage of affordable rental properties that meet high standards of living in Aotearoa (Prakash, 2023). Older adults in Aotearoa have expressed high dissatisfaction with their insecure tenure (Witten et al., 2017; Prakash, 2023), indicating that they prefer greater control over their housing situation. Older tenants of lower SES are even more vulnerable to poor mental health as they have few, if any, resources to draw on from family and friends (Howden-Chapman, 2021). Additionally, the proportion of older Māori living in rental accommodation is expected to rise as home ownership becomes less attainable (Prakash, 2023). Cram and Munro (2020) found that many older Māori participants found it hard to keep up with living costs and manage high rent rates. Conversely, homeowners can build and transfer generational wealth to their families and use their property as a financial resource during economic hardship (Cram & Munro, 2020).

Research has repeatedly demonstrated that experiencing unaffordable or unstable housing over time has been shown to increase depressive and anxiety symptoms among tenants (Burgard et al., 2012; Li et al., 2022; Mason et al., 2013; Park & Seo, 2020; Szabo et al., 2018; Talmatzky et al., 2023). Stable housing provides older adults with consistent access to medical care and essential services (Carrere et al., 2022). When that housing is secure and appropriately modified, it also reduces the risk of falls or injuries through adjustments such as ramps, stairlifts, and grab bars (Telfar-Barnard et al., 2020). However, this stability can be undermined when older tenants face uncertainty around rent increases or potential forced moves, which research shows can be a significant source of ongoing anxiety (Morris et al., 2021).

Additionally, older adults experiencing severe financial housing stressors are more likely to develop limitations related to activities of daily living (Jenkins Morales & Robert, 2022). Overall, literature suggests that if tenants' rentals are stable, i.e. their living circumstances are predictable, mental health becomes comparable to that of homeowners over time (Morris, 2018; Morris et al., 2021).

Concerning social inequalities, owner-occupiers are more likely to reside in the least deprived neighbourhoods than renters, who tend to live in more deprived areas (Telfar-Barnard et al., 2017). Additionally, homeowners are more likely to live with a partner and earn higher incomes than renters, who tend to struggle to meet basic needs (Carter et al., 2005; Prakash, 2023). Social renters tend to live in the most deprived areas of Auckland, illustrating how intertwined tenure and deprivation are in Aotearoa (Prakash, 2023; Telfar-Barnard et al., 2017). Low SES populations are more likely to be exposed to and have less choice over these poorer housing conditions and consequently have higher levels of potentially avoidable housing-related health issues (Witten et al., 2017).

Common themes that emerge among low-income older renters aging in their homes include housing affordability and a home environment that supports autonomy and access to support systems (Lee et al., 2019). International research has shown that older tenants of low SES tend to be less independent and have poorer mental health (Aplin & Petersen, 2023). Older renters in Aotearoa tend to be economically disadvantaged, with the highest rates among Māori, Pacific, and female populations (Pledger et al., 2019; Prakash, 2023; Social Well-being Agency, 2023; Telfar-Barnard et al., 2017). These populations are particularly susceptible to the adverse consequences of renting on health outcomes. Hence, low-income renters are more vulnerable to experiencing poor mental health (Jenkins Morales & Robert, 2022). Renters often report feeling lonelier than homeowners do (Prakash, 2023). Overall, housing disadvantage is a public health concern in Aotearoa, as the proportion of households renting is increasing while the number of homeowners is decreasing (Bentley, 2021).

Housing Satisfaction

Housing contentment plays a crucial role in the psychological health of older adults. Higher satisfaction with housing is often associated with better self-rated health and decreased depression and anxiety (Knochelmann et al., 2020; Qiao et al., 2024). Housing satisfaction among older adults is significantly associated with the quality of the home's physical characteristics, such as healthy home status, structure, and size (Lee et al., 2021). Many older adults prefer to live independently and often seek smaller residences, such as bungalows, which are easier to manage and maintain (Mulliner et al., 2020). Older adults who can adapt their homes to their increasing needs, such as maintenance, energy efficiency and home warmth, are likely to have better well-being as these characteristics are fundamental to living a comfortable life for older people (Fernández-Portero et al., 2017; Mulliner et al., 2020). Other strong determinants of housing satisfaction include home ownership, period of residence and neighbourhood relations (Jones-Rounds et al., 2014;

Sendi et al., 2024). Thus, poor housing quality and not owning your home are associated with poorer psychological well-being (Huang et al., 2015; Jones-Rounds et al., 2014).

Housing quality is strongly associated with tenure, with rental housing generally older, colder, and in worse physical condition than owner-occupied housing (Howden-Chapman et al., 2021). Research has shown that maintenance issues, safety concerns and limited access to health and social programs can negatively impact housing satisfaction, particularly for low SES older adults who rent (Sheppard et al., 2023). Similarly, neighbourhood deprivation is negatively associated with neighbourhood satisfaction (Mouratidis, 2020; Sait & Jivraj, 2022). Thus, poor housing and neighbourhood conditions, including issues like noise, dampness, and disrepair, contribute to housing dissatisfaction and create ongoing stress and financial strain for low SES groups.

The Neighbourhood Environment

Neighbourhood Accessibility

When evaluating the neighbourhood's environmental impact on health and well-being, it is crucial to consider multiple ecological factors given the multifaceted nature of neighbourhoods (Marek et al., 2021). The built environment, which is regarded as a determinant of health, refers to the physical space constructed by humans for living, encompassing building infrastructure, parks, roads, and public transport (Beemer et al., 2021; Bonaccorsi et al., 2023; Mitchell et al., 2015; Song et al., 2024). Easy access to important facilities such as healthcare and transportation is essential for older adults, especially for those who often experience frequent changes in their needs (Tang et al., 2022).

Poorly constructed neighbourhood environments play a crucial role in the quality of life for older populations (Kong et al., 2025). Older adults are particularly vulnerable to subpar environments, as they are more likely to utilise these services and facilities daily

(Tang et al., 2022). Features that promote age-friendliness in the built environment, such as elevators, smooth pathways, resting seats, fitness areas, and public toilets, are essential for ageing in place (Kong et al., 2025). An Aotearoa study found that falls are the leading cause of injury and mortality among the older adults, leading to reduced outdoor activity, which damages social connections and, consequently, mental well-being (Curl et al., 2020). Decreased accessibility to amenities has been shown to affect older adults' mental health adversely (Song et al., 2024; Zhang et al., 2022), while increased accessibility and proximity to essential facilities significantly correlate with improved cognitive functioning and overall well-being in older adults (Blaschke et al., 2024; Guo et al., 2021; Song et al., 2024; Rigolon et al., 2021; Wang & Lan, 2019; Xian et al., 2024; Zhang et al., 2022; Zhang et al., 2024; Zuo et al., 2024).

It is highly critical to acknowledge the role of structural inequalities across neighbourhoods of varying levels of deprivation. The local environment influences exposure to amenities, with health-promoting facilities more commonly found in lower-deprivation neighbourhoods (Park et al., 2017; WHO, 2025). International studies have found strong evidence that deprived areas are less likely to have availability and accessibility to health-promoting leisure activities, such as parks and fitness centres (Blaschke et al., 2024; Bone et al., 2022; Schüle et al., 2019; Sun et al., 2022; Wang & Lan, 2019; Zuo et al., 2024). Numerous findings from Aotearoa indicate that neighbourhoods with high levels of deprivation often experience limited access to essential services (Marek et al., 2021; Zhang et al., 2024). Conversely, areas characterised by greater deprivation see an increase in health-diminishing facilities, such as alcohol and fast-food outlets, while the presence of health-enhancing facilities, such as outdoor fitness areas, decreases (Hobbs et al., 2021; Marek et al., 2021). Research commonly shows reduced stress, anxiety, and depressive symptoms with greater exposure to amenities (Beemer et al., 2021; Bonaccorsi et al., 2023; Bone et al., 2022;

Guo et al., 2021; Kong et al., 2025; Mavoa et al., 2019; Roe et al., 2020; Sullivan & Chang, 2011; Yue et al., 2022). Health-diminishing environments adversely affect older people's mental health and experiences of loneliness (Bonaccorsi et al., 2023; Stephens & Phillips, 2022), particularly in terms of opportunities for social inclusion and support (Stephens et al., 2010; Stephens et al., 2019).

A higher proportion of low SES populations reside in more deprived areas, which is reflected through the evident disparities in healthcare accessibility between groups of high and low SES. Access to care is generally lower among low SES populations (Almeida et al., 2017; Elshaikh et al., 2023; Packness et al., 2019; Stevenson et al., 2009). Common barriers to seeking healthcare include the associated costs for appointments and transportation to the service (Packness et al., 2019). However, healthcare utilisation among low SES individuals tends to be lower even when services are free, suggesting that cost is not always the primary barrier (Packness et al., 2017). Thus, there are likely more factors at play regarding neighbourhood accessibility for low SES populations.

The literature indicates that older adults with higher SES have better access to healthcare (Almeida et al., 2017; McMaughan et al., 2020). Lower SES groups frequently rely on public healthcare options, often leading to longer waiting times and reduced utilisation (McMaughan et al., 2020). In contrast, higher-SES populations benefit from greater accessibility owing to higher income and education levels, which correlate with greater awareness of health needs and a stronger tendency to seek healthcare (Almeida et al., 2017).

Overall, higher-SES populations are more likely to live in less deprived neighbourhoods and, consequently, tend to have greater access to and higher utilisation of neighbourhood facilities, resulting in improved mental health outcomes (Elshaikh et al.,

2023). Additionally, evidence indicates that lower-SES groups may benefit more from health-promoting facilities than affluent groups (Rigolon et al., 2021), suggesting that increased access may be a stronger protective factor for mental health among more disadvantaged populations.

Neighbourhood Safety

Perceptions of safety and security in a community are vital to well-being, as they directly influence individuals' feelings of tranquillity, social relationships, and overall quality of life (Sun et al., 2012). In the context of this study, neighbourhood safety underpins the feelings of safety within the home itself and the surrounding neighbourhood. Neighbourhood safety is directly linked to socioeconomic factors, where socioeconomic disadvantage is often associated with higher crime rates and lower perceptions of safety. (Prakash, 2023; Sullivan & Chang, 2011). Evidence suggests that children living in more deprived areas, such as those near busy roads, tend to engage in less outdoor play and have smaller social networks (Sullivan & Chang, 2011). Similarly, adults tend to have less social interaction with their neighbours in these circumstances (Grinshteyn & Sugar, 2021). Thus, lower-SES populations living in more deprived areas are more likely to be affected by issues of neighbourhood safety and security.

An abundance of findings illustrate the association among perceptions of poor neighbourhood safety, fear of crime, and psychological distress (Bonaccorsi et al., 2023; Choi & Matz-Costa, 2018; Firdaus, 2017; Mohan & Barlow, 2023; Pearson & Breetzke, 2014; Sun et al., 2012). A safe neighbourhood enhances well-being in several ways. An Aotearoa study on perceived safety showed that marginalised children and adolescents tended to feel less secure in neighbourhoods, have lower emotional well-being scores, and higher depressive symptoms (Zhang et al., 2024).

The subjective sense of safety of older people in their homes and neighbourhoods is influenced by key features of the physical environment and the level of social cohesion within the community (Van Hoof et al., 2022). Key features of the physical environment include housing and neighbourhood infrastructure, particularly in relation to preventing accidents and security from crime (Pearson & Breetzke, 2014). Older adults who perceive high neighbourhood safety have increased independence and participation in community activities (Grinshteyn & Sugar, 2021; Mason et al., 2013; Napier et al., 2023; Sun et al., 2012). Thus, older adults who perceive their community as less safe are more likely to remain isolated and socially disconnected, thereby increasing the risk of experiencing negative well-being for these populations. Notably, research has found that the association between safety and mental health is stronger for those with physical limitations, indicating that restrictions in being able to respond to these perceived threats result in poorer mental health outcomes for older adults (Choi & Matz-Costa, 2018).

Age-related declines in sensory function and mobility increase older adults' risk of serious falls in and around the home and heighten their vulnerability to incidents such as burglary (Van Hoof et al., 2022). Familiarity with surroundings can increase feelings of safety and security, for example, having familiar people nearby to ask for help when needed and knowing where the shops are located (Napier et al., 2023). Supportive contact with neighbours is highly advantageous for the older adults, as neighbours are around to look out for one another. Therefore, features of the physical and social environment, e.g., home security systems and meaningful neighbourhood connections, play a positive role in increasing older adults' feelings of security.

Neighbourhoods of higher deprivation are exposed to more stressors that impact psychological well-being, such as crime, police presence, and noise (Mouratidis, 2020; Robinette et al., 2021). People living in unsafe neighbourhoods often report poor health, thus

neighbourhoods can create a situation of chronic stress (Robinette et al., 2021). As lower-SES groups are more likely to be residing in more deprived communities, safety concerns tend to be highest amongst older adults who are more disadvantaged (Holding et al., 2020).

Neighbourhood Trust

Humans are social beings; therefore, the social environment in which we are surrounded is vital to well-being throughout the life course (Niskavaara et al., 2025). The social environment refers to the people, relationships, and social structures surrounding individuals or communities, including family, friends, and community organisations (Choi & Matz-Costa, 2018). Hence, the quality of relationships, such as the sense of community and trust within the neighbourhood, is an excellent predictor of variations in well-being (Choi & Matz-Costa, 2018; Wright & Kloos, 2007).

The literature consistently reveals that strong social cohesion within the neighbourhood is a powerful resource for improving the well-being of older residents in the community as it fosters independence and diminishes reliance on formal care (Choi & Matz-Costa, 2018; Erdem et al., 2016; Sengupta et al., 2013; Zhang et al., 2024). Consequently, older adults who lack social connectedness in their neighbourhoods are more susceptible to decreased well-being (Zhang et al., 2024). For individuals residing alone, limited support from friends and relatives can enhance well-being by facilitating household maintenance and mobility within the local environment. (Cramm & Nieboer, 2015).

Older adults who live in socially connected neighbourhoods tend to experience lower rates of depression, anxiety, and loneliness (Choi & Matz-Costa, 2018; Erdem et al., 2016; Gale et al., 2011; Zhang et al., 2024). Factors contributing to social cohesion, such as trust in local organisations, social networks, and community participation, are all linked to improved mental health outcomes (Gordeev & Egan, 2015). Notably, neighbourhood trust has a greater

effect on alleviating poor mental health symptoms than on physical well-being (Ivory et al., 2011; Stephens et al., 2020). Over a 20-year period, lower levels of social cohesion were found to significantly predict higher rates of depression and anxiety (De Main et al., 2023).

Socioeconomic circumstances can decisively influence the level of social neighbourhood cohesion (Holman et al., 2022). Significant disparities arise in opportunities to access and engage in activities that enhance social connectedness. Greater neighbourhood deprivation is often linked to poorer perceived and actual social cohesion and, consequently, worse mental health outcomes among older residents (Fone et al., 2014; Mackenbach et al., 2016; Salvatore & Grundy, 2021). Aotearoa findings indicate that over the past decade, inequalities in social cohesion have deepened, with lower-SES populations facing a higher risk of experiencing barriers to belonging and participation in society (Prakash, 2023). Low SES populations reported that limited finances were linked to social exclusion, while high SES populations tend to have sufficient disposable income to enable a broader range of social activities (Prakash, 2023).

Social connection and neighbourhood trust have been demonstrated to mediate between the built environment and mental health, promoting feelings of safety and security in a neighbourhood that may be perceived as dangerous and insecure (Choi & Matz-Costa, 2018; Jones-Rounds et al., 2014; Kong et al., 2025; Zhang et al., 2022). Thus, high social cohesion among disadvantaged neighbourhoods has been shown to mitigate the adverse effects of neighbourhood deprivation on well-being (Cramm & Nieboer, 2015; Fone et al., 2014), reinforcing the idea that social cohesion serves as a strong protective factor for well-being among older adults of low SES (Choi & Matz-Costa, 2018; Cramm et al., 2013; Erdem et al., 2016; Lei et al., 2025).

Chapter 5: Theoretical Perspectives on the Environment and Mental Well-being

Two theoretical perspectives will be discussed, the Person-Environmental Fit Theory (Wahl et al., 2012), and Intersectionality (Crenshaw, 1989, 1991), serving as interpretive lenses to understanding how the environment can impact well-being, particularly among older adults. These two perspectives show how societal deprivation and privilege can advantage/disadvantage individuals throughout their lifespans, shaping where and how they live in older age.

Person-Environmental Fit Theory

This study draws on the person-environmental (P-E) fit model (Wahl et al., 2012), adapted from Lawton and Nahemow (1973), which focuses on the dynamic interplay between a person and environment, specifically for older adults. The model is strongly person-centred, in which individual characteristics such as personality, personal history, and functional competence shape one's environment. Thus, the P-E fit model suggests that better mental health outcomes can be attributed to a good 'fit' between the individual and the environmental context. However, the broader structural factors that unevenly shape older people's environments are not considered, thereby underestimating the power of social determinants on health outcomes (Park et al., 2017). Because the P–E model is primarily grounded in the experiences of more privileged groups with greater control over their housing environments, it overlooks the realities of marginalised populations. This can inadvertently shift responsibility onto individuals, implying that a 'poor fit' reflects personal inadequacy rather than structural constraints. (Park et al., 2017).

Intersectionality

Intersectionality (Crenshaw, 1989, 1991) can help explain how social and structural inequities impact health outcomes among minority populations. Intersectionality provides a framework for understanding how people's multiple self-identities, such as gender, ethnicity, social class, and disability, interact with structural power systems to create unique experiences of privilege or disadvantage (Niskavaara et al., 2025). Recent international literature has highlighted the need to embrace intersectionality approaches to fully understand the determinants of health disparities (Holman et al., 2022), while also emphasising the significance of place, space, and location on mental health outcomes (Niskavaara et al., 2025).

The interaction of neighbourhood context and SES has been found to create greater disadvantage for some groups (Holman et al., 2022). In Aotearoa, Māori populations, who face various inequities across society, tend to have the poorest health outcomes (Lee et al., 2017). Colonial processes eroded Māori ways of living, significantly contributing to systemic racism and, thus, intergenerational trauma and marginalisation among this population (Williams et al., 2018). Societal structures have exacerbated the social inequities that are highly prevalent throughout Aotearoa's society, particularly in access to healthcare, education, and employment (Sullivan et al., 2023).

An intersectional perspective highlights the unique, context-dependent challenges faced by older adults who experience many inequities. For example, an older Māori woman of low SES is more likely to experience socioeconomic disadvantage compared to an older non-Māori woman of low SES due to the compounding disadvantage that Māori are more likely to experience (Williams et al., 2018). Māori therefore experience higher rates of chronic illness, poor mental health, and have a lower life expectancy compared to non-Māori (Sullivan et al., 2023). Intersectionality can therefore help identify who will most benefit

from public health initiatives targeted towards reducing inequities in health outcomes (Blaikie et al., 2024).

Present Study

As noted in the literature, depression, anxiety and loneliness outcomes are highly prevalent among older adults (Bandyopadhyay, 2024; Huang et al., 2024; Lu et al., 2023). Additionally, comorbidities of mental issues are common, which result in even worse outcomes (Wang et al., 2023). This is a public health issue, as the implications are costly to both the individual and society as a whole (Haigh et al., 2018; Lay-Yee et al., 2022; Ogrin et al., 2021; Smith et al., 2021).

Previous studies have found that SES and mental health outcomes are closely linked, with low SES a significant risk factor for the development and maintenance of adverse mental health (Muhammad et al., 2022; Sanchez-Moreno et al., 2024; Wang et al., 2024). Accessibility to socioeconomic resources such as income, education and occupation influences access to amenities such as healthcare and social connections, which serve as protective factors to well-being (Gao et al., 2022; McMaughan et al., 2020; Peterson et al., 2025; Utomo et al., 2023). However, these resources are unevenly distributed across society, disadvantaging populations with lower SES (Zhang et al., 2022).

Furthermore, housing and neighbourhood characteristics directly shape our well-being by varying levels of access to resources, thereby influencing health behaviour. SES is closely associated with neighbourhood deprivation (Bentley, 2021; Prakash, 2023; Telfar-Barnard et al., 2017). Low SES individuals are more likely to reside in more deprived areas and live in rental housing, reducing residential stability while increasing anxiety, depression and loneliness (Li et al., 2022; Morris et al., 2021; Talmatzky et al., 2023). Additionally, literature

outlines that deprived areas tend to have less access to socioeconomic resources that improve mental well-being (Elshaikh et al., 2023; Kong et al., 2025; McMaughan et al., 2020). Low SES populations are less likely to seek professional help due to experiencing more barriers to healthcare compared to high SES populations (Elshaikh et al., 2023), despite being in the greatest need of assistance.

Less research has been done on how housing and neighbourhood qualities interact with individual-SES among older adults (Niskavaara et al., 2025). Thus, the dynamics of individual-level SES and neighbourhood qualities on mental health outcomes among older adults remain poorly understood. Additionally, the importance of considering the home and neighbourhood environment within an intersectional framework is often overlooked (Johansson et al., 2025).

Research aims and hypotheses

This paper aims to test three models in which SES is directly related to mental health, in that lower SES is related to poorer mental health. Housing and neighbourhood qualities are likely to interact with SES, such that if these qualities are perceived as better or more satisfying, the relationship between SES and mental health will be weaker.

Demographic factors, such as age, gender, and ethnicity, were incorporated to address the absence of individual characteristics typically considered in neighbourhood studies. These variables were included to control for their known contribution to explanations of SES and mental health outcomes. Adults aged 50-60 tend to report higher levels of depression and anxiety than older adults aged 70-80 (Silva, 2024). Adults aged 70 and older generally report lower rates of psychiatric disorders despite age-related physical decline (Wilkinson et al., 2018). Older-aged individuals tend to have higher emotion regulation, acceptance and resilience, where their difficulties are more likely to stem from neurocognitive conditions and their mental health impacts (Silva, 2024; Wilkinson et al., 2018). Regarding gender, older

women are more likely to experience depression and anxiety disorders compared to older men (Kiely et al., 2019; Sialino et al., 2021). The gender gap is smaller than in younger populations; however, it is still present.

There is abundant evidence illustrating the significant ethnic disparities in health outcomes in Aotearoa, where Māori have higher rates of poor mental health compared to non-Māori (Ashlea et al., 2018; Lee et al., 2017; Ministry of Health, 2024; Sullivan et al., 2023; Tapsell & Mellsop, 2007; Theodore et al., 2022). Recent data on key Māori health indicators show that Māori are at least 1.5 times as likely to experience high or very high psychological distress compared to non-Māori populations (Ministry of Health, 2024). Additionally, the suicide rates among Māori are almost twice as high as those of non-Māori. These disparities are especially large between Māori and non-Māori females.

The current research aimed to address the following hypotheses:

Hypothesis (1). Housing and neighbourhood variables are directly related to mental health (depression, anxiety and loneliness), such that poorer perceptions of the environment are related to poorer mental health.

Hypothesis (2). SES is directly related to mental health (anxiety, depression and loneliness), such that low SES is related to poorer mental health.

Hypothesis (3). Housing and neighbourhood variables moderate the relationship between SES and depression, anxiety and loneliness, such that better perceptions of housing and neighbourhood qualities and home ownership will be beneficial for mental health, but more so for those of lower SES.

Chapter 6: Methods

Study Design/Overview

The Health Work and Retirement (HWR) survey is a longitudinal, prospective cohort study that has surveyed New Zealanders aged 55 and older biennially since 2006, providing NZ residents with the opportunity to share their experiences to help inform national and international discussions on the important issues of health, work, retirement and housing (Massey University, 2025a). The current study will examine how SES, housing, and neighbourhood qualities influence older adults' mental health outcomes using responses from the 2022 HWR survey. The 2022 wave focus addresses rapid population aging and the need to support working lives and health disparities between population groups (Massey University, 2025a).

Participants

Participants were randomly selected from the Aotearoa Electoral Roll. Participants included in this study were respondents to the 2022 survey on the variables of interest. A total of 5534 responses to the 2022 survey were received (Massey University, 2025b). 20 responses were excluded due to a mismatch between previously recorded and reported demographic (date of birth, gender) data. As such, $N = 5514$ survey respondents were included in the 2022 dataset.

The demographic composition of this sample is presented in Table 1 of the results section. Age was measured in years at the time of the 2022 data collection. Gender was self-reported by participants and coded from 1-3 (1 = male, 2 = female, 3 = gender diverse). Ethnicity was coded as 1 = Māori, 2 = Non-Māori. The mean age in the sample was 66.2 years, with 16.5% of the sample in the 55-59 years range, 32.6% in the 60-64 years range,

21.7% in the 65-69 years range, 14.3% in the 70-74 years range, and 13.2% of the sample in the 75+ years range. Females made up 56.6% of the sample. 85.8% of our sample identified as non-Māori, while 14.2% identified as Māori. Approximately 11.8% of the current sample reported their living standards to be in the range of 'severe-some hardship', 28.8% in the 'fairly comfortable-comfortable', 34.5% in the 'good' and 25% in the 'very good', as characterised by the ELSI-SF (Jensen et al., 2005). Majority of our sample was therefore of mid-to-high SES. 90% of participants owned their house (n = 4808) compared to 10% renting (n = 551).

Procedure

The 2022 Health, Work, and Retirement survey comprised a 32-page postal survey sent to individuals who had previously participated between 2006 and 2021 (the 'existing' cohort) if they were not excluded (deceased, relocated overseas, withdrawn from the study, had not responded since 2018 or earlier) or lost to contact (Massey University, 2025b). A new sample was invited to participate for the first time (the 2022 'refresh' cohort). Participant cohorts in the HWR have been drawn from random samples of individuals aged 55 years or older who are listed on the Aotearoa electoral roll, on which approximately 97.6% of eligible voters aged 55 years or older are enrolled (New Zealand Electoral Commission, 2016). As in previous cohorts, the population samples in 2022 have included oversampling of people listed on the electoral roll as Māori to ensure adequate Māori representation. The 2022 protocol continues the 'refresh' recruitment of new cohorts of individuals aged 55-65 to the HWR study to maintain representation of the younger age range.

In September 2022, all participants were first sent an initial approach which comprised an introductory letter, an information sheet, a pen, a survey booklet, a consent form, and a reply-paid return envelope. A first reminder was sent three weeks later, followed

by a second reminder 12 weeks after the initial mail-out to those who had not returned the survey. The information sheet for new participants included details on health data and ACC (Accident Compensation Corporation) data linkage components. They were also sent a consent form requesting signed consent to access these health records. Existing participants had previously provided consent for health and ACC data linkage, but were not approached again (Massey University, 2025b).

Of the existing (recruited before 2022) longitudinal participants surveyed in 2022, 78.7% completed the survey. Of the new 2022 refresh cohort, 23.5% returned the survey. The majority of responses for the existing cohort were received within the first four weeks of the initial mail-out. For the refresh cohort, the majority of responses were received after the first reminder was sent. All the completed surveys were securely stored, with the data being accessible only to academic researchers. Participant data were recorded and contained in secure SPSS files. The Massey University Human Ethics Committee (MUHEC) approved all the sampling and survey processes (Southern A Application – 22/23; Health, Work and Retirement Study 2022).

Measures

The measures utilised in this study included several previously developed and psychometrically validated scales: The 10-item Centre for Epidemiologic Studies Depression Scale (CESD-10), Geriatric Anxiety Inventory – Short Form (GAI-SF), De Jong Gierveld Loneliness scale, Economic Living Standard Index Short Form (ELSI-SF). Housing and neighbourhood qualities were assessed using items adapted from previous studies (e.g., Buckenberger, 2012; Van der Pas et al., 2015). The means and standard deviations for each measure are reported in Table 2.

ELSI-SF (Socioeconomic status measure)

SES was assessed using a measure of economic living standards (ELSI-SF) for older people (whose income or educational status is not a reliable indicator of SES). The ELSI -SF is a 25-item measure of material well-being developed by the Ministry of Social Development for use in Aotearoa (Jensen et al., 2005). Economic standards of living refer to the material aspects of well-being; thus, ELSI-SF seeks to reflect a person's financial well-being by considering their personal belongings, including household items such as refrigerators and televisions, clothing, and access to medical services. The components of the scale are ownership restrictions, social participation restrictions, and economising. Scores are a sum of all items, ranging from 0 to 31. A higher score indicates a higher standard of living, with scores from 0-8 interpreted as 'severe hardship', 9-12 as 'significant hardship', 13-16 as 'some hardship', 17-20 as 'fairly comfortable', 21-24 as 'comfortable', 25-28 as 'good' and 29-31 as 'very good'.

Low living standards are characterised by poor access to resources, inability to socialise with others and the need to cut back on many day-to-day activities. People with a high standard of living are distinguished by having access to most of the possessions they want, the ability to socialise in many varied ways, and little need to economise on day-to-day activities (Jensen et al., 2005). Example items include 'generally, how satisfied are you with your current material standard of living' on a scale from 1 *(very satisfied)* to 5 *(very dissatisfied)* and 'How well does your total income meet your everyday needs for such things as accommodation, food, clothing and other necessities' on a scale from 1 *(not enough)* to 4 *(more than enough)*. Past research has shown the internal consistency (alpha) to be between .85 to .90 (Radloff, 1977). In our sample, the alpha for this scale was .82.

CESD-10 (Depression measure)

The CESD-10 (Andresen et al., 1994) was used to assess symptoms of depressed mood in older adults. The CESD-10 (10 items) is a shorter version of the CES-D (20 items) (Radloff, 1977). The CESD-10 is a self-report measure in which participants indicate agreement with statements on a 4-point scale ranging from 1 *(rarely or none of the time)* to 4 *(all of the time),* with two reverse-scored items. Items are scored on this 1-4 scale, with the total scale score calculated as the sum of all item scores (after reversing the positive mood items). The possible range for the CESD-10 is 0-30, with higher scores indicating greater depressed mood. Items 5 'I felt hopeful for the future' and 8 'I was happy' were reverse-keyed. Example items include 'I was bothered by things that usually don't bother me' and 'My sleep was restless'. Past research has shown the internal consistency (alpha) to be between .85 to .90 (Radloff, 1977). In our sample, the alpha for this scale was .82.

GAI-SF (Anxiety measure)

The GAI-SF (Byrne & Pachana, 2011) was used to assess anxiety symptoms among participants. The GAI-SF is a shorter version of the original GAI (Pachana et al., 2007), which has 5 items, compared to the original, which comprises 20 items. The GAI-SF is a self-report measure in which participants indicate agreement with statements ranging from 1 *(agree)* to 2 *(disagree)*. The total score can range from 0 to 5. A cut-off score of 3 or more is often used to indicate a potential anxiety disorder. Example items include 'little things bother me a lot' and 'my own thoughts often make me nervous'. Past research has shown Cronbach's α for the GAI-SF was 0.81 (Cronbach's α of the GAI was 0.93). The GAI-SF total score was highly correlated with the 20-item GAI (Byrne & Pachana, 2011). In our sample, the alpha for this scale was .84.

Loneliness measure

The loneliness measure (Gierveld and Tilburg, 2006) is a 6-item scale to assess emotional, social and overall loneliness. This is a shorter version of the 11-item De Jong Gierveld Loneliness Scale (de Jong-Gierveld & Kamphuis, 1985). It is a self-report measure in which participants indicate agreement with statements on a 3-point scale ranging from 1 *(yes)* to 3 *(no)* with three reverse-scored items. Items can be totalled to form a total loneliness score, ranging from 0-6. A higher score indicates greater loneliness. Items include statements such as 'There are enough people I feel close to' and 'I often feel rejected' (reverse-scored). Gierveld and Tilburg (2006) found the α coefficients for the 6-item loneliness scale varied between .70 and .76. In our sample, the alpha for this scale was .75.

Housing and Neighbourhood qualities

Self-reports of housing tenure, housing satisfaction, neighbourhood accessibility, neighbourhood safety and neighbourhood trust assessed the immediate environment. For housing tenure, respondents were placed into the 'own' category if they selected 'owned by yourself and/or partner with a mortgage', 'owned by yourself and/or partner without a mortgage', 'owned by family', 'owned by a family trust' and 'licence to occupy'. Respondents were placed in the 'rent' category if they selected 'private rental' or 'state, council or kaumātua housing'. Housing tenure was coded by whether individuals owned or rented their housing, coded as 0 = own, 1 = rent.

Satisfaction with the home/housing environment was assessed with nine items adapted from Heywood et al. (2002) and Oswald et al. (2006) to cover general satisfaction (e.g., "I am satisfied with my house"), housing quality ("I am able to keep my house warm"), and social provisions of housing (e.g., "My house enables me to see friends and whānau/family as often as I like"). Statements range on a scale from 1 *(no, definitely not)* to 5 *(yes, definitely).* Item scores were combined into a composite measure of housing

satisfaction, with higher scores indicating higher housing satisfaction. In our sample, the internal reliability of this scale was (α = .82).

Neighbourhood quality was operationalised in terms of accessibility (three items adapted from van der Pas et al., 2015) and neighbourhood safety (five items; Buckenberger, 2012). Example items include 'I can get to the shops easily' *(accessibility)* and 'I feel safe at home/in my neighbourhood' *(safety).* Statements range on a scale from 1 *(no, definitely not)* to 5 *(yes, definitely).* Item scores were combined into a composite measure of neighbourhood quality, with higher scores indicating higher neighbourhood quality. In our sample, the internal reliability of the accessibility scale was (α = .85), and safety was (α = .88)

Neighbourhood trust was measured using the 6-item subscale of the Neighbourhood Social Cohesion Tool (Stafford et al., 2003). Example items include 'people in this area would do something if a house was being broken into' and 'people in this area will take advantage of you' (reverse-coded). Statements range on a scale from 1 *(strongly disagree)* to 5 *(strongly agree).* Item scores were combined into a composite measure of neighbourhood trust, with higher scores indicating greater trust. In our sample, the internal reliability of this scale was (α = .78).

Analyses

Variables relevant to our research question were retrieved from the HART (Health and Ageing Research Team). The anonymised data was securely downloaded and imported into the Statistical Package for the Social Sciences (SPSS v. 30).

Data Screening and Assumption Checking

Firstly, the data were conditioned (e.g., specific items were reverse-coded). The data was then screened for missing values, outliers, normality, linearity, independence of residuals,

homoscedasticity, and multicollinearity. The missing data values for all of the variables were below the acceptable threshold of 5% (Schafer, 1999), so no imputations for missing values were conducted.

Normality

The normality of the variables was measured using histograms, Q-Q plots, and the Shapiro-Wilks test. All of our dependent and independent variables were non-normally distributed. Histograms showed that all mental health outcomes were right-skewed, thus the majority of participants reported lower levels of depression, anxiety and loneliness symptoms. SES was left-skewed showing that majority of the sample reported a higher economic standard of living. Housing and neighbourhood variables were all left-skewed, thus participants generally reported high housing satisfaction and high neighbourhood access, safety and trust.

Variables were transformed using Blom's normal probability transformation, which ranks the data and assigns each value a score based on the expected quantile of a standard normal distribution (Blom, 1958). This procedure reduces skewness and makes the distribution more closely approximate normality. Although variables were transformed, interpretation of results was made in the context of the original data scale to retain practical meaning.

Outliers and Multicollinearity

The range for Cook's distance in the current sample was between 0.00 – 0.02, which is below the acceptable value of 1. Hence, the outliers were characterised as being non-influential (Cook & Weisberg, 1982). Multicollinearity in the data was screened by using the VIF values. The VIF values were acceptable and below 10, indicating that the variables did

not have a high level of overlap. Therefore, the variables of interest were not centred for the data analysis involving interaction terms.

Linearity was assessed by examining the P-P plots, which indicated a straight-line relationship between the predictor variables and outcome variables. The independence of residuals was assessed by using the Durbin-Watson statistic. There were no concerns regarding the residuals being statistically or theoretically linked, and this was confirmed by the Durbin-Watson statistic being close to 2 for each regression model (Durbin – Watson = 1.98), indicating that the residuals were not linked (Pallant, 2020).

Several statistical analyses investigated correlations between our three mental health variables (depression, anxiety and loneliness) with SES, housing tenure, housing satisfaction, and neighbourhood accessibility, safety and trust. Initial analyses included computing descriptive statistics and evaluating the reliability of all scales used in this study.

The computation of Cronbach's alpha was used to assess the scale reliability of composite variables. Coefficients over $\alpha c = .70$ were considered acceptable Cronbach's alpha values. The strengths of correlations between variables were examined using Pearson product-moment correlation coefficients to determine the strength (r) and significance (p-value). Correlations were interpreted based on Cohen's (1988) guidelines for effect size, where correlation coefficients from .10 to .29 indicate a weak association, coefficients over .30 represent a moderate correlation, and coefficients with an effect size of .50 or above represent a strong association. The strength of interactions were examined using hierarchical multiple regression.

Hierarchical Multiple Regression

Hierarchical regression was utilised to explore the relationship between mental well-being and SES and the potential moderating effects of housing and neighbourhood qualities

on the relationship between mental health and SES. Before the analyses, a correlation matrix for all variables included in the regression models was computed to examine relationships among them. Following on, three separate hierarchical multiple regression models were conducted with depression, anxiety and loneliness as the dependent variables (DV) and the same set of independent variables (IV) in four blocks:

- The first block of each model included each of the demographic variables to control for their known effects (age, ethnicity and gender).
- The second block included the addition of SES.
- The third block contained the housing and neighbourhood qualities of housing tenure, perceived housing satisfaction, and perceived neighbourhood accessibility, trust and safety.
- In the fourth block, interaction terms were added to test the moderating effects of housing and neighbourhood qualities on depression, anxiety, and loneliness outcomes. Interaction terms were formulated by multiplying each housing/neighbourhood variable by SES.

Unstandardized Beta coefficients with corresponding *p*-values were utilised as indicators to assess the contribution of the variables in the model at every step. The regression model's statistical output was then used to compute the means required for the graphical display of the significant interaction variables. The Excel-based ModGraph-I program was used to plot the interaction terms to visualise the moderation effect (Jose, 2013).

Chapter 7: Results

After the appropriate adjustments were made, all data met the normality assumptions for mental health, housing and neighbourhood factors.

- Table 1 presents the demographic data from the 2022 wave of the HWR survey.
- Table 2 presents the descriptive statistics of the measures.
- Table 3 present the correlation coefficients, which were computed among all variables.

Table 1

Demographic data from Wave 9 (2022) of the HWR study (N = 5514)

		N	Valid %	Mean (SD)
Age				66.21 (7.2)
	55-59	912	16.5	
	60-64	1796	32.6	
	65-69	1199	21.7	
	70-74	793	14.3	
	75+	812	13.2	
Sex				
	Female	3119	56.6	
	Male	2388	43.3	
	Gender Diverse	4	.1	
Ethnicity				
	Māori	771	14.2	
	Non-Māori	4645	85.8	
Socioeconomic status (SES)				24.05 (6.2)
	Severe hardship	172	3.2	
	Significant hardship	171	3.2	
	Some hardship	285	5.4	
	Fairly comfortable	558	10.4	
	Comfortable	984	18.4	
	Good	1850	34.5	
	Very good	1338	25	
Housing Tenure				
	Own	4808	90	
	Rent	551	10	

Note. N = number of participants. SD = standard deviation N total = 5514, Ns will vary due to missing data.

Table 2

Means and standard deviations of the scales used in the current sample

Scale	Construct	Mean Score	Std. Deviation
CESD-10	Depression	6.48	5.07
GAI-SF	Anxiety	.95	1.53
Loneliness	Loneliness	1.57	1.68
SES	Socioeconomic Status	24.05	6.20
Tenure	Housing tenure	.10	.30
Satisfaction	Perceived housing satisfaction	4.42	.62
Accessibility	Perceived neighbourhood accessibility	4.52	.79
Safety	Perceived neighbourhood safety	4.63	.64
Trust	Perceived neighbourhood trust	4.07	.72

Table 3

Pearson's correlations between the variables of interest included in the multiple regression

	Age	**Gender**	**Ethnicity**	**CESD-10**	**GAI-SF**	**Loneliness**	**SES**	**Tenure**	**Satisfaction**	**Accessibility**	**Safety**	**Trust**
Gender	-.04**											
Ethnicity	.09**	.02										
CESD-10	-.04**	.04**	-.11**									
GAI-SF	-.09**	.09**	-.06**	.59**								
Loneliness	-.08**	-.02	-.06**	.55**	.39**							
SES	.11**	-.05**	.18**	-.50**	-.32**	-.40**						
Tenure	-.10**	.01	-.19**	.19**	.10**	.15**	-.31**					
Satisfaction	.14**	-.02	.12**	-.46**	-.28**	-.42**	.53**	-.22**				
Accessibility	.06**	.01	.05**	-.30**	-.16**	-.28**	.34**	-.09**	.47**			
Safety	.11**	-.02	.06**	-.38**	-.25**	-.34**	.40**	-.17**	.60**	.38**		
Trust	.12**	-.02	.05**	-.31**	-.19**	-.33**	.33**	-.16**	.42**	.22**	.55**	

*Note. **p<0.001, GAI-SF = Geriatric Anxiety Inventory Total Short Form, CESD-10 = Center of Epidemiologic studies depression scale total*

Hypothesis 1: Housing and neighbourhood perceptions are negatively correlated with mental health (anxiety, depression, and loneliness), such that worse perception is related to poorer mental health.

Pearsons correlations

Pearson's correlation (*r*) coefficients were between -.30 and -.46 for depression and housing satisfaction, neighbourhood accessibility, trust, and safety. Thus, these housing and neighbourhood variables were negatively and moderately correlated with depression, indicating that viewing the neighbourhood as more favourable is associated with lower depression scores.

Pearson's correlation (*r*) coefficients were between -.28 and -.42 for loneliness and housing satisfaction, neighbourhood accessibility, safety and trust. Thus, these housing and neighbourhood variables were negatively and moderately correlated with loneliness, indicating that viewing the neighbourhood as more favourable in those aspects is associated with lower loneliness scores.

Pearson's correlation (*r*) coefficients were between -.19 and -.28 for anxiety and housing satisfaction, neighbourhood safety and trust. Thus, these housing and neighbourhood variables were negatively and weakly correlated with anxiety, indicating that viewing the neighbourhood as more favourable is associated with lower anxiety scores. Hypothesis 1 is therefore supported as all housing and neighbourhood qualities were negatively correlated with depression, anxiety, and loneliness.

Hypothesis 2: Socioeconomic status is directly related to mental health (anxiety, depression, and loneliness), such that lower SES is related to poorer mental health, controlling for the effects of age, gender and ethnicity.

Pearsons correlations

Pearson's correlations found that SES and mental health outcomes were between -.32 and -.50. Thus, SES was negatively and moderately to strongly related to depression, anxiety, and loneliness scores, showing that lower SES is linked to poorer mental health.

Hierarchical Regression Analysis

The multiple regression model with depression as the dependent variable showed that at block one, age, gender, and ethnicity contributed significantly to the model (F (3, 5103) = 24.63, $p < .001$) and accounted for 1.4% of the variation in depression scores. After entering SES in block two, the total variance explained by the model was 21%, F (4, 5102) = 340.10, $p < .001$. SES explained an additional 20% of the variance in depression after controlling for age, gender and ethnicity, R-squared change = .20, F change (1, 5102) = 1268.02, $p < .001$.

The model measuring anxiety showed that at block one, age, gender, and ethnicity contributed significantly to the regression model (F (3, 5133) = 32.36, $p < .001$) and accounted for 1.9% of the variation in anxiety scores. SES contributed significantly to the regression equation, as after entering our SES measure in block two, the total variance explained by the model as a whole was 10.1%, F (4, 5132) = 144.87, $p < .001$. SES explained an additional 8.3% of the variance in anxiety after controlling for age, gender and ethnicity, R-squared change = .083, F change (1, 5132) = 473.48, p < .001.

The model measuring loneliness shows that at block one, age, gender, and ethnicity contributed significantly to the regression model (F (3, 5103) = 17.81, p < .001) and accounted for 1% of the variation in loneliness scores. SES contributed significantly to the regression equation, as after entering our SES measure in block two, the total variance explained by the model as a whole was 14.6%, F (4, 5102) = 218.57, $p < .001$. SES explained

an additional 14% of the variance in loneliness after controlling for age, gender and ethnicity, R-squared change = .14, *F* change (1, 5102) = 812.36, $p < .001$.

Hypothesis 2 was therefore supported.

Hypothesis 3: Housing and neighbourhood variables moderate the relationship between SES and depression, anxiety and loneliness, such that better perceptions of housing, neighbourhood qualities, and home ownership will be beneficial for mental health, but more so for those of lower SES.

Hypothesis 3a: Housing tenure will moderate the relationship between SES and mental health, whereby home ownership will weaken the relationship for those of lower SES, controlling for age, gender and ethnicity.

Hypothesis 3b: Perceived neighbourhood accessibility to valued amenities will moderate the relationship between SES and mental health, whereby higher neighbourhood accessibility will weaken this relationship for those of lower SES, controlling for age, gender and ethnicity.

Hypothesis 3c: Housing satisfaction will moderate the relationship between SES and mental health, whereby higher housing satisfaction will weaken this relationship for those of lower SES, controlling for age, gender and ethnicity.

Hypothesis 3d: Perceived neighbourhood trust will moderate the relationship between SES and mental health, whereby higher neighbourhood trust will weaken this relationship for those of lower SES, controlling for age, gender and ethnicity.

Hypothesis 3e: Perceived neighbourhood safety will moderate the relationship between SES and mental health, whereby higher neighbourhood safety will weaken this relationship for those of lower SES, controlling for age, gender and ethnicity.

Pearsons correlations

Pearson's correlations (*r*) between housing satisfaction and neighbourhood qualities were significantly positively related with SES, showing that as SES increased, so did housing satisfaction and perceived neighbourhood accessibility, safety and trust. As shown in Table 3, correlations were between .34 and .53, indicating moderate to strong correlations. Housing tenure and SES were significantly negatively correlated, with a moderate correlation of -.31, suggesting that as SES increased, housing tenure decreased (higher SES individuals were more likely to own than rent).

Hierarchical Regression Analysis for variables and moderators predicting Depression scores

A four-block hierarchical multiple regression was computed to further explore the relationship between SES, well-being and the moderating role of housing and neighbourhood qualities in that relationship. Table 4 shows the summary statistics for the hierarchical multiple regression model with depression scores on the CESD-10 scale as the dependent variable.

Housing tenure, satisfaction and neighbourhood safety, trust and accessibility contributed significantly to the regression equation, as after entering these housing and neighbourhood qualities in block three, the total variance explained by the model as a whole was 30.1% (F (9, 5097) = 243.51, $p < .001$. Housing/neighbourhood qualities explain an additional 9% of the variance in depression after controlling for age, gender and ethnicity, R-square change = .09, F change (5, 5097) = 131.48, $p < .001$.

Interactions between SES and housing and neighbourhood variables contributed significantly to the regression equation, as after entering these in block four, the total variance explained by the model as a whole was 30.3%, F (14, 5092) = 157.74, $p < .001$. Interactions

explained an additional 0.2% of the variance in depression after controlling for age, gender and ethnicity, R-squared change = .002, *F* change (5, 5092) = 2.65, *p* = .02.

Of the five interaction variables, two were significant. Variables that made a unique statistically significant contribution were housing tenure (*p* = .04) and neighbourhood safety (*p* = .03). Figure 1 visualises the relationship between SES and depression scores, as moderated by housing tenure. An increase in SES was associated with a decrease in depression scores, and this effect was moderated by tenure. Renters were more likely to suffer depressive symptoms at lower levels of SES. Therefore, hypothesis 3a was supported for the outcome of depression.

Figure 2 illustrates the relationship between SES and depression as moderated by neighbourhood safety. An increase in SES was associated with a decrease in depression scores, and this effect was moderated by perceived neighbourhood safety. Higher neighbourhood safety was associated with lower depression scores, and this effect was stronger for those of low SES. Therefore, hypotheses 3a and 3e were supported for depression. Hypotheses 3b, c and d were unsupported.

Table 4

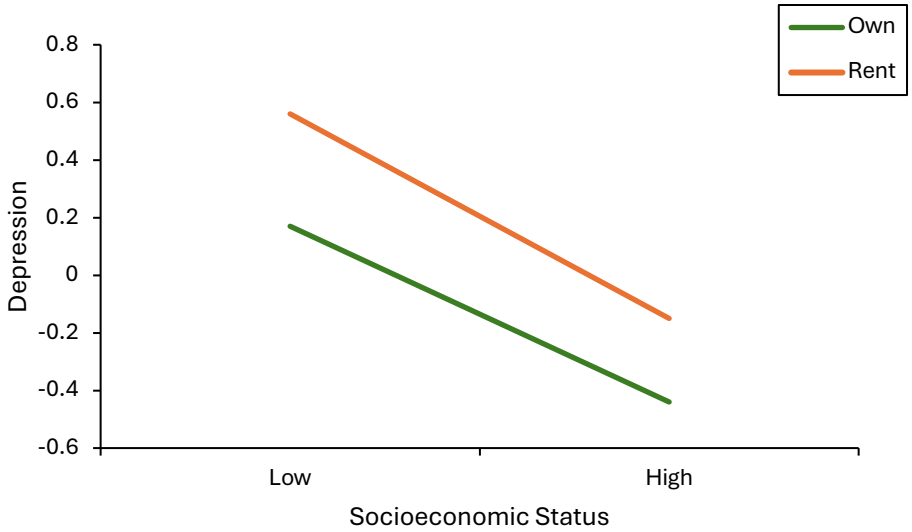
Summary of the final Hierarchical Regression Model after all variables and moderators predicting Depression scores (CESD-10) have been entered

Predictor Variables	Unstandardized B	Standardized β	R^2	R^2 Change	t	Sig.
Block 1			.01			
Age	.006	.04			3.56	.000**
Gender	.06	.03			2.54	.011*
Ethnicity	-.08	-.03			-2.29	.022
Block 2			.21	.20		
SES	-.26	-.26			-18.08	.000**
Block 3			.30	.09		
Housing Tenure	-.00	.00			-.001	.99
Housing Satisfaction	-.23	-.22			-13.26	.000**
Neighbourhood Accessibility	-.08	-.07			-3.25	.000**
Neighbourhood Safety	-.07	-.05			-3.25	.000**
Neighbourhood Trust	-.09	-.09			-6.43	.000**
Block 4			.30	.002		
Housing Tenure * SES	-.05	-.03			-2.03	.04*
Housing Satisfaction * SES	.002	.002			.10	.92
Neighbourhood Accessibility * SES	.003	.003			.19	.85
Neighbourhood Safety * SES	.04	.04			2.19	.03*
Neighbourhood Trust * SES	-.02	-.02			-1.46	.15

Note. Sig.= significance, **p<0 .001, * p<0.05

Figure 1

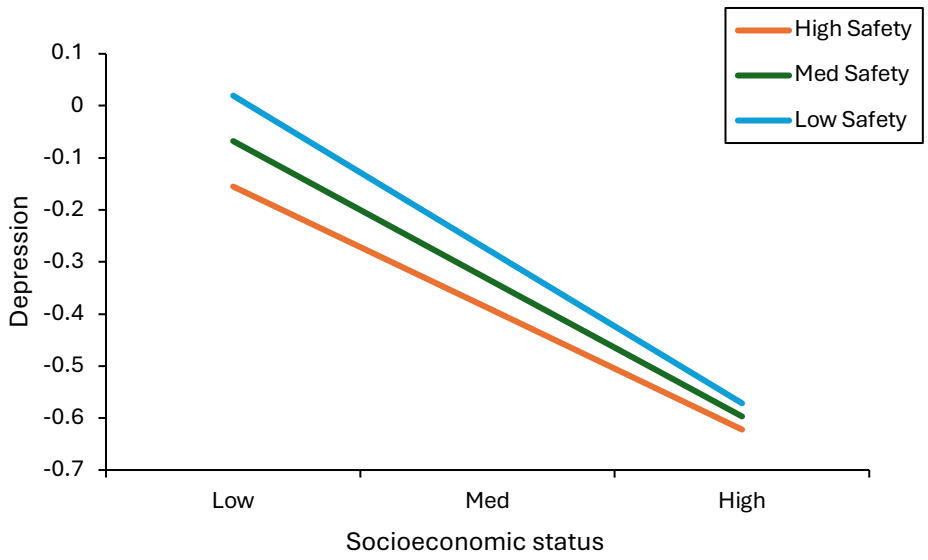
Moderation of the Effect of Socioeconomic Status on Depression by Housing Tenure



Note: Values on the y-axis are derived from the intercept in the regression equation.

Figure 2

Moderation of the Effect of Socioeconomic Status on Depression by Neighbourhood Safety



Note: Values on the y-axis are derived from the intercept in the regression equation.

Hierarchical Regression Analysis for variables and moderators predicting Anxiety Scores

Table 5 shows the summary statistics for the hierarchical multiple regression model with anxiety scores on the GAI-SF scale as the dependent variable. Housing tenure, satisfaction, neighbourhood safety, trust and accessibility contributed significantly to the regression equation. After entering these housing and neighbourhood qualities in block three, the total variance explained by the model as a whole was 12.8% (F (9, 5127) = 84.58, p = <.001. Housing/neighbourhood qualities explain an additional 2.8% of the variance in anxiety after controlling for age, gender and ethnicity, R-square change = .03, F change (5, 5127) = 32.76, p = <.001.

Interactions between SES and housing and neighbourhood variables contributed significantly to the regression equation. After entering these in block four, the total variance explained by the model as a whole was 13.2%, F (14, 5122) = 55.673, p = <.001. Interactions explained an additional 0.3% of the variance in anxiety after controlling for age, gender and ethnicity, R-squared change = .003, F change (5, 5122) = 3.30, p = .006.

Of the five interaction variables, no interaction terms were significant. Therefore, all interaction hypotheses were unsupported for anxiety.

Table 5

Summary of the final Hierarchical Regression Model after all variables and moderators predicting Anxiety Scores (GAI-SF) have been entered

Predictor Variables	Unstandardized B	Standardized β	R^2	R^2 Change	t	Sig.
Block 1			.02			
Age	-.01	-.05			-.3.42	.000**
Gender	.12	.08			5.75	.000**
Ethnicity	-.01	-.00			-.24	.81
Block 2			.10	.02		
SES	-.15	-.19			-12.12	.000**
Block 3			.13	.03		
Housing Tenure	-.05	-.04			-.87	.05
Housing Satisfaction	-.09	-.11			-6.00	.000**
Neighbourhood Accessibility	-.01	-.01			-.33	.74
Neighbourhood Safety	-.07	-.07			-3.60	.000**
Neighbourhood Trust	-.03	-.04			-2.12	.03*
Block 4			.13	.003		
Housing Tenure * SES	-.04	-.03			-1.75	.08
Housing Satisfaction * SES	.01	.02			.79	.43
Neighbourhood Accessibility * SES	.01	.01			.37	.72
Neighbourhood Safety * SES	.04	.04			1.96	.05
Neighbourhood Trust * SES	-.01	-.01			-.77	.44

Note. Sig.= significance, **p<0 .001, * p<0.05

Hierarchical Regression Analysis for variables and moderators predicting Loneliness scores

Table 6 shows the summary statistics for the hierarchical multiple regression model with loneliness scores as the dependent variable. Housing tenure, satisfaction and neighbourhood safety, trust and accessibility contributed significantly to the regression equation. After entering these housing and neighbourhood qualities in block three, the total variance explained by the model as a whole was 23.7% (F (9, 5097) = 175.80, p = <.001. Housing/neighbourhood qualities explain an additional 9.1% of the variance in loneliness after controlling for age, gender and ethnicity, R-square change = .091, F change (5, 5097) = 121.01, p = <.001.

Interactions between SES and housing and neighbourhood variables contributed significantly to the regression equation. After entering these in block four, the total variance explained by the model as a whole was 24%, F (14, 5092) = 114.86, p = <.001. Interactions explained an additional 0.3% of the variance in loneliness after controlling for age, gender and ethnicity, R-squared change = .003, F change (5, 5092) = 4.18, p = <.001.

Of the five interaction variables, only neighbourhood trust*SES was significant (p = .02). Figure 3 visualises the relationship between SES and loneliness scores, as moderated by neighbourhood trust. An increase in SES was associated with a decrease in loneliness scores, and this effect was moderated by perceived neighbourhood trust. However, this effect was stronger for individuals of high SES than for those of low SES. Therefore, hypothesis 2d was unsupported.

Table 6

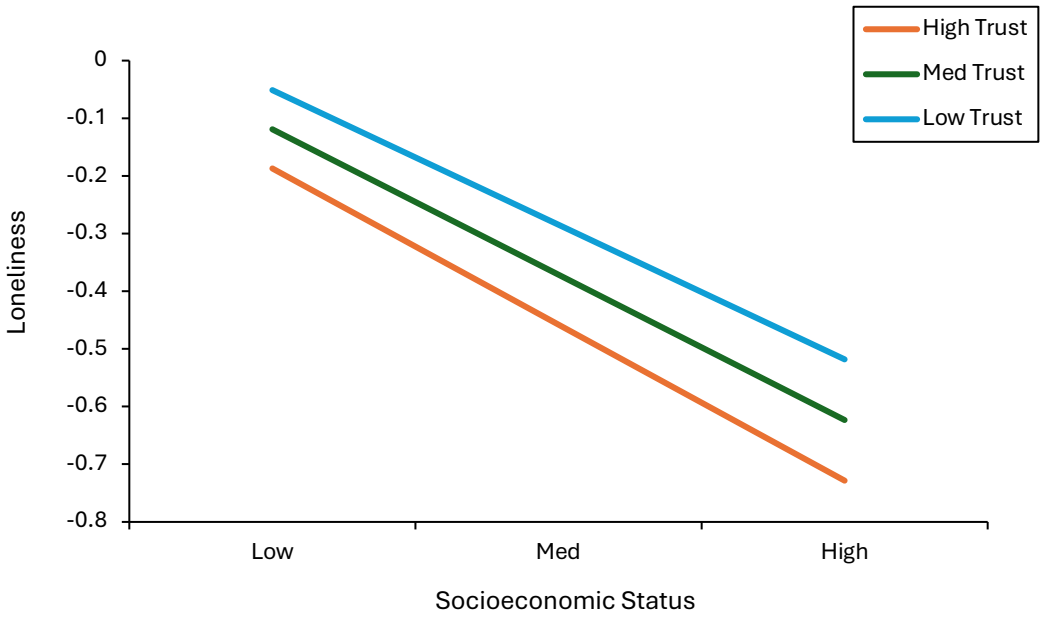
Summary of the final Hierarchical Regression Model after all variables and moderators predicting Loneliness scores have been entered

Predictor Variables	Unstandardized B	Standardized β	R^2	R^2 Change	t	Sig.
Block 1			.01			
Age	-.00	-.07			-.700	.49
Gender	-.08	-.03			-3.50	.000**
Ethnicity	.01	-.06			.38	.71
Block 2			.15	.14		
SES	-.17	-.38			-12.67	.000**
Block 3			.24	.09		
Housing Tenure	.00	.02			.14	.89
Housing Satisfaction	-.17	.02			-10.38	.000**
Neighbourhood Accessibility	-.09	-.09			-5.69	.000**
Neighbourhood Safety	-.04	-.04			-2.06	.04
Neighbourhood Trust	-.13	-.14			-9.58	.000**
Block 4			.24	.003		
Housing Tenure * SES	-.03	-.02			-1.30	.19
Housing Satisfaction * SES	.03	.03			1.68	.09
Neighbourhood Accessibility * SES	.01	.01			.81	.42
Neighbourhood Safety * SES	-.02	-.02			-1.02	.31
Neighbourhood Trust * SES	.03	.04			2.37	.02*

Note. Sig.= significance, **p<0 .001, * p<0.05

Figure 3

Moderation of the Effect of Socioeconomic Status on Loneliness by Neighbourhood Trust



Note: Values on the y-axis are derived from the intercept in the regression equation.

Summary

Overall, findings show that older adults reported poorer mental health outcomes when they also perceived their housing and neighbourhood qualities as low. Additionally, SES is directly related to mental health, after controlling for the effects of gender, age and ethnicity. Older adults with low SES were more likely to report higher depression, anxiety and loneliness scores. Finally, our interactions showed that housing tenure and neighbourhood safety significantly moderated the relationship between SES and depression scores, while neighbourhood trust moderated the relationship between SES and loneliness scores.

Chapter 8: Discussion

The current study aimed to explore the influence of SES, housing and neighbourhood qualities on the depression, anxiety and loneliness outcomes of older adults in Aotearoa. There were several main findings. Firstly, in line with hypothesis one, poorer mental health was associated with a higher probability of renting, decreased housing satisfaction, and neighbourhood accessibility, safety and trust. In line with hypothesis two, as SES decreased, depression, anxiety and loneliness scores tended to increase. Additionally, higher SES was significantly associated with home ownership, increased housing satisfaction, and better perceived neighbourhood accessibility, safety, and trust.

Secondly, there were three significant interaction effects. Home ownership, neighbourhood safety and neighbourhood trust moderated the relationship between SES and mental health. Owning a house and perceiving the neighbourhood as safe were significantly associated with lower depression scores among older adults, and this effect was stronger for those of low SES. Perceiving neighbourhood trust as high was significantly associated with lower loneliness scores among older adults; however, this effect was stronger for those of high SES. These findings highlight the influence of housing and neighbourhood qualities on the relationship between SES and mental health outcomes for older adults.

It is important to highlight that when SES was added to each model in the present study, it accounted for so much of the variance associated with ethnicity that ethnicity no longer explained any unique variance. This indicates that SES has a stronger explanatory role in depression, anxiety, and loneliness. In other words, the association between ethnicity and these mental health outcomes is largely attributable to the fact that Māori are disproportionately represented in lower SES groups. It is socioeconomic disadvantage, rather than ethnicity itself, that primarily drives poorer mental health outcomes among Māori. The

interpretation of the current study's findings concerning the existing literature and theoretical explanations is discussed below.

Relationships between Mental Health and SES

The present sample who are of low SES are more likely to report higher depression, anxiety, and loneliness scores. This finding aligns with previous research (e.g., Chai et al., 2024; Nguyen et al., 2024; Lu et al., 2023; Wang et al., 2023). Therefore, all mental health outcomes measured in this study were significantly associated with SES. Among all mental health outcomes measured, depression was most strongly correlated with SES, consistent with a large body of international literature on this relationship (e.g., Badrasawi & Zidan, 2021; Chai et al., 2024; Nguyen et al., 2024).

As expected, the findings on SES and mental health outcomes are consistent with hypothesis two. Poorer older adults are at greater risk of experiencing poor mental health, which is consistently found due to having fewer socioeconomic resources to mitigate feelings of depression, anxiety and loneliness (Zhang et al., 2022). Furthermore, older adults may be especially susceptible to adverse feelings such as hopelessness, as adversity at this stage of life often reflects the accumulation of hardship across the lifespan (Foster et al., 2019). Older adults experiencing economic hardship are less likely to seek professional treatment; thus, symptoms are left untreated and are likely to get worse or stay the same, perpetuating this cycle of disadvantage and poor health outcomes (Wheeler et al., 2014).

Relationships between Housing and Neighbourhood Qualities and SES

Housing and SES

Regarding housing tenure, the findings indicate that high SES individuals were more likely to own their homes than to rent. These findings build on the evidence that socioeconomic level is significantly related to housing tenure, where renting is more likely

among low SES groups (Baker et al., 2013; Bentley, 2021; Telfar-Barnard et al., 2017). This common finding reflects homeownership as a marker of wealth accumulation and long-term security (Mason et al., 2013). Renting may be a more feasible option for low SES individuals due to barriers to obtaining a mortgage, e.g., unstable or low-paying employment that prevents long-term housing commitments and the financial means for a deposit (Chisholm et al., 2017).

Additionally, housing satisfaction was strongly associated with SES. Housing satisfaction increased with higher SES, indicating that people with more socioeconomic resources were more satisfied with how their housing supported their needs and preferences (i.e., more affluent people were more likely to be happy with the physical condition of their housing and to be able to accommodate friends and family). This finding aligns with numerous studies highlighting the influence of SES on housing satisfaction (Sendi et al., 2024; Sheppard et al., 2023). Housing satisfaction is closely linked to the dwelling itself and the wider neighbourhood environment (Mulliner et al., 2020). Higher SES populations have greater financial means to access homeownership and dwellings of higher quality (e.g., are newer, equipped with modern amenities, better maintained) (Prakash, 2023). Additionally, wealthier households can afford to live in safer, quieter, and more resource-abundant neighbourhoods, which enhances satisfaction beyond the dwelling itself (Telfar-Barnard et al., 2017).

In summary, older adults in our sample with high SES were more likely to own their homes and report higher housing satisfaction than those with low SES. These findings suggest homeownership is not just about property; it carries implications for stability and autonomy, which largely influence housing satisfaction.

Neighbourhood Qualities and SES

The built environment is a well-defined determinant of health, with access varying between SES groups (Song et al., 2024). The findings suggest that people with more socioeconomic resources were more likely to view themselves as having greater accessibility to essential facilities and the help they need within their neighbourhood. This finding aligns with several studies highlighting the influence of SES on neighbourhood accessibility (Blaschke et al., 2024; Wang & Lan, 2019; Zuo et al., 2024). Access to neighbourhoods is typically poorer for low SES groups because, on a broader scale, these communities often reside in more disadvantaged areas, which usually have limited access to higher-quality amenities. (Blaschke et al., 2024). As a result, individuals residing in disadvantaged neighbourhoods often experience disparities in opportunities to engage in healthy behaviours compared to those in more affluent areas (Stevenson et al., 2009).

Additionally, this study builds on existing evidence that SES is significantly related to neighbourhood safety, with older adults of low SES often perceiving lower neighbourhood safety (Johansson, 2025; Prakash, 2023). Affluent older adults are more likely to live in safe, well-resourced neighbourhoods with lower crime rates, fostering stronger perceptions of safety (Johansson, 2025). Therefore, having more resources enables older adults to mitigate safety concerns, such as by owning their home and implementing home security systems to meet increasing needs. Perceived safety is also linked to mobility, as low SES older adults often experience poorer physical health, which contributes to feelings of physical vulnerability and decreased safety (Holding et al., 2020).

Greater neighbourhood deprivation is often linked to poorer perceived and actual social cohesion and, consequently, worse mental health outcomes among residents (Fone et al., 2014; Salvatore & Grundy, 2021). Similar to previous findings, this study found neighbourhood trust to be higher among high SES populations (Prakash, 2023).

Neighbourhood trust is a closely related, yet distinct concept to neighbourhood safety. Trust is built over time; thus, people who have lived in neighbourhoods as long-term residents have had more opportunities to create meaningful neighbourly connections (Erdem et al., 2016). Housing stability is higher among more affluent groups; therefore, these populations are more likely to have had the opportunity to build up trust with neighbours. Low SES older adults who are moving residency more frequently have to adjust to new environments, limiting their ability to draw on support or trust in their community. In summary, the findings add to the literature by showing that older adults of lower SES tend to have poorer perceptions of neighbourhood accessibility, trust, and safety.

Relationship between Mental Health and Housing and Neighbourhood Qualities

Housing and Mental Health

The results showed significant correlations between housing tenure and satisfaction with mental health. Along with previous research (e.g., Qiao et al., 2024; Talmatzky et al., 2023), housing tenure was significantly related to depression, anxiety, and loneliness scores among older adults, with homeownership beneficial for mental health. Renters are more vulnerable to housing instability and uncertainty, negatively affecting well-being (Acolin, 2022; Kang, 2021; Li et al., 2022; Morris et al., 2021; Talmatzky et al., 2023). Homeownership in Aotearoa, particularly in Auckland, has become less attainable due to rising housing costs (Prakash, 2023). Renting is often not the desirable choice for many people, yet owning a home is too far out of reach. If people experience high stability and autonomy when renting, their well-being is more likely to increase than renters with very little stability or control (Li et al., 2022).

The results suggest that housing satisfaction was moderately to strongly associated with depression, loneliness and anxiety in our sample. As housing satisfaction increased, all mental health scores were likely to decrease, which aligns with previous studies (Fernández-Portero et al., 2017; Mulliner et al., 2020). Also consistent with our results, prior research found that housing quality was more important than housing tenure in explaining the mental health of older people (Howden-Chapman et al., 2011). The stronger influence of housing quality compared to tenure suggests that it is the poorer conditions of rental housing, rather than the act of renting itself, that contribute to poorer mental health outcomes. Overall, these findings provide further evidence that housing tenure and satisfaction influence older adults' anxiety, depression and loneliness scores.

Neighbourhood Qualities and Mental Health

The results showed significant correlations between all neighbourhood variables. In this sample, as neighbourhood accessibility increased, mental health among older adults was likely to improve, aligning with previous research (e.g., Song et al., 2024; Zhang et al., 2022). Older adults with better neighbourhood access enhance their ability to navigate the neighbourhood, such as walking, driving, and using public transport. Older adults who remain active and independent tend to experience greater feelings of control, which supports better mental well-being (Xian et al., 2024). In turn, those with good mental health are more likely to engage in social and community activities, further reinforcing this positive cycle (Mohan & Barlow, 2023). In contrast, reduced accessibility reduces independence and contributes to symptoms of depression, anxiety and loneliness through withdrawal from the community (Zhang et al., 2024).

Similarly, the analysis reveals that perceived high neighbourhood safety was significantly related to better mental health among older adults, supporting existing literature (e.g., Grinshteyn & Sugar, 2021; Napier et al., 2023). When the neighbourhood is considered

safe, mental health increases as safety directly influences the sense of peace and overall quality of life, especially among older populations who can be more vulnerable to acts of crime, for example.

Lastly, the results indicate that high neighbourhood trust was significantly related to better mental health among older adults. Neighbourhood trust is closely tied to social cohesion, which is a powerful resource for improving the sense of belonging and well-being of older adults (Choi & Matz-Costa, 2018; Erdem et al., 2016; Sengupta et al., 2013; Zhang et al., 2024). Social connectedness within the neighbourhood is vital to older adults, given the increased dependency that comes with age. For those living alone, even help from one trusted neighbour significantly enhances well-being among older adults, helping combat negative mental health (Zhang et al., 2024).

Overall, higher perceived neighbourhood accessibility, safety and trust were all significantly related to lower depression, anxiety and loneliness scores. Perceiving the neighbourhood positively appears particularly important for older adults, as it fosters a greater sense of independence and control, which, in turn, significantly enhances mental well-being.

Moderating Effects of Housing and Neighbourhood Variables on the Relationship between SES and Mental Health

The results found housing tenure, neighbourhood safety and neighbourhood trust moderated the relationship between SES and mental health outcomes. Firstly, the findings show that housing tenure moderated the relationship between SES and depression. The significant interaction suggests that the relationship between SES and depression differs slightly between owners and renters, with the gap narrowing at higher SES levels. This converging interaction indicates that home ownership appears to be particularly beneficial for

people with low SES, i.e., the negative impact of low SES on depression seems to be stronger among renters than homeowners. This finding suggests that the independence and security associated with home ownership may buffer the adverse mental health effects of low SES, whereas renters with similar SES levels experience higher symptoms of depression (Herbert & Belsky, 2008; Lindblad et al., 2023; Mallach, 2011; Manturuk, 2013; Szabo et al., 2019). The burden of housing costs and risk of instability on renters is heavier for low SES groups (Barrett, 2023); thus, owning a home is considered especially advantageous for these groups, which is reflected in the data. Hypothesis 3a is therefore supported for the outcome of depression.

Secondly, the findings suggest that perceived neighbourhood safety moderated the relationship between SES and depression. The difference between groups becomes smaller at higher SES, meaning, regardless of neighbourhood safety, depression levels are similarly low among high SES individuals. Therefore, the data indicates that neighbourhood safety is most important for people of low SES. These results build on the existing evidence that increased perceived neighbourhood safety is associated with better mental health, particularly among more disadvantaged groups (Robinette et al., 2021). At higher SES levels, people have increased access to protective advantages, such as better housing or social support, so the additional benefit of safety is smaller. Hypothesis 3e is therefore supported for the relationship with depression as the outcome.

Lastly, findings show neighbourhood trust moderated the relationship between SES and loneliness. Low SES individuals with high trust were more likely to report lower loneliness scores compared to low SES individuals with low trust. Examining the graph, the interaction lines are diverging, indicating that high trust amplifies the SES advantage, where the difference between trust levels increases as SES rises. This finding does not support the initial interaction hypothesis, as high trust seems to benefit high SES individuals more than

low SES, suggesting a cumulative advantage effect, where trust and SES compound each other's benefits. Previous literature highlights neighbourhood trust as levelling out health disparities, rather than increasing mental health differences between SES groups (Choi & Matz-Costa, 2018; Cramm et al., 2013); however, our results differ from this notion. When looking at all three interaction effects, it is vital to acknowledge the disparities that arise in opportunities for populations to access privileges, such as choosing where to live. Theoretical constructs offer a valuable lens for interpreting the study's findings.

Theoretical explanations

Person-Environmental (P-E) Fit model

From a theoretical lens, the person-environmental (P-E) fit model (Wahl et al., 2012), adapted from Lawton and Nahemow (1973), focuses on the dynamic interplay between a person and environment, specifically for older adults. The P-E fit model suggests that better mental health outcomes can be attributed to a good 'fit' between the individual and the context. All of our main findings align with the P-E fit model (Wahl et al., 2012), as participants who report higher satisfaction with their neighbourhood and housing context can be inferred as an overall 'better environmental fit' compared to older adults who perceive the environment as less favourable. The interaction findings align with the model, highlighting that secure and safe environments have the potential to fulfil key psychological and practical needs among older individuals.

A critical disadvantage of the P-E fit model is that it does not acknowledge the broader structural factors that unevenly shape older people's environments, thereby underestimating the impact of social determinants on mental health outcomes. The P-E model tends to fit more privileged populations with greater access and control over their housing environments, underrepresenting marginalised populations and increasing the risk that

individual responsibility will be attributed to them. The P-E fit model primarily considers psychosocial alignment with the environment (e.g., autonomy, control, and comfort), but it fails to address the barriers that prevent poorer populations from easily aligning with their environments. The major policy limitation using this model alone is that it may lead one to focus on home and neighbourhood modifications rather than broader systemic reform, such as affordable housing.

When focusing on populations with limited resources and capabilities, it is suggested that older adults can age optimally in their environment if the environment's characteristics support them and compensate for the barriers they face, such as a lack of resources (Park et al., 2017). Previous research has shown that vulnerable low-income older adults reported better health outcomes when they had access to senior housing compared to living in a conventional private home environment (Park et al., 2017), which shows that populations of varying socioeconomic standing have different needs that should be accounted for in decision-making, such as in housing policy.

Intersectionality

Intersectionality (Crenshaw, 1989, 1991) provides a critical lens for understanding the emerging complexities of wealth inequalities and housing and neighbourhood qualities on the mental health of older adults. An intersectional analysis closely addresses the underlying social and structural determinants that perpetuate depression, anxiety and loneliness outcomes. Having insight into these underlying mechanisms helps in understanding how these relationships work together to contribute to the mental health outcomes of more disadvantaged groups (Niskavaara et al., 2025).

An intersectional stance challenges one-dimensional ways of thinking by emphasising that people's experiences cannot be understood by looking at one identity (e.g., SES) in

isolation, because social categories overlap and influence one another. The moderation findings of housing tenure and neighbourhood safety reflect a buffering interaction, illustrating how disadvantages overlap (i.e., low SES renters are most depressed); however, resources such as home ownership can potentially mitigate the effects of structural disadvantages on depression outcomes. On the other hand, neighbourhood trust widened the mental health gap as SES increased, reflecting a cumulative advantage pattern. Rather than buffering disadvantages for low SES individuals, perceived neighbourhood trust reinforced existing inequities, so high SES individuals benefit disproportionately. Thus, high perceived neighbourhood trust was beneficial across all SES levels, but high SES individuals experienced more substantial gains. The three interaction findings, therefore, reflect how intersecting systems of privilege (economic security and social capital) and disadvantage (economic strain and social disconnection) create compounding inequalities in mental well-being.

It is critical to note the role of ethnicity in these intersecting relationships, especially in the context of Aotearoa. Consistent with other research (Howden-Chapman, 2021), this study found that Māori participants were overrepresented in lower-SES groups compared to non-Māori participants. Considering Aotearoa's colonial history and the enduring impacts of structural racism, Māori populations have faced systemic disadvantage from the outset, restricting opportunities for upward social mobility and access to assets such as homeownership (Boden et al., 2022). This reflects a pattern of intergenerational trauma that is difficult to break, particularly when structural systems continue to reinforce barriers to change for low SES populations. Consequently, being of Māori ethnicity increases the likelihood of being born into environments characterised by intergenerational socioeconomic disadvantage. Therefore, intersectionality better explains who has access to opportunities and

resources in the first place, which in turn influences the housing and neighbourhood qualities of satisfaction, accessibility, safety, and trust.

Low SES groups who rent their home are likely to report lower safety and trust due to factors such as the increased probability of experiencing discrimination or displacement within the community (Prakash, 2023). This is reflected in recent national data, where Māori youth and adults were found to be much more likely than non-Māori adults to have experienced any type of racial discrimination and poor well-being as a result of it (Ministry of Health, 2024).

In conclusion, from an intersectional perspective, these findings reflect how structural inequities in housing access reinforce socioeconomic disparities, perpetuating cycles of disadvantage for marginalised groups. The significant interactions between SES and housing tenure, neighbourhood safety and trust suggest that these social and economic dimensions do not operate in isolation, but combine and intersect to shape mental health outcomes. Rather than simply adding up the effects of low SES and insecure housing and neighbourhood qualities, the interaction shows that these factors compound one another, creating a distinct disadvantage that cannot be explained by either factor alone. This supports an intersectional understanding that individuals experience disadvantage through the combined effects of socioeconomic, housing, and neighbourhood-based inequities. Overall, the interaction effects highlight the value of applying an intersectional framework in quantitative research, demonstrating that the interlocking influences of social class, housing, and neighbourhood qualities shape mental health outcomes among older adults.

Limitations and Strengths

Like all research, this study has limitations that should be acknowledged when interpreting its findings. An important limitation to address concerns the transformation of

variables prior to analysis. While transformations were applied to satisfy statistical assumptions (e.g., normality), this process can alter the scale and interpretation of variables. Notably, some differences emerged between analyses using transformed versus untransformed data. When variables were transformed, neighbourhood safety and housing tenure significantly moderated depression outcomes. Safety and housing satisfaction remained significant in the untransformed data, but tenure did not. Transformed data showed no significant interactions for anxiety, whereas untransformed data identified housing satisfaction as a moderator. For loneliness, transformed data revealed neighbourhood trust as a moderator, while untransformed data indicated only housing satisfaction as a moderator. These differences in findings imply that the outcomes could vary depending on how the data were processed. This highlights the importance of carefully interpreting findings and recognising that alternative analytical approaches may result in slightly different outcomes.

The data used for analysis in this study were collected using a structured survey with predominantly closed-ended questions. These close-ended questions may have limited an individual's experience of mental health outcomes and neighbourhood perceptions, prompting them to fit their experience into the pre-assigned options, which may not accurately reflect their true experience (Cheung, 2021).

Additionally, self-reported measures are susceptible to bias, including social desirability bias and subjective interpretation of survey items. Participants may have underreported negative experiences or overestimated their well-being, which could influence the observed associations. Responses reflect personal perceptions rather than objective measures of neighbourhood quality or mental health, which may limit the precision of the findings (Rosenman et al., 2011). Perceptions of their neighbourhood and mental health may not fully align with objective conditions or clinical assessments. Despite these limitations,

self-report data remain valuable for understanding individuals' lived experiences and subjective well-being, providing insights that objective indicators alone cannot capture.

The observational design limits control over confounders and, therefore, the findings cannot infer causality. The associations identified should be interpreted as correlational rather than directional; thus, we cannot prove that one variable causes another (Oranga & Matere, 2025). From this study, it is unclear whether poorer housing and neighbourhood conditions contribute to lower mental well-being or whether individuals with poorer mental health are more likely to reside in less advantaged areas. Longitudinal research is needed to clarify these pathways over time. Essentially, the findings indicate whether the variables are related and how strongly, but not necessarily why.

The majority of participants in this sample reported higher SES; thus, the generalisability of the findings may not reflect the lived experiences of lower SES older adults. This uneven distribution may have reduced the statistical power to detect differences between socioeconomic groups and could bias the findings toward the experiences of more advantaged older adults.

Despite these limitations, this study has many strengths. The use of validated measures and robust statistical techniques enhances confidence in the study's findings, e.g., the relationships between variables, and the ability to statistically generalise findings to larger populations (Oranga & Matere, 2025). Using a large sample reduces the likelihood that individual reporting biases meaningfully distort overall findings. The survey was anonymous to encourage truthful responses and reduce social desirability bias. Additionally, questions were carefully worded to avoid ambiguity and minimise response bias, ensuring participants interpreted items consistently.

Constructs were measured using multi-item scales, which reduces the impact of random error or misinterpretation of individual questions (Oranga & Matere, 2025). These approaches enhance the overall validity of the self-reported data, although some degree of response bias cannot be entirely eliminated. Another strength of the study was its focus solely on older adults' mental health and perceptions of housing and neighbourhood qualities in relation to individual SES. Most of the current literature fails to look at how housing and neighbourhood qualities interact with SES to produce different mental health outcomes. Seeing how these interact makes it possible to visualise the interconnectedness of these socioeconomic variables and their impact on mental health. There is a growing demand for evidence-based practices in policy-making and program evaluation (Prakash, 2023), which underscores the relevance of quantitative research methods.

Future Research

Future research could replicate these analyses using alternative transformation techniques or non-parametric methods to determine whether the observed associations remain consistent across different analytical approaches. Analyses of the effects, more specifically, for lower SES older adults, are needed to understand the association between SES and mental health more clearly. Future research should investigate whether these findings are causal, necessitating longitudinal studies to clarify these pathways over time. It would be interesting to see how these patterns develop over a person' s lifespan. For example, examining how susceptible younger SES populations are to poor mental health in older age, how and if SES can significantly change, and whether this improves mental health over time.

A more comprehensive understanding of the specific dimensions of housing and neighbourhood quality that are valued by older adults provides a foundation for evidence-based strategies aimed at improving their quality of life. Such insight enables policymakers,

urban planners, and service providers to design targeted interventions that align with older adults' preferences, priorities, and daily needs. This understanding helps ensure that housing and neighbourhood policies are not based on assumptions, but rather reflect diverse experiences of older adults themselves. This contributes to more equitable and person-centred approaches to healthy ageing. Additionally, gender effects should be examined further, as an intersectional approach reveals that females face higher inequities.

Implications

The findings emphasise the importance of wealth inequalities as an essential aspect of well-being. Lower SES populations report poorer housing conditions and less favourable neighbourhood perceptions, which have significant implications for public health and housing policy. An intersectional approach helps value particular housing and neighbourhood qualities that have the potential to improve the mental health of older adults, especially those of lower socioeconomic standing. Hence, an intersectional lens can guide more equitable housing and social support initiatives, creating opportunities, such as easier access to home ownership for low SES populations.

Housing tenure and perceived safety were particularly beneficial to individuals of low SES, highlighting the transformative potential of improving environmental conditions on the mental health of older adults. Findings illustrate that social inequity is not fixed; structural change can narrow the mental-health gap between social classes. The interaction findings between trust, SES, and loneliness suggest that promoting neighbourhood trust in general is not enough; interventions must target the structural barriers that prevent low SES populations from living in trustworthy environments (e.g., discrimination, neighbourhood instability). Improving housing determinants, such as stability in low-income areas, could help ensure trust functions as a *buffer* rather than a divider. Policies aiming to reduce mental health

disparities among older adults must therefore consider how socioeconomic and housing inequalities interact for these populations, rather than addressing each dimension separately.

Conclusion

In conclusion, the ability to enjoy and perceive life with good mental health is significant to healthy ageing. A vital part of flourishing mental health is attributed to the housing and neighbourhood environment in which we live. Mental health issues are prominent among older adults and have significant adverse consequences for the individual and public health systems. The study asked whether housing and socioeconomic variables had an effect on the mental health of older people, and found consistent results from previous research. The study's findings confirmed that experiencing socioeconomic deprivation is associated with poorer mental health outcomes and more negative perceptions of housing and neighbourhood qualities.

The findings highlighted that home ownership, perceived neighbourhood safety, and trust significantly moderated the relationship between SES and mental health. Thus, the current study supported the notion that intersectionality can both perpetuate and alleviate disadvantages and advantages for certain population groups. As people age, they rely more on safe housing and a neighbourhood environment to age in place, which has significant benefits for cognitive functioning. Frustration and loneliness are common obstacles experienced by older adults, but we know from the abundance of literature that the built and social environment has a significant ability to buffer adverse mental health over an individual's life span. Evidently, housing and neighbourhood qualities are crucial social determinants of health; thus, they should be treated as such, reflected in health and social policy. Improving environmental quality for disadvantaged groups results in disproportionately large mental-health benefits, reducing overall mental health disparities between population groups.

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