Loneliness and isolation across the life course

A literature review

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Background

Loneliness and social isolation are associated with a range of negative outcomes for health and wellbeing. There is concern about loneliness and social isolation levels increasing as a result of societal changes and events, such as more people living alone, weaker community ties, more interaction taking place online, and the COVID-19 pandemic. Loneliness is typically characterised as an issue of old age, however young people are often disproportionately impacted by loneliness, including in New Zealand. This report explores understandings and experiences of loneliness and social isolation across the life course to support the interpretation of loneliness data and inform wellbeing promotion planning.

Methods

A rapid review of the literature was conducted to identify current literature on loneliness and social isolation. This search was carried out between September 2022 and January 2023 using Google and Google Scholar search engines. Academic articles and grey literature were included in this review. The overall findings are presented as a narrative synthesis.

Findings

Loneliness and social isolation are closely related concepts: loneliness refers to the subjective experience of feeling alone while social isolation refers to the objective experience of being alone. Clarifying the definitions of these concepts is important for understanding and measuring loneliness. There is a range of direct and indirect loneliness measures, however capturing the experience of feeling lonely is challenging because people have diverse experiences of loneliness. Survey results show that some groups are disproportionately impacted by loneliness, including younger and older adults, disabled people, indigenous people, and people with low incomes. Age differences in loneliness levels are attributed to changes and transitions that occur across the life course, however most loneliness research has focused on later life. Loneliness is also shaped by a range of demographic, social, and economic factors, and a life course perspective is useful for understanding how these factors intersect with age. Addressing loneliness is considered a public health priority and various interventions have been implemented, such as individual and group activities. However, there is limited evidence to support the effectiveness of such interventions.

Conclusions

Differences in the frequency and extent of experiencing loneliness are associated with age differences, as well as other demographic and socioeconomic factors. However, understanding, measuring, and addressing loneliness is complex because of the subjective and multidimensional nature of loneliness. More research is required to understand how loneliness is experienced among young people and diverse social groups and how loneliness can be alleviated. Alleviating loneliness is important because loneliness can have negative impacts on physical, mental, social and economic wellbeing.

Background

Loneliness is understood as a negative emotional experience resulting from a mismatch between desired and actual social connections (Perlman & Peplau, 1981). Loneliness is linked to, but not the same as, social isolation, which is characterised as a lack of social contacts and being physically separated from social connections (Yanguas, Pinazo-Henandis, & Tarazona-Santabalbina, 2018). Both loneliness and social

isolation are associated with a range of negative health outcomes, including high blood pressure, heart disease, a weakened immune system, anxiety, depression, and cognitive decline (Hawkley & Cacioppo, 2010). Therefore, loneliness and social isolation are considered important public health issues and have received attention from policy makers and researchers around the world (Fakoya, McCorry, & Donnelly, 2020). There is concern that loneliness and social isolation are increasing as a result of societal changes, such as more people living alone, increased geographic mobility, smaller household sizes, and more social interaction taking place online (Dykstra, 2009). There is also concern that loneliness and social isolation have been worsened by restrictions put in place during, and the ongoing impacts of, the COVID-19 pandemic (Lonergan-Cullum, Hooker, Levy, & Ricco, 2022).

Although most research on loneliness has generally focused on older adults, young people are often disproportionately impacted by loneliness (Barreto et al., 2021). This is the case in New Zealand and in greater Christchurch where survey results show that young people often have a higher prevalence of loneliness than older age groups (Stats NZ, 2022; Te Whatu Ora Waitaha Canterbury, 2023d). Research shows that there are various groups who experience higher levels of loneliness, including disabled people, Māori people, non-European ethnic groups, migrants, unemployed people, and people with low incomes (Stats NZ, 2022). There are a range of measures used to capture the experience of being lonely, including direct and indirect measures of loneliness (Penning, Liu, & Chou, 2014; What Works Wellbeing, 2019). Various approaches have been used to address loneliness and isolation, such as befriending services, therapies, and community interventions (Victor et al., 2018).

This review

Purpose of this report

This review was a joint request from the Communities and Information teams at Te Mana Ora, National Public Health Service. The purpose of this review is to explore understandings and experiences of loneliness and social isolation across the life course, with a particular focus on young people aged between 18 and 24 years. This review will inform Canterbury Wellbeing Index content for the loneliness and isolation indicator and the ongoing development of the Canterbury Wellbeing Survey questionnaire. In addition, the review will inform Communities team planning on how to support community action and health promotion interventions to reduce the harmful impacts of loneliness.

Approach and report structure

This report is the outcome of a rapid review of literature and is presented as a narrative synthesis of findings. Findings are grouped to address key questions about loneliness and isolation. Firstly, this review provides definitions of loneliness and social isolation, before outlining the potential health and wellbeing impacts associated with loneliness and isolation and discussing contextual factors that can contribute to loneliness levels in populations. Next, the review discusses loneliness measures and presents survey data from New Zealand and other countries. Then the review provides context to trends seen in loneliness data by discussing factors that contribute to loneliness among social groups. Finally, loneliness interventions are discussed.

Methods

Current literature on loneliness and social isolation was identified by conducting electronic journal searches through Google and Google Scholar search engines. Search terms included loneliness, social isolation, life course, young people, and health. This search was carried out between September 2022 and January 2023. Further articles were found by examining the reference lists of key articles, by searching principal researchers' recent publications, and by examining the websites of organisations that research loneliness. Grey literature and unpublished material were also included in this review. Generally, articles were selected for inclusion by scanning the titles and abstracts of articles, and then determining whether the full text contained relevant information.

Limitations of the evidence base

This review has some limitations. The literature search was not exhaustive, so it is unlikely that all relevant research was found. There were only a small number of studies that provided information specific to Māori and Pasifika. In addition, publication bias was not assessed, however any publication bias would have to be substantial to change the conclusions and implications of this rapid review.

Findings

How are loneliness and social isolation defined?

As a social species, humans have a fundamental need to belong. When the need to belong is not met, such as through positive relationships and interactions, people can experience loneliness (Baumeister & Leary, 1995). Loneliness is defined as a distressing feeling experienced when people perceive a difference between their desired and actual social relationships (Hawkley & Cacioppo, 2010; Perlman & Peplau, 1981). This definition contains three key ideas: the experience of being lonely is a negative emotional experience, loneliness is an outcome of deficient social relationships, and loneliness is a subjective phenomenon (Perlman & Peplau, 1981). Loneliness is subjective because people feel lonely when the quantity and/or quality of their social relationships do not meet their expectations. Expectations are shaped by personal, cultural, and situational factors, and are subject to change across the life course (Perlman & Peplau, 1981). Loneliness is a common experience that most people will experience at some stage in their lives (L. Mansfield et al., 2021), however loneliness is also a unique experience for individuals because of the subjective nature of feeling lonely (Heinrich & Gullone, 2006). Therefore, loneliness is a complicated subject and difficult to define for individuals (L. Mansfield et al., 2021; Morrison & Smith, 2017).

The subjective experience of being lonely has been categorised into different types of loneliness. Weiss (1973) categorised loneliness into two main types: emotional loneliness and social loneliness. Emotional loneliness refers to a lack of meaningful relationships, often resulting from the loss of a partner or another close relationship, including through bereavement, relationship breakdown, or other life changes (L. Mansfield et al., 2019). Social loneliness is the feeling of disconnection from a social network, such as friends, family, colleagues, and neighbours (Diehl, Jansen, Ishchanova, & Hilger-Kolb, 2018). A third type of loneliness is existential loneliness, referring to the feeling of separation from others and the outside world (van Tilburg, 2021). This type of loneliness is also associated with feeling a lack of meaning or purpose in life, as well as with fears experienced at the end of life (Ettema, Derksen, & van Leeuwen, 2010). While social and emotional loneliness are considered mostly negative experiences, existential loneliness has been framed more positively. Despite the feelings of emptiness, isolation, and longing related to this type of loneliness, existential loneliness can be an opportunity for self-growth and finding meaning in life (Moustakas, 1961; van Tilburg, 2021). Loneliness is also characterised as having three dimensions: intimate loneliness, relational loneliness, and collective loneliness (S. Cacioppo, Grippo, London, Goossens, & Cacioppo, 2015). Intimate and relational loneliness are similar to Weiss' concepts of emotional and social loneliness, while collective loneliness refers to the lack of connection with a network in which an individual can connect with others at a distance, such as a school, team, or national identity (S. Cacioppo et al., 2015). Delineating different types of loneliness highlights how the human need for connection is made sense of, however these definitions of loneliness types overlap, and it is likely that experiences of these types of loneliness overlap too.

Aloneness, solitude, and social isolation are concepts related to, but not the same as, loneliness. Loneliness is a subjective experience resulting from the self-evaluation of social relationships, whereas social isolation is an objective experience (L. Mansfield et al., 2021). Social isolation refers to the absence of social contact that can be measured by counting the number of people in an individual's social network or the frequency of social contact (Child & Lawton, 2019). People might experience social isolation when they live alone or far away from others, spend long periods of time alone, or have a limited social network (Victor, 2021). In comparison to loneliness, social isolation is often conceptualised simplistically. However, people can feel socially isolated across a range of relational contexts, such as family and friends, education and employment networks, and community engagement, which highlights the complexity of social isolation (R. Mansfield, Henderson, Richards, Ploubidis, & Patalay, 2023). Aloneness is another observable measure, and refers to the amount of time that individuals have no one else around, either voluntarily or involuntarily (Victor, 2021). Although the concepts of social isolation and loneliness are related, research has found that they are only weakly correlated as one may occur without the other (Coyle & Dugan, 2012; Shankar,

McMunn, Banks, & Steptoe, 2011). For example, a person may not feel lonely when they are socially isolated because they want to be alone (Hawkins-Elder, Milfont, Hammond, & Sibley, 2018). People might seek out solitude, which is described as a positive experience of alone time and associated with relaxation, personal growth, and creativity (Long, Seburn, Averill, & More, 2003). On the other hand, a person may feel lonely even when they are well connected with a social network. Therefore, social isolation is an objective reality that is also perceived and evaluated subjectively (Child & Lawton, 2019). Clarifying the differences between these related concepts is important for understanding, measuring, and alleviating loneliness and isolation and addressing the potential health and wellbeing impacts associated with these concepts.

How do loneliness and social isolation impact health and wellbeing?

Loneliness and social isolation can have significant impacts on health and wellbeing, which can be understood from an evolutionary perspective. Across time, humans have relied on each other for their survival, such as for the provision of food, shelter, protection, and care (Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006). Therefore, the feeling of loneliness has evolved to indicate to someone who is isolated from others that their social connections are under threat. Feeling lonely is often a temporary experience because loneliness motivates individuals to seek out social connection (Qualter et al., 2015). For this reason, loneliness has been likened to other aversive signals including hunger, thirst, and pain, which trigger specific responses, such as eating food, drinking water, and avoiding injury (J. T. Cacioppo, Cacioppo, & Boomsma, 2014; Yanguas et al., 2018). However, loneliness can also be a prolonged experience, which has consequences for cognitive, mental, emotional, and physical health, as well as health behaviours (J. T. Cacioppo et al., 2014).

Cognitive and mental health

Although feeling lonely is a unique experience for individuals, experiences of loneliness share some affective, cognitive, and behavioural features (Heinrich & Gullone, 2006). For example, people who feel lonely often experience negative affect, such as emotions linked with feelings of depression, desperation, and self-deprecation (Heinrich & Gullone, 2006). Furthermore, the threat of loneliness can produce cognitive biases meaning individuals expect negative interactions, recall more negative information about interactions, view others as less trustworthy, and experience low self-esteem (Hawkley & Cacioppo, 2010). Behavioural features of loneliness can include being less assertive, more socially withdrawn, and being more passive in coping with feelings of loneliness and stress (Heinrich & Gullone, 2006). These features of loneliness can reinforce feeling lonely. People who feel vulnerable to loneliness may become more vigilant about social threats, which can lead to having negative expectations of themselves and others, and therefore result in more socially avoidant behaviour (Hawkley & Cacioppo, 2010). Through these cognitive and behavioural mechanisms, people can experience a 'self-reinforcing loneliness loop,' which is associated with negative health outcomes (Hawkley & Cacioppo, 2010).

Loneliness has been linked with various mental health issues including depression, anxiety, personality disorders and psychoses, suicidal ideation, reduced executive control, impaired cognitive performance, and cognitive decline over time (Hawkley & Cacioppo, 2010). Many studies have investigated the association between loneliness and depressive symptoms and found that loneliness is a risk factor for depression for adolescents and adults (Alpass & Neville, 2003; Erzen & Çikrikci, 2018; Vanhalst et al., 2012). For instance, a study found that loneliness predicts increases in depressive symptoms, but depression does not predict increases in loneliness (J. T. Cacioppo, Hawkley, & Thisted, 2010). Research has also identified that the relationship between anxiety and depression is mediated by loneliness; anxiety can lead to loneliness and subsequently trigger depressive symptoms (Ebesutani et al., 2015). Additional health impacts of loneliness are cognitive decline and dementia, which generally impact adults in later life. For example, studies have found that loneliness is associated with a more rapid decline in cognitive functioning and a greater risk of Alzheimer's disease (Tilvis et al., 2004; Wilson et al., 2007). In addition, loneliness is associated with

psychological stress, as well as biological stress, and stress-related health behaviours (E. Paul, Bu, & Fancourt, 2021).

Physical health

Feeling lonely is a psychological experience that can have adverse effects on physical health. Spending an extended amount of time being vigilant of social threats can put the body into a state of hyperarousal, which can lead to an increased risk of morbidity and mortality (Hodgson, Watts, Fraser, Roderick, & Dambha-Miller, 2020; Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). Studies have found that a lack of social connection has a similar influence on the risk of early mortality to other well-established risk factors such as low physical activity, obesity, smoking, and alcohol (Holt-Lunstad et al., 2015; Holt-Lunstad, Smith, & Layton, 2010). Loneliness is associated with an increased risk of cardiovascular disease, which includes outcomes such as stroke, coronary heart disease, and high blood pressure (Valtorta, Kanaan, Gilbody, & Hanratty, 2018). A study found a dose-response relationship between cardiovascular health risks in young adulthood and feelings of loneliness at different life stages; the more that participants reported being lonely in childhood, adolescence, and young adulthood, the more likely they were to experience cardiovascular health risks (Caspi, Harrington, Moffitt, Milne, & Poulton, 2006). Other health outcomes associated with loneliness include a weakened immune system, disrupted sleep, hormonal imbalances, and obesity (Hawkley & Cacioppo, 2010).

Various studies have investigated the potential physiological mechanisms that link loneliness with poor health (Hawkley & Cacioppo, 2010; E. Paul et al., 2021). Loneliness can impact health through effects related to stress hormones, referred to as neuroendocrine effects. Loneliness activates the body's central stress response system, the hypothalamic pituitary adrenal (HPA) axis, to prepare the body for a 'fight or flight' response (E. Paul et al., 2021). The HPA axis secretes the stress hormone cortisol, which can lead to poor health when levels of cortisol are persistently elevated (E. Paul et al., 2021). Loneliness can also impact health through immune dysregulation due to increased inflammation (Jaremka et al., 2013). Research has investigated the association between loneliness and inflammatory biomarkers, such as C-reactive protein, which can indicate the presence of inflammation in the body (Hänsel, Hong, Cámara, & Von Kaenel, 2010). However, further research is required to understand the nature of the relationship between loneliness and the immune system (Smith, Gavey, Riddell, Kontari, & Victor, 2020). Metabolic dysregulation is another proposed pathway through which loneliness can impact health. A study found that lonely older adults were more likely to show changes for the worse in metabolic biomarkers, including glycated haemoglobin, which is a glucose measure used for diagnosing diabetes, and body mass index which predicts cardiovascular disease (Shiovitz-Ezra & Parag, 2019).

Health behaviour

Social connection, or a lack thereof, can impact health behaviours in different ways. Feeling lonely can interrupt an individual's ability to self-regulate, which refers to regulating thoughts, feelings and behaviours, and is considered important for following social norms and achieving personal goals (Hawkley & Cacioppo, 2010). Therefore, people who feel lonely may be less likely to avoid harmful health behaviours such as drinking alcohol, smoking tobacco, and physical inactivity (Shankar et al., 2011). Moreover, quality social relationships may promote health. For instance, having social relationships may improve access to health information, provide access and transportation to healthcare, and reinforce healthy behaviours (Singer, 2018; Steptoe, Shankar, Demakakos, & Wardle, 2013). On the other hand, social relationships could also promote unhealthy behaviours, such as peer pressure to consume alcohol among adults (Morris, Larsen, Catterall, Moss, & Dombrowski, 2020). However, a study identified that the health benefits of social relationships for older adults are likely to be greater than any negative impacts (Cornwell & Waite, 2009). Loneliness can also impact healthcare-seeking behaviour. Studies have suggested that lonely people are more likely to make use of the healthcare system, by making visits to emergency departments and primary care, as well as phoning helplines (Heinrich & Gullone, 2006). This 'excess' use of healthcare systems by lonely people to meet their social needs, rather than for other health reasons, has been characterised as illegitimate (Victor, 2021). Furthermore, a study has found that this group may receive poorer quality care than patients who appear to be more socially connected (J. T. Cacioppo, Hawkley, & Berntson, 2003).

In sum, loneliness is associated with a range of physical and psychological consequences for health and wellbeing. Although studies have identified loneliness as a risk factor for morbidity and mortality, it can be difficult to determine the direction of the relationship between health and loneliness (Heinrich & Gullone, 2006; Singer, 2018). Health status can also contribute to loneliness, as people who have health issues may find it more challenging to establish and maintain social connections. The relationship between loneliness and health is shaped by various psychological, biological, and behavioural pathways, and it is likely that these pathways interact with each other (E. Paul et al., 2021), and some studies suggest that some pathways are more influential than others on the association between loneliness and health (Seeman, 2000; Valtorta et al., 2018). Understanding the relationship between loneliness and health is also challenging because of the influence of growing older. While health impacts associated with loneliness are experienced at every stage of the life course, these health outcomes are often associated with later life because outcomes can accumulate over time and result in serious health consequences (Marquez et al., 2022). The thoughts, feelings, and behaviours associated with loneliness may increase health risks for young people, however, the consequences of loneliness may not become apparent until later in life (Hawkley, Burleson, Berntson, & Cacioppo, 2003). In addition, many health outcomes associated with loneliness are also associated with the process of ageing itself, meaning that the physiological effects of both loneliness and ageing can be complex (Palmer, 2019).

While loneliness and social isolation are both associated with detrimental health impacts, studies suggest that loneliness and social isolation have independent impacts on health and should be considered as individual characteristics (Dickens, Richards, Greaves, & Campbell, 2011). An example of the differences between loneliness and social isolation is the pathways through which they impact health. Loneliness has been associated with health through psychosomatic pathways, such as feelings of depression, desperation, or low self-esteem, whereas social isolation has been associated with health through behavioural pathways as a lack of social support may result in poor health outcomes and biological pathways as isolation could cause a stress response (Child & Lawton, 2019). However, the terms loneliness and social isolation are often used interchangeably, and it is possible that there are similarities in the factors that contribute to loneliness and social isolation (Fakoya et al., 2020).

What contextual factors contribute to loneliness and isolation?

Feeling lonely may have historically ensured survival by motivating social connection, however the effects of loneliness contribute to morbidity and mortality in contemporary society (J. T. Cacioppo & Cacioppo, 2014). Modernity has led to changes in the way people lead their lives and interact with each other (Patulny & Bower, 2022), therefore it has been suggested that the motivation to reconnect that loneliness provides is not as functional as it once was (Killeen, 1998). In Western societies, industrialisation, along with changes in political and philosophical systems, has put greater focus on individualism (Alberti, 2019). There has been a move away from living in small communities, civic engagement, and religious affiliation, towards new forms of social structures and relations (Sønderby & Wagoner, 2013). Examples of new forms of social structures and relations include the increased diversity of family groups, reduced intergenerational living, more people living alone, as well as greater mobility in pursuit of economic opportunities, and more flexible and precarious working arrangements (Fakoya et al., 2020; Hawkley, Wroblewski, Kaiser, Luhmann, & Schumm, 2019; Patulny & Bower, 2022). There is also evidence that experiences of loneliness are shaped by the places and spaces where people live, as built environment characteristics can both create and inhibit social opportunities (Hsueh et al., 2022). The breakdown of traditional social support structures and the rise of individualism is associated with a greater risk of loneliness (Lasgaard, Friis, & Shevlin, 2016; Patulny & Bower, 2022). It would seem likely that individualistic cultures that value self-reliance and have weaker social ties would experience higher rates of loneliness, however studies have produced mixed findings about whether the prevalence of loneliness is higher in individualist cultures (Barreto et al., 2021; Heu, van Zomeren, & Hansen, 2019) or collectivist cultures (Dykstra, 2009; Lykes & Kemmelmeier, 2014). For instance, it has been suggested that people who live in collectivist cultures may have greater expectations

of social relations, which could lead to feelings of loneliness when these expectations are not met (Barreto et al., 2021). It is important to understand the ways that different cultures and societies give value and meaning to social relationships, and how this impacts the match between actual and desired social relationships.

In recent decades, there have been reports of an 'epidemic of loneliness' faced by different countries (Khaleeli, 2013). This loneliness epidemic is attributed to structural changes in society, as well as demographic changes, including decreasing birth rates resulting in smaller family networks and the increasing proportion of older adults (Dykstra, 2009; Morrison & Smith, 2017). However, studies have found that the proportion of respondents reporting feeling lonely has remained fairly consistent in recent decades, such as in Australia (Baker, 2012), the UK (Victor, Scambler, Bond, & Bowling, 2000), and the US (Hawkley et al., 2019). Furthermore, a study that investigated social isolation across the life course by comparing five successive British both cohorts found no clear pattern of social isolation increasing or decreasing over time (R. Mansfield et al., 2023). More recently, there have been reports of a 'pandemic of loneliness' resulting from the COVID-19 pandemic (Lonergan-Cullum et al., 2022). This is because measures introduced in response to the pandemic in New Zealand and other countries, such as lockdowns, physical distancing requirements, remote working and education, and travel restrictions, resulted in increased social isolation (Ernst et al., 2022; Sibley et al., 2020). However, there are diverse findings about the initial impact of the pandemic on loneliness in different countries, for example some studies have reported that loneliness levels increased (Ernst et al., 2022; Kovacs, Caplan, Grob, & King, 2021; B. Macdonald & Hülür, 2021), decreased (Bartrés-Faz et al., 2021), or remained relatively stable (Luchetti et al., 2020; Peng & Roth, 2022). Surveys conducted in New Zealand in 2020 found that loneliness increased during the first nationwide level 4 lockdown, however by the end of 2020, proportions of people experiencing loneliness were similar to pre-pandemic levels[1] (Walker, 2021). While there is limited evidence to support the claims of a 'pandemic' of loneliness at the population level, the COVID-19 pandemic and associated restrictions have highlighted factors, such as living alone, being unemployed, or having a mental illness, that make people vulnerable to loneliness (Bell et al., 2022; Patulny & Bower, 2022). Measuring loneliness is important to understand the impacts of societal changes on loneliness at the population level, as well as the 'loneliness gaps' that exist within populations as loneliness is not experienced equally by all.

How is loneliness measured?

Various tools are used to measure loneliness, including single-item measures and multi-item scales[2]. Single-item measures are frequently used in surveys; they are usually scaled-questions, that is offering a scaled range of response option, that ask directly about the experience of being lonely. Rather than asking a direct question about being lonely, loneliness scales ask a series of scaled-questions about social connections and contexts. A score is given to each response and these are added up to calculate a total score. Generally, a higher total score indicates a higher level of loneliness (Campaign to End Loneliness, 2015). Studies have evaluated the psychometric properties of loneliness measures to understand whether they are reliable and valid (Penning et al., 2014). A scale has good reliability if the same results are obtained on repeated assessments. Validity refers to whether a scale accurately measures what it is intended to measure. There are two main loneliness scales that have been widely used in studies - the University of California, Los Angeles (UCLA) Loneliness Scale and the De Jong Gierveld (DJG) Loneliness Scale - which are outlined below along with a selection of single-item measures of loneliness. Issues related to different types of loneliness measures are then discussed.

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[1] A survey was conducted by Victoria University of Wellington during the third week of the national Level 4 lockdown that began in March 2020. This survey found that that 10.6 percent reported feeling lonely all or most of the time in the past four weeks, compared to 3.5 percent in the 2018 General Social Survey. The Household Labour Force Survey was also conducted quarterly in 2020 and was updated to include a question about loneliness. The results from this survey show that there were small increases in the prevalence of self-reported loneliness relative to the prevalence in the 2018 General Social Survey.It is important to note that caution should be taken when comparing findings from different surveys and that attention should be paid to methodologies used.
[2] In this context, an item refers to a question. A single-item measure asks one question, whereas a multi-item scale asks a series of questions.

Single-item measures of loneliness

Single-item measures are direct measures of loneliness. Asking directly about loneliness allows respondents to subjectively interpret what being lonely means to them. Single-item measures are valued in research because these questions are straightforward and time-efficient to administer (Luanaigh & Lawlor, 2008). There are several surveys that collect information on loneliness using scaled single-item questions in New Zealand including the General Social Survey, Quality of Life Survey, and the Canterbury Wellbeing Survey. These survey questions, as well as international examples, are presented in Table 1. Some single-item questions reference a timeframe, such as one week or one month. While single-item measures can reliably measure the prevalence of loneliness (Child & Lawton, 2019), it has also been argued that single-item measures have limited psychometric properties, such as reliability and validity, and lack a robust theoretical foundation (Victor, 2021).

Table 1: Examples of single-item measures of loneliness

	Source	Question	Response categories	Time frame
New Zealand	Canterbury Wellbeing Survey Quality of Life Project	Over the past 12 months how often, if ever, have you felt lonely or isolated?	Always Most of the time Sometimes Rarely Never	12 months
	General Social Survey	In the last four weeks, how much of the time have you felt lonely?	None of the time A little of the time Some of the time Most/all of the time	4 weeks
International	Office of National Statistics (UK)	How often do you feel lonely?	Often/Always Some of the time Occasionally Hardly ever Never	n/a
	Single-item from Center for Epidemiologic Studies Depression Scale (US)	How often have you felt lonely in the past week?	Rarely or none of the time (less than one day) Some or a little of the time (1-2 days) Occasionally or a moderate amount of time (3-4 days) All of the time (5-7 days)	1 week
	Living in the Community Questionnaire - Summary (Australia)	In the last four weeks did you feel lonely?	Yes No	4 weeks

Loneliness scales

University of California, Los Angeles (UCLA) Loneliness Scale

The UCLA Loneliness Scale was first developed in the 1970s in the US (Russell, Peplau, & Ferguson, 1978). This scale is based on the theory that loneliness is experienced when there is a discrepancy between the social relationships that people expect and actually have, referred to as cognitive discrepancy theory (Penning et al., 2014). The scale has twenty statements about feeling disconnected from others. On a four-point Likert scale, participants indicate how often each statement describes how they feel (never, rarely, sometimes, or often). The scale has been revised multiple times since it was first published. In the 1990s, the scale was revised, and this version is referred to as the R-UCLA. The wording in the scale was simplified, statements were rephrased as questions to help with using the scale over the phone, and both positively and negatively framed statements were included in the revised scale (Russell, 1996). These changes were

made because the statements were worded in a negative direction meaning the scale could produce biased responses (Russell, 1996). In addition, the original scale had a lack of discriminant validity[3] because results were not substantially different from measures of depression and self-esteem (Shaver & Brennan, 1991). Furthermore, the scale was initially developed for use with college students therefore it may have been less suitable for use with other groups, such as older adults, because of the high reading level required (Penning et al., 2014). A study investigated the psychometric properties of the revised scale found good reliability and validity among different population groups, including young and older adults (Russell, 1996).

Table 2: The original UCLA Loneliness Scale

Statement	Often	Sometimes	Rarely	Never
I am unhappy doing so many things alone	3	2	1	0
I have nobody to talk to	3	2	1	0
I cannot tolerate being so alone	3	2	1	0
I lack companionship	3	2	1	0
I feel as if nobody really understands me	3	2	1	0
I find myself waiting for people to call or write	3	2	1	0
There is no one I can turn to	3	2	1	0
I am no longer close to anyone	3	2	1	0
My interests and ideas are not shared by those around me	3	2	1	0
I feel left out	3	2	1	0
I feel completely alone	3	2	1	0
I am unable to reach out and communicate with those around me	3	2	1	0
My social relationships are superficial	3	2	1	0
I feel starved for company	3	2	1	0
No one really knows me well	3	2	1	0
I feel isolated from others	3	2	1	0
I am unhappy being so withdrawn	3	2	1	0
It is difficult for me to make friends	3	2	1	0
I feel shut out and excluded by others	3	2	1	0
People are around me but not with me	3	2	1	0

The scores for each question are added together to give a possible range of scores from 0 to 60.

A shorter version of the UCLA Loneliness Scale (UCLA-3) was created in 2004, which includes only three questions. Condensing the scale made delivering the scale over the phone or including the scale in a larger survey more straightforward (Hughes, Waite, Hawkley, & Cacioppo, 2004). The three questions are negatively framed and capture feelings about relational connectedness, social connectedness, and perceived isolation (Campaign to End Loneliness, 2015) (Table 3). The UCLA-3 also has a simplified set of

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[3] Discriminant validity means that the scale produces results that do not correlate with results of tools designed to measure different psychological constructs. A construct is an idea or theory made up of various simpler ideas.

responses; participants indicate the frequency with which they feel lonely by selecting a response on a three-point Likert scale (hardly ever, some of the time, or often). Reducing the number of response categories made the scale easier to administer, and was helpful for participants to remember response options when answering questions (Hughes et al., 2004). A study found the UCLA-3 to have good reliability and both discriminant and convergent validity[4] (Hughes et al., 2004).

Table 3: UCLA 3-item Loneliness Scale

Questions	Hardly ever	Some of the time	Often
How often do you feel that you lack companionship?	1	2	3
How often do you feel left out?	1	2	3
How often do you feel isolated from others?	1	2	3

The scores for each question are added together to give a possible range of scores from 3 to 9. Generally, researchers have grouped people who score 3 to 5 as 'not lonely' and people with the score 6 – 9 as 'lonely.'

De Jong Gierveld (DJG) Loneliness Scale

The other commonly used loneliness scale is the De Jong Gierveld Loneliness Scale, which was developed in the 1980s in the Netherlands (de Jong Gierveld & Tilburg, 2006). This scale has been widely used, but particularly with older adults and in Europe (Penning et al., 2014; Yanguas et al., 2018). The DJG scale is based on Weiss' (1973) distinction between social and emotional loneliness and consists of eleven statements: five statements about social loneliness and six statements about emotional loneliness. Participants select a response on a three-point Likert scale to indicate the extent that each statement describes their experience (yes, more or less, or no). Asking questions about both social and emotional loneliness can provide insight into different sources of loneliness, for example, respondents may feel lonely because of the lack of a social network or an intimate partner (Campaign to End Loneliness, 2015). The full scale can be used to measure overall loneliness, or the scale can be divided into two subscales to measure either social or emotional loneliness (de Jong Gierveld & Tilburg, 2006). The DJG scale has been found to have good reliability and validity (Penning et al., 2014).

Similar to the UCLA scale, the 11-item DJG scale was considered challenging to use as part of a larger survey, so a shorter version of the scale was developed in 2006 (de Jong Gierveld & Tilburg, 2006). The 6-item scale includes three negatively-worded questions about emotional loneliness and three positively-worded questions about social loneliness (Table 4). Including positive and negative statements in the scale is useful for limiting 'automatic answers,' which could occur when participants fall into a pattern of responding rather than thinking about and responding to each question individually (Campaign to End Loneliness, 2015). The 6-item scale, as well as the 3-item subscales, have been found to be reliable and valid, as well as being appropriate for use with adults from a broad range of ages (de Jong Gierveld & Tilburg, 2006).

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[4] Convergent validity is the degree to which two measures of constructs that theoretically should be related are related.

Table 4: De Jong Gierveld 6-item Loneliness Scale

Type of loneliness	Statement	Yes	More or less	No
Emotional loneliness	I experience a general sense of emptiness	1	1	0
	I miss having people around me	1	1	0
	I often feel rejected	1	1	0
Social loneliness	There are plenty of people I can rely on when I have problems	0	1	1
	There are many people I can trust completely	0	1	1
	There are enough people I feel close to	0	1	1

The negative and positive statements are scored differently. The neutral and positive answers are scored as 1 on the negatively worded questions (related to emotional loneliness). On the positively worded items (related to social loneliness), the neutral and negative answers are scored as 1. An answer of 'more or less' is given the same score as 'yes' or 'no,' depending on the positive or negative wording of the question. This produces a total loneliness score ranging from 0 to 6, however the scale also provides emotional loneliness and loneliness scores both ranging from 0 to 3.

There are various other scales used to measure loneliness, including the Differential Loneliness Scale (Schmidt & Sermat, 1983), the Loneliness Rating Scale (Scalise, Ginter, & Gerstein, 1984), the Social and Emotional Loneliness Scale for Adults (DiTommaso & Spinner, 1993), Russell Emotional and Social Loneliness Scale (Russell, Cutrona, Rose, & Yurko, 1984), and the Campaign to End Loneliness Measurement Tool (Campaign to End Loneliness, 2015). There are also tools used for measuring loneliness among children and adolescents, including the Children's Loneliness and Social Dissatisfaction Scale (Asher & Wheeler, 1985) and the Loneliness and Aloneness Scale for Children and Adolescents (Marcoen, Goossens, Caes, & Adolescence, 1987). Furthermore, there are numerous scales used for measuring social isolation and social support, such as the Lubben Social Network Scale (Lubben, 1988), the Social Support Questionnaire (Sarason, Levine, Basham, & Sarason, 1983), the Duke Social Support Index (Koenig et al., 1993), the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988), and the Convoy Model (Kahn & Antonucci, 1980).

Discussion of loneliness measures

What is measured by loneliness scales?

Measuring loneliness is challenging because of the subjective and multidimensional nature of loneliness. While loneliness scales aim to account for this complexity, capturing the range and diversity of people's experiences of feeling lonely is difficult (L. Mansfield et al., 2021). Some researchers are critical of using loneliness scales to determine levels of loneliness because they presume what it means to be lonely (Shaver & Brennan, 1991). Loneliness scales are often based on theories about loneliness, for example, the DJG scale was developed from a cognitive viewpoint that defines loneliness as 'the manner in which the person perceives, experiences, and evaluates his or her isolation and lack of communication with other people' (de Jong Gierveld, 1987, p. 120). In comparison, the UCLA scale perceives loneliness as an affective state, or an emotional response, to 'a discrepancy between desired and achieved levels of social contact' (Robinson, Shaver, & Wrightsman, 1991, p. 250). However, often authors of loneliness scales do not provide reasons for their choice of theories (Shaver & Brennan, 1991). Furthermore, the focus of scales is often to generate a numerical score and therefore they do not allow space for respondents to define what being lonely means to them (Victor et al., 2000).

There is also debate over the dimensionality of loneliness scales. Dimensionality refers to the dimensions, or constructs, of loneliness measured in loneliness scales. The UCLA scale is based on cognitive discrepancy theory, which conceptualises loneliness as a 'unidimensional' emotional response (Robinson et al., 1991). However, it is proposed that the UCLA scale is multidimensional as the scale measures more than one construct of loneliness. For instance, a factor analysis study[5] of the R-UCLA that found the scale measured

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[5] Factor analysis is a technique used to reduce a large number of variables into fewer numbers or factors.

three dimensions of loneliness, specifically 'intimate others,' 'social others,' and 'affiliative environment' (McWhirter, 1990). It is possible that the positively and negatively worded statements included in the R-UCLA could measure two different constructs – positive and negative affective states (Penning et al., 2014). The DJG scale recognises the multidimensional nature of loneliness and measures both emotional and social loneliness. While this scale conceptualises loneliness as multidimensional, the authors of this scale claim that the scale can be used as unidimensional measure of loneliness or as bidimensional measure of emotional and social loneliness (Penning et al., 2014). However, it is unclear whether the bidimensionality of the DJG scale is due to the direction of the positively worded questions about social loneliness and negatively worded questions about emotional loneliness (Penning et al., 2014). Therefore, the item wording in both the R-UCLA and DJG scales could result in systematic response bias, and possibly social desirability bias if the item wording prompts respondents to give answers that they think will be favoured by others. These biases could shape the constructs that are measured by these loneliness scales. It is important for researchers to be aware of the dimensionality and potential method effects of item wording in loneliness scales.

Direct versus indirect measures of loneliness

There are various arguments for and against using direct and indirect measures of loneliness. The use of the word 'lonely' is contentious because of the stigma attached to loneliness, therefore asking directly about loneliness could introduce social desirability bias and loneliness could go underreported (Child & Lawton, 2019; What Works Wellbeing, 2019). For example, research has identified that women more often report being lonely than men when asked directly about loneliness, however these sex-based differences are less apparent when an indirect scale is used to measure loneliness (Borys & Perlman, 1985). On the other hand, it has been contended that avoiding direct questions about loneliness due to concern about response bias misunderstands the subjective nature of loneliness, as it is up to individuals to determine whether they consider themselves lonely or not (Victor, 2021). As discussed, asking directly about loneliness allows respondents to interpret what being lonely means to them, however this may also pose challenges because it is likely that loneliness will be understood differently by different groups and across time (Luanaigh & Lawlor, 2008). Moreover, concerns about the potential stigma of direct questions may not be relevant as surveys are frequently administered online which potentially removes the social desirability effect of telephone and face-to-face interviews (Kreuter, Presser, & Tourangeau, 2008).

While direct measures are appropriate for assessing the prevalence of loneliness, indirect measures can potentially provide more insight into the experience of feeling lonely by asking various evaluative statements about social connections and contexts (Hawkley & Capitanio, 2015; Luanaigh & Lawlor, 2008). However, there is potentially a gap between what indirect loneliness scales intend to measure and the information that they collect (Child & Lawton, 2019). For instance, the UCLA scale asks about feelings of social isolation therefore respondents may be unaware that they are responding to questions considered to be about their loneliness (Child & Lawton, 2019). A study that compared a direct measure of loneliness (single-item from Center for Epidemiologic Studies Depression Scale, see Table 1) and an indirect loneliness scale (R-UCLA) found that a significant proportion of participants who reported being lonely on the direct item were classified as not lonely on the indirect scale (Shiovitz-Ezra & Ayalon, 2012). Furthermore, it has been suggested that some items included in loneliness scales could also be interpreted as stigmatising or distressing, such as the statements 'I often feel rejected' and 'I experience a general sense of emptiness' from the DJG scale (Victor, 2021).

Evidently, there are various reasons for and against using direct and indirect measures of loneliness. In the UK, the Office of National Statistics (ONS) have identified a national measure of loneliness that includes both direct and indirect measures of loneliness, specifically a direct question about loneliness alongside the UCLA-3 scale (Tables 1 and 3). Using both a direct and indirect measure is an opportunity to explore different aspects of loneliness. The ONS recommends that the language should be simplified when using the recommended measure with children (What Works Wellbeing, 2019). This measure is considered the 'gold standard' and can be used in projects and by organisations to evaluate the effectiveness of interventions and to make comparisons to national data (What Works Wellbeing, 2019). It is suggested that

if questionnaires only have space for one question, that organisations should opt to use the direct question about loneliness only.

Frequency, duration, and intensity of loneliness

Some direct loneliness measures ask how often respondents have felt lonely in a specific timeframe to understand how frequently they experience loneliness (as detailed in Table 1). However, including a timeframe in a question about loneliness could produce skewed results if the participant has had a distressing week or month, for example (Campaign to End Loneliness, 2015; Pikhartova, Bowling, & Victor, 2014). Furthermore, asking people about how often they have felt lonely may obscure or underestimate the impact of intense but infrequent experiences of loneliness. The two commonly used loneliness scales, the UCLA and DJG scales, do not refer to a timeframe. Therefore, it is unclear whether these scales measure state loneliness, which refers to occasional feelings of loneliness, or trait loneliness, referring to enduring feelings of loneliness (Luanaigh & Lawlor, 2008). A study has suggested that the UCLA scale measures trait loneliness because of correlation between test-retest results[6] that were collected at two and seven months after the original results (Shaver & Brennan, 1991).

It is important to understand the duration and intensity of loneliness, as well as its frequency, because the interaction of these elements is likely to produce quite varied experiences of loneliness (Victor, 2021). The DJG scale asks respondents about the intensity of their experience of social and emotional loneliness, however this scale does not investigate the frequency or duration of loneliness. Longitudinal research can provide information about how often people transition in and out of loneliness and how long their loneliness lasts (Morrison & Smith, 2017). For instance, an Australian study found that episodes of loneliness generally last for less than a year and 13 percent of participants had repeat episodes of loneliness (Baker, 2012). These different elements have implications for the type of results collected, health and wellbeing outcomes, and the interventions that are appropriate. More research is required to understand how the frequency, intensity, and duration of loneliness interact for different groups and across the life course (Victor, 2021).

Measuring loneliness among different population groups

Commonly used loneliness measures may not capture aspects of loneliness specific to different socio-cultural groups' experiences (Heu et al., 2021). It is unclear whether loneliness scales measure the same concept across the life course and for different age groups (Penning et al., 2014). Age differences in loneliness, as discussed below, could be caused by different sources of loneliness throughout the life course (Perlman & Peplau, 1981) or due to the ways that different age groups understand and respond to loneliness questionnaires. However, there is a lack of literature that investigates whether different groups report the same scores on questionnaire items when they have the same level of loneliness (Panayiotou, Badcock, Lim, Banissy, & Qualter, 2022). In contrast to using loneliness measures that fit all age groups, researchers have highlighted the need for age groups to create their own definitions of loneliness as they have knowledge about their own social realities (Morgan et al., 2020).

Similarly, it is also important to understand how different cultural groups understand and define loneliness. Research among older adults in New Zealand identified that Māori, Pakeha, Pacific, and Asian people have culturally nuanced understandings of loneliness and social isolation (Morgan et al., 2020). In Te Ao Māori, for example, loneliness could be understood as a lack of whanaungatanga, which refers to connections with family, shared experiences, and working together, which provides people with a sense of belonging (Walker, 2020). Furthermore, an unpublished study found that loneliness scales based on Western concepts do not adequately measure features of loneliness that are culturally specific to Māori and Pacific people (Waldegrave, Tamasese, & Cunningham, 2021). Consequently, a research team and a group of older Māori and Pacific people co-designed questions to measure cultural aspects of loneliness, such as the changing roles of older people in contemporary life, their extended family responsibilities, spirituality, and the impact of contemporary living on their cultures. While some participants did not measure particularly high on the DJG scale, they did register as lonely when responding to culturally specific questions

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[6] Test-retest results are results of a study that has been conducted more than once in a specific time period. The scores from each test are correlated to evaluate the reliability of the test over time.

(Waldegrave et al., 2021). The failure to capture experiences of loneliness for non-Western cultures highlights the potential to misunderstand or mask the problem of loneliness. Loneliness measures should recognise issues of transition and change across the life course and examine how experiences are influenced by specific sociocultural and personal influences (L. Mansfield et al., 2021).

What are the trends in loneliness data?

There are a number of surveys that measure loneliness in New Zealand and internationally. Trends from three surveys in New Zealand and other surveys in Australia and the UK are described below. Results from these surveys highlight how loneliness prevalence has changed in recent years and how demographic groups are unevenly impacted by loneliness. It is important to note that comparing results from different surveys and countries is challenging because different methods have been used (Hawkley, Buecker, Kaiser, & Luhmann, 2022). For instance, surveys may use direct or indirect loneliness measures or enquire about loneliness over a specific timeframe. Similarly, as mentioned above, in-person surveying may be associated with greater social desirability bias, affecting responses to loneliness questions or scales.

New Zealand

The General Social Survey collects information about the wellbeing of people in New Zealand aged 15 years and over (Stats NZ, 2022). The survey includes various social and economic topics, including loneliness and social contact. This survey asks participants how much of the time they felt lonely in the past four weeks (Table 1). This survey is usually conducted face-to-face and every two years, however the survey that was due to be conducted in 2020 was delayed until 2021 because of COVID-19 (Stats NZ, 2023). The survey results show that the proportion of respondents who reported that they had not felt lonely in the past four weeks decreased from 68.3 percent to 56.6 percent between 2010 and 2021, whereas the proportion of respondents who reported feeling lonely all or most of the time increased from 3.7 percent to 6.5 percent over this period (Statistics New Zealand, 2013; Stats NZ, 2022). Information about the statistical significance of findings is not provided in the General Social Survey dataset, however the large sample size of the General Social Survey means that estimates should be reasonably precise. Recent loneliness trends from the General Social Survey are highlighted below (Stats NZ, 2022):

- Young people were more likely to report feeling lonely all or most of the time. The proportion of those aged 15 to 24 years and 25 to 34 years reporting high levels of loneliness increased from 5.8 and 4 percent in 2018 to 6.5 and 5.1 percent in 2021, respectively. Approximately 2 percent of each of the age groups aged 35 years and above reported feeling lonely all or most of the time in 2021 and saw a decrease since 2018, except for the 65 to 74 years age group. The proportion of respondents in the 65 to 74 years age group reporting feeling lonely increased from 2.3 to 3.7 percent between 2018 and 2021.

- The proportion of women who reported feeling lonely all or most of the time was higher than men, with 4.3 percent of women and 2.7 percent of men reporting feeling lonely in 2021. The proportion had increased slightly for women and decreased slightly for men since 2018.

- Respondents who had a personal income of less than $30,000 were more likely to report feeling lonely all or most of the time than respondents with personal income between $30,000 and $70,000 or over $70,000 (4.5%, 3.8%, and 1.6% in 2021, respectively).

- Family structure is also associated with varying loneliness levels. Respondents who were part of a family of one parent and child(ren) had a higher proportion reporting feeling lonely all or most of the time than couples with or without child(ren) (6.3% compared with 2.8% and 1.9% in 2021 respectively).

- The results show that disabled people were more likely to experience loneliness. For the population aged between 15 and 64 years, 3 percent of the non-disabled population reported feeling lonely all or most of the time which is considerably lower than the 12.4 percent of disabled population who reported feeling lonely in 2021[7].

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[7] The General Social Survey uses the Washington Group Short Set of questions to determine disability status.

- Māori were the ethnic group most likely to report feeling lonely all or most of the time in the past four weeks, with 6.4 percent reporting loneliness in 2021. In comparison, 3 percent of European and 4.2 percent of Asian respondents reported feeling lonely all or most of the time. The rate of self-reported loneliness for Pacific peoples increased from 2.3 to 3.5 percent between 2018 and 2021.
- Recent migrants to New Zealand reported higher rates of loneliness compared to long-term migrants and people born in New Zealand. In 2021, 6 percent of recent migrants reported feeling lonely all or most of the time, compared to 3.5 percent in 2018.
- Employment status is an important determinant in self-reported loneliness. In 2021, 8.5 percent of unemployed people reported feeling lonely all or most of the time, compared to 3.1 percent of employed people.

The Quality of Life Project is a survey administered every two years in a number of large urban areas in New Zealand. The territorial authorities currently involved in the Quality of Life Project are Auckland Council, Hamilton, Tauranga, Wellington, Porirua, Hutt, Christchurch and Dunedin City Councils and Wellington Regional Council. The survey covers a range of measures that impact quality of life, including loneliness and isolation. The data collected in the survey are combined, as well as being reported by each territorial authority. This survey asks respondents how often, if ever, they have felt lonely or isolated in the past year (Table 1). The survey results show that self-reported loneliness in New Zealand urban centres has increased, with 6 percent and 11 percent reporting that they feel lonely or isolated all or most of the time in 2018 and 2022, respectively (NielsenIQ, 2022). Over the same period, the proportion of people in New Zealand urban centres reporting that they never or rarely feel lonely or isolated has decreased from 65 to 50 percent (NielsenIQ, 2022). Key trends in the loneliness data from the Quality of Life Project are outlined below. It is not possible to determine whether differences between cities and over time are statistically significant, however, large sample sizes mean that estimates should be reasonably precise.

- In Christchurch, the proportion of respondents reporting feeling lonely or isolated most of the time or always increased from 7 percent in 2018 to 10 percent in 2022.
- Other urban centres have seen trends similar to Christchurch in the proportion of respondents reporting loneliness and isolation in recent years.
- In 2022, Auckland and Hamilton had the highest rates of self-reported loneliness with 12 and 13 percent respectively, whereas Tauranga and Greater Wellington had the lowest rates with 8 and 9 percent respectively.

The Canterbury Wellbeing Survey collects information about various aspects of wellbeing in greater Christchurch. This survey asks respondents how often, if ever, they have felt lonely or isolated in the past year (Table 1). The Canterbury Wellbeing Index presents Canterbury Wellbeing Survey data in the form of a set of online indicators. The 'Loneliness and isolation' indicator presents the proportion of those aged 18 years and over who felt lonely or isolated always or most of the time (Te Whatu Ora Waitaha Canterbury, 2023d). The results show that the percentage of those who have reported feeling lonely or isolated always or most of the time in greater Christchurch has increased from 6.2 to 8.1 percent between 2017 and 2020 (Te Whatu Ora Waitaha Canterbury, 2023d). There are key differences in experiencing loneliness by income, age, and disability status:

- The survey results show a clear pattern of young people experiencing higher levels of loneliness and isolation than older age groups. Between 2017 and 2020, respondents aged between 18 and 24 years reported statistically significantly higher levels of loneliness than all other age groups. The difference between the 18 to 24 years age group and the older age groups increased further between 2019 and 2020, with 22.4 percent of the youngest age group reporting experiencing loneliness and isolation in 2020. This compares to 11.5 percent for the 25 to 34 years age group, followed by 4 percent for the 65 to 74 years age group, and 1.5 percent for the 75 years and over age group.

- There is also a pattern of higher levels of self-reported loneliness or isolation for those in the lowest income groups. Respondents who earn less than $30,000 had statistically significantly higher self-reported levels of loneliness than those who earn over $100,000 (13.9% compared with 3.5% in 2020).
- The survey results show that people under the age of 65 years with a disability or long-term health condition experience statistically significantly higher levels of loneliness and isolation, compared to people over 65 years with a disability or long-term health condition and people who do not have a disability or long-term health condition (21.8%, 5.5% and 5.9% respectively in 2020).

Australia

In Australia, there are various surveys that collect information about loneliness, such as the Household Income and Labour Dynamics in Australia Survey and the National Study of Mental Health and Wellbeing. In recent years, surveys have investigated the impact of COVID-19 on loneliness, including the COVID-19 Impact Monitoring Survey Program and the Household Impacts of COVID-19 Survey.

- In 2018, a series of surveys were conducted, and the Australian Loneliness Report was produced by the Australian Psychological Society. The survey used the UCLA Loneliness Scale (Version 3) 20-item measure and found that one in four respondents reported high levels of loneliness. The study also used the Center for Epidemiologic Studies Depression Scale single-item measure of loneliness (Table 1). Notably, the over 65 age group were the age group who reported the lowest levels of loneliness, and respondents who were married were the least lonely compared to respondents who were single, separated or divorced (Australian Psychological Society, 2018).
- The National Study of Mental Health and Wellbeing collects information about key mental health issues and use of services. The 2020/21 survey included a question about loneliness from the Living in the Community Questionnaire - Summary (Table 1) and found that 15.5 percent of respondents aged 16 to 85 reported feeling lonely in the past four weeks (Australian Bureau of Statistics, 2022).
- The COVID-19 Impact Monitoring Survey Program conducted surveys at multiple stages between 2020 and 2022 and asked how often respondents experienced loneliness in the past week. The highest loneliness levels were reported in April 2020 with 45.8 percent of respondents reporting that they felt lonely at least some of the time in the past week (Biddle, Edwards, Gray, & Sollis, 2020). Loneliness levels have since fluctuated concurrent with waves of COVID infections and restrictions. This survey also found that younger people, Aboriginal and Torres Strait Islanders, and people with lower levels of household income were more likely to report higher levels of loneliness (Biddle & Gray, 2022).

United Kingdom

There are also multiple surveys in the UK that measure loneliness. For example, the Community Life Survey and the Opinions Lifestyle Survey measure loneliness using the direct and indirect measures of loneliness recommended by ONS as described above (Table 1 and 3).

- The 2021/22 Community Life Survey found that 6 percent of respondents reported that they often or always feel lonely, which was the same proportion as the previous surveys conducted in 2019/20 and 2020/21. The survey also found that 10 percent of people aged 16 to 24 years and 9 percent of people aged 25 to 34 years reported feeling lonely. These proportions are higher than for the older age groups which ranged from 3 to 6 percent. (GOV.UK, 2023).
- The Opinions and Lifestyle Survey was conducted in April and May in 2020 during the COVID-19 pandemic. The survey results show that the proportion of people reporting feeling lonely often or always (5%) was similar to pre-lockdown levels. The survey also found that working age adults living alone, with bad or very bad health, or who were single, divorced, or separated were more likely to report feeling lonely often or always (Office for National Statistics, 2020).
- From October 2020 to February 2021, results from Opinions and Lifestyle Survey show that proportion of people reporting loneliness increased to 7.2 percent from 5 percent who reported feeling lonely between 3 April and 3 May 2020. Results also show that areas with a higher concentration of young people aged 16 to 24 years and areas with higher rates of unemployment

tended to have higher levels of loneliness. Furthermore, the survey identified that young people, unmarried people, and those living alone were more likely to experience 'lockdown loneliness' (Office for National Statistics, 2021).

What are the drivers of loneliness for different social groups?

There are various factors that protect people from and make people vulnerable to loneliness. This section explores how loneliness is experienced across the life course as well as different demographic, economic, and social drivers of loneliness. This section aims to provide context to the trends outlined above and does not cover all factors that are associated with loneliness.

Loneliness across the life course

People experience loneliness at every stage of the life course (Victor & Yang, 2012). Various studies have found a U-shaped distribution of loneliness across age groups, with higher rates of loneliness reported by young adults and older adults compared to middle age groups, such as in the UK and a range of European countries (Pinquart & Sörensen, 2001; Victor & Yang, 2012; K. Yang & Victor, 2011). In contrast, studies have also identified peaks in loneliness in middle age groups (Hawkley et al., 2022; Luhmann & Hawkley, 2016). As an example, the 2021 General Social Survey in New Zealand shows that the proportion reporting feeling lonely all or most of the time fluctuates over the life course; loneliness levels peak among 15 to 24 years olds then trend downwards before slightly increasing for the 65 to 74 years age group and then decreasing again for the 75+ year age group. Feeling lonely is often associated with transitions and changes that occur at different stages of life and when people re-evaluate their sense of belonging. For instance, changes in work, education, living arrangements, family structures, romantic relationships, and health status can lead to feelings of loneliness (What Works Wellbeing, 2019). Furthermore, people may feel lonely when their social relationships do not align with age-related social norms (Hawkley et al., 2022). How loneliness is experienced by different age groups is discussed here, as well as how loneliness can be investigated through a life course approach.

Loneliness is stereotypically represented as a social problem of old age (Victor, 2021). Retirement and the loss of social roles, the death of partners or peers, and declining health and mobility are major life changes that can increase social isolation and most frequently occur in old age (Hawkley et al., 2022; Pinquart & Sörensen, 2001). A meta-analysis identified risk factors for experiencing loneliness in later life, including less social contact, lower quality of social relationships, and moving into residential care (Pinquart & Sörensen, 2001). However, the various risk factors associated with loneliness do not necessarily translate into feelings of loneliness for older adults (Pinquart & Sörensen, 2001). For instance, a study in the UK that examined loneliness among adults found that while poor physical health was associated with loneliness for young and middle age groups, poor physical health was not associated with loneliness for older age groups (Victor & Yang, 2012). This could be because poor physical health is not unexpected for older adults, so older adults may cope better than younger age groups who do not expect poor physical health (Victor & Yang, 2012). Studies also suggest that expectations of social relationships change over the life course (Perlman & Peplau, 1981) and that emotional closeness in relationships is increasingly valued with age (Hughes et al., 2004). Younger seniors may experience loneliness more sharply as they adjust to their changing roles in society, whereas older seniors may have lower expectations of social relationships that can be met more easily (Peplau, Bikson, Rook, & Goodchilds, 1982). On the other hand, some risk factors associated with loneliness might become more salient with increasing age (Pinquart & Sörensen, 2001). For example, a study of older adults in the US found that loneliness levels decreased between the ages of 50 and 75 years and then increased after the age of 75 years; this increase in loneliness levels was associated with poor health, having fewer close relationships, and living alone (Hawkley et al., 2019). Older adults may experience loneliness due to health and social factors that reduce the quantity of their

relationships and mean they have less choice in selecting quality relationships that meet their emotional needs (Pinquart & Sörensen, 2001).

Compared to older adults, loneliness among young people has received less attention in research (Yun, Fardghassemi, & Joffe, 2023). However, survey results in New Zealand highlight how loneliness levels among adolescents and young adults exceed those for other age groups (Stats NZ, 2022; Te Whatu Ora Waitaha Canterbury, 2023d). There are various transitions associated with adolescence and young adulthood that can disrupt social networks and make young people vulnerable to loneliness, such as moving away from home, job seeking, starting a new job, as well as starting at, changing, or leaving an education setting (What Works Wellbeing, 2019). Adolescence is also a period of physical and psychological change as young people enter puberty and explore their own identity (Qualter et al., 2015). This stage of life is described as being 'fraught with tension' as young people navigate being accepted by their peer group and having close friendships, as well as growing individually and developing independence from family and friends (Barreto et al., 2021). Adolescents may experience existential loneliness as they transition between childhood and adulthood and experience a sense of not belonging (Garnow, Garmy, Edberg, & Einberg, 2022). Study results highlight how young people also experience other types of loneliness. For instance, a study in the UK found that quantity of social contact was protective against loneliness for under 30-year-olds, whereas having a confidante and perceived level of social engagement was protective for middle and older age groups, which possibly reflects young adults' experiences of social loneliness (Victor & Yang, 2012). However, emotional loneliness may also be important for young people as studies indicate that the importance of friendship quality increases through late childhood and adolescence, and romantic relationships are increasingly valued through adolescence and young adulthood (Qualter et al., 2015). Findings from another UK study show that young people aged 16 to 24 years were more likely to report being lonely if they had lower levels of perceived neighbourhood quality and less sense of belonging to their communities (Marquez et al., 2022), which could convey young peoples' experiences of collective loneliness. Thus, it is important to understand how deficits in different relationships and different types of loneliness are experienced across the life course (Nicolaisen & Thorsen, 2017).

Generally, the data show that adults in middle age groups experience lower rates of loneliness compared to younger and older adults. Middle aged adults tend to have more stable social relationships, such as through their spouse or romantic partners, work colleagues, and networks of friends (Pinquart & Sörensen, 2001). It is proposed that this age group have learned to adjust their social needs to suit the opportunities available in their social contexts (Pinquart & Sörensen, 2001). However, there are various life changes and transitions that could contribute to middle age groups experiencing loneliness such as geographic mobility, relationship breakdown, children leaving home, financial pressures, and having limited free time due to work and caring responsibilities (Barreto et al., 2021; Hawkley et al., 2022). While various factors are used to explain age differences in loneliness, multiple studies have identified some 'universal' factors that are associated with loneliness at midlife and in younger and older adulthood (Hawkley et al., 2022; Luhmann & Hawkley, 2016; Qualter et al., 2015). One study found that frequency of social contact, marital status, living alone, self-rated health, and household income were universal predictors of loneliness for all age groups (Hawkley et al., 2022). Rather than age causing loneliness, age can be understood as a proxy for various life experiences, as well as material resources and other non-material resources, that are associated with loneliness (Hawkley et al., 2022). Such experiences and resources are unevenly distributed across different age groups meaning that loneliness is also unevenly distributed.

Finally, a life course approach is useful for understanding age-related differences in loneliness. This approach investigates the timing and number of biological, social, and environmental exposures that shape the trajectory of a person's life (Lam, Dickson, & Baxter, 2022; Victor, Rippon, Barreto, Hammond, & Qualter, 2022). Studies have investigated how prior experiences of loneliness at different life stages can influence loneliness in later life. Multiple exposures to loneliness can have an impact in later life, which is referred to as cumulative disadvantage (Victor et al., 2022). A study of UK residents over 65 years found that participants reporting current loneliness were significantly more likely to have experienced loneliness previously than non-lonely participants (Victor et al., 2022). Furthermore, another study among people born in the UK investigated the association between social relationship adversities, which are described as

stressful interpersonal incidents or circumstances, across the life course and loneliness experienced at age 68 (Ejlskov, Bøggild, Kuh, & Stafford, 2020). This study found that greater exposure to social relationship adversities at earlier life stages predicted higher loneliness levels in later life, and that more recent adversities were more strongly associated with current loneliness (Ejlskov et al., 2020). The timing of exposures is also important for understanding the impact of loneliness across the life course, as exposures can have different impacts on outcomes depending on when they are experienced (Victor et al., 2022). For example, a study conducted among older adults in China investigated factors that are predictive of loneliness, such as relationship status, self-rated health, and socioeconomic factors, from a life course perspective (F. Yang & Gu, 2020). This study found that adulthood factors are more predictive of loneliness than childhood factors, however the authors contend that it is still important to study childhood factors as they likely influence factors across adulthood and therefore have an indirect impact on loneliness in later life (F. Yang & Gu, 2020). A life course perspective provides insight into the age distribution of loneliness at a population level, as well as individual experiences of exposures to loneliness.

Demographic, economic, and social drivers of loneliness

Gender and sexuality

Studies have produced mixed findings about gender differences in loneliness. Some studies have identified that women generally report higher rates of loneliness (Borys & Perlman, 1985; Luhmann & Hawkley, 2016; Pinquart & Sörensen, 2001), others have found that loneliness levels are higher among men (Barreto et al., 2021), while other studies have claimed that gender differences are insignificant (Mund, Freuding, Möbius, Horn, & Neyer, 2020). It is proposed that males and females value, expect, and invest in different types of social relationships, however these characteristics could be used to create opposing hypotheses to explain gender differences in loneliness (Maes, Qualter, Vanhalst, Van den Noortgate, & Goossens, 2019). For example, females are more likely to value and have dyadic relationships, which refers to close relationships between two people. Having intimate relationships may mean that females experience less emotional loneliness, however it could also be argued that because females value these types of relationships they are more vulnerable to emotional loneliness (Maes et al., 2019). The same argument could be made for males who might experience less social loneliness because they orient themselves towards groups of friends, however males may experience more social loneliness because these types of relationships are more important to them (Maes et al., 2019). As discussed, gender differences in loneliness could be due to reporting bias because disclosing feeling lonely may be more acceptable to women than men (Borys & Perlman, 1985). Understanding these potential differences in how males and females evaluate whether they are lonely or not is important for measuring loneliness (Stokes & Levin, 1986).

Differing findings about gender differences in loneliness could be due to variation by age group. A meta-analysis found that that males were slightly lonelier than females in childhood, adolescence, and young adulthood, however these gender differences were only small and disappeared in middle adulthood and old age (Maes et al., 2019). Comparatively, studies have identified gender differences in loneliness among older adults (Pinquart & Sörensen, 2001). For example, a study that examined loneliness across different age groups in the UK found that loneliness rates for women increase from age 55 years and over, whereas loneliness levels accelerated for men at age 75 years and over. These findings suggest that different factors contribute to the increase in loneliness levels for older men and women, or that the timing of these factors or life events is experienced differently (Victor & Yang, 2012). Widowhood is an example of a life event that could be experienced differently and at different times for men and women. Women generally live longer than men, and therefore women are more likely to be impacted by widowhood or provide care to their spouse (Barreto et al., 2021; Pinquart & Sörensen, 2001). On the other hand, widowhood could have a more significant impact on men because men generally cite their partner as their main confidante, whilst women are more likely to have close relationships outside of the family (Victor et al., 2000). The COVID-19 pandemic is another event that could have been experienced differently by males and females. For instance, a Canadian study that investigated loneliness during the first year of the COVID-19 pandemic found that women were more likely than men to report loneliness, but only among the youngest and oldest adults, which were the age groups at highest and lowest risk of loneliness respectively (Wickens et al., 2021). It is possible that restrictions limited the coping mechanisms used by women to deal with isolation,

such as socialising outside of home, making women more vulnerable to the negative mental health impacts of the pandemic (Wickens et al., 2021). These examples highlight the ways that the relationship between gender and loneliness is shaped by age and other social factors.

It is important to note that most studies about gender differences in loneliness have focused on males and females and not diverse genders. The New Zealand General Social Survey collects information about sexual identity and LGBT+ (lesbian, gay, bisexual, transgender, plus other sexual orientation and gender diverse groups) status. Results for the 2021 General Social Survey show that 7.2 percent of the LGBT+ population reported feeling lonely all or most of the time compared to 2.9 percent of the non-LGBT+ population, while 7.7 percent of sexual minorities[8] reported feeling lonely all or most of the time compared to 2.9 percent of the heterosexual population (Stats NZ, 2022). Studies suggest that LGBT+ older adults are vulnerable to social isolation and loneliness because of the decades of discrimination and stigmatisation faced by this community (Perone, Ingersoll-Dayton, & Watkins-Dukhie, 2020). For example, LGBT+ older adults may lack social support if they are estranged from their family or if they have faced barriers creating their own family (Perone et al., 2020). There is less research regarding loneliness among young adults who identify as LGBT+. A study among young people in the UK used a categorical model[9] to assess loneliness among different sexual orientation groups (i.e. heterosexual, gay/lesbian, bisexual, and other) and found that young people who reported their sexual orientation as 'other' reported higher rates of loneliness than the remaining groups (Marquez et al., 2022). This study highlights the benefit of using a categorical model rather than a binary model (i.e. heterosexual and non-heterosexual) because there are important differences in how non-heterosexual groups experience loneliness (Marquez et al., 2022). There is a need for more research to explore the drivers of loneliness for communities of diverse genders and sexualities.

Employment status and income

Multiple studies have found economic gradients in loneliness, with higher economic status protecting against the risk of loneliness (Kung, Pudney, & Shields, 2022). Research shows that unemployed people are more likely to report loneliness than people who are employed (Morrish & Medina-Lara, 2021). A systematic review found that there was a 40 percent greater likelihood of reporting loneliness when unemployed compared to when employed (Morrish & Medina-Lara, 2021). There is also evidence of a bi-directional relationship whereby unemployment can lead to loneliness but also feeling lonely can lead to subsequent unemployment (Morrish & Medina-Lara, 2021; Morrish, Mujica-Mota, & Medina-Lara, 2022). A UK study found that lonelier young adults were less optimistic about career prospects (Matthews et al., 2019). This lack of confidence in competing in the labour market could be due to shyness and low self-esteem, which are associated with loneliness and could contribute to unemployment (Matthews et al., 2019).

The relationship between employment status and loneliness can be explained by the various 'latent' benefits of employment (K. I. Paul & Batinic, 2010; Wang, Li, & Coutts, 2022). For instance, work is an opportunity to interact with others, gain social support, feel connected to wider society, and form a sense of purpose, belonging, and identity (Segel-Karpas, Ayalon, Lachman 2018). Therefore, retirement or job loss could lead to feelings of loneliness when people stop experiencing the latent benefits of being employed (Segel-Karpas, Ayalon, & Lachman, 2018). Furthermore, changes in work patterns that have occurred in recent decades, such as more flexible working arrangements and more precarious employment, could create uneven access to latent benefits (Patulny & Bower, 2022). People who work remotely or for online platforms as part of the gig economy are likely to report lower levels of loneliness compared to the unemployed, however it is possible that they will not experience latent benefits of work that can protect against loneliness (Wang et al., 2022). The COVID-19 pandemic has heightened such changes in work patterns, therefore it is important to consider the ongoing impacts of the pandemic on employment status and loneliness (Patulny & Bower, 2022).

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[8] Sexual minorities include gay or lesbian, bisexual, and other identities such as takatāpui, asexual, and pansexual, among others.
[9] In this study, categorical model refers to a model that has four categories for sexual orientation (i.e. heterosexual, gay/lesbian, bisexual, and other), which compares to a binary model which has two categories for sexual orientation (i.e. heterosexual and non-heterosexual).

There are various other factors that mediate the relationship between employment status and loneliness. The amount of time spent at work potentially influences feelings of loneliness as the systematic review referenced above found that full-time employment provided greater benefit in protecting against loneliness than part-time employment (Morrish & Medina-Lara, 2021). It is possible that the association between loneliness and time spent at work could be shaped by age. For example, full-time employment is associated with lower levels of loneliness for middle-aged adults, whereas employment status is not significant for loneliness among older adults (Hansen & Slagsvold, 2016; Luhmann & Hawkley, 2016). In addition, a study among young people found that young people who were unemployed but had access to casual paid work experienced less social loneliness than those who were employed full-time (Creed & Reynolds, 2001). Age differences in the association between employment status and loneliness could be explained in part by age-normative expectations (Luhmann & Hawkley, 2016). For middle-aged adults, working full-time may be the norm as building a career and having financial resources are considered important, whereas young people may have fewer financial costs and prefer to have more free time to foster social relations outside of work (Luhmann & Hawkley, 2016).

Another important factor that mediates the relationship between employment status and loneliness is income. A study in Germany found that working full-time was associated with lower loneliness, however, this association was confounded by income (Luhmann & Hawkley, 2016). Generally, people on lower incomes report higher levels of loneliness (S. J. Macdonald, Nixon, & Deacon, 2018). Poverty can be a barrier to having quality social relationships, for example, people may work irregular hours, have multiple jobs, have less funds, and have fewer opportunities for social activities (Kung et al., 2022). People with low incomes may find it challenging to limit the negative impacts of loneliness if they do not have access to resources such as the internet, a warm home, and food (Walker, 2021). Additionally, people with low incomes who feel lonely may experience poor health because they lack financial and social resources (Bosma, Jansen, Schefman, Hajema, & Feron, 2015). In regard to age differences, a study found that the association between income and loneliness was strongest for middle-aged adults (Luhmann & Hawkley, 2016).

Living arrangements and parenthood

Living with others may provide emotional support and opportunities for socialising and therefore protect against loneliness, whereas living alone may contribute to feeling lonely (Barjaková & Garnero, 2022). COVID lockdowns may have reinforced the influence of living arrangements on loneliness, for instance, people who live alone may have felt lonelier because their opportunities for socialising outside of home were restricted during lockdowns. However, the protective effect of living with others may depend on the types of relationships that inhabitants share with each other, such as parents, children, partners, or friends. For instance, a study among older adults in Europe found that older people who lived alone were the loneliest, followed by people who live with children, while people living with their partners were the least lonely (de Jong Gierveld, Dykstra, & Schenk, 2012). Similar to other socioeconomic drivers of loneliness, it is possible that age effects could provide insight into the relationship between living arrangements and loneliness. A study found that living alone was not a key risk factor for loneliness among young people, however living alone was a key factor for loneliness among older people (Luhmann & Hawkley, 2016). There are also gendered differences in the interaction of living arrangements and loneliness, with living with others offering more protection from loneliness to men than women (Hansen & Slagsvold, 2016). It is important to note that living alone does not necessarily equate to feeling alone, for example, people who live alone may meet their social and emotional needs by engaging in relations with people they do not live with. In fact, it is possible that living alone could provide some benefits to the quality of social relationships (Luhmann & Hawkley, 2016).

While it seems possible that living with children could protect against loneliness for parents, relationships with children may not meet parents' social and emotional needs. Research shows that parents report higher levels of loneliness than people who are not parents (Stats NZ, 2022). Parenthood, like other life transitions, could lead to feelings of loneliness because of changes in social connections and contexts (Nowland, Thomson, McNally, Smith, & Whittaker, 2021). A scoping review discussed specific groups of

parents who are at increased risk of loneliness, including single parents, first-time parents, immigrant and ethnic minority parents, and parents of children with special needs or health conditions (Nowland et al., 2021). Single parents, for example, may experience higher rates of loneliness because of the demands of solo parenting, which could limit their social opportunities (Walker, 2021). The scoping review identified key factors that contribute to loneliness among parents, including having limited social support, negative thoughts towards themselves, or a lack of peers in similar position who they can share their experience with (Nowland et al., 2021).

Ethnicity and migrant status

Studies have found differences in loneliness levels by ethnicity and migrant status. In New Zealand, various studies have found that Māori report higher rates of loneliness compared to non-Māori (Lay-Yee, Campbell, & Milne, 2022; Wright-St Clair, Neville, Forsyth, White, & Napier, 2017). This discrepancy in loneliness levels is associated with the impacts of colonisation, racism, and socioeconomic inequalities (Walker, 2021). Colonisation had significant impacts on the health status, land possession, and cultural practices of Māori, and the legacy of colonial systems is evident today as Māori experience poorer health, social, and economic outcomes than non-Māori (Moewaka Barnes & McCreanor, 2019). As the indigenous population in New Zealand, it is possible that Māori experiences of loneliness differ to other ethnic minorities because of the long history of structural changes that have impacted cultural practices and social relations (Jamieson et al., 2018). Most research exploring ethnic differences in loneliness in New Zealand has focused on older adults, including Māori, Asian, and Pacific populations (Jamieson et al., 2018; Morgan et al., 2020; Wright-St Clair et al., 2017). Such studies have found that non-European ethnic groups report higher rates of loneliness, which is associated with diminished social relationships, a lack of belonging, and discrimination. There is also a positive relationship between migrant status and loneliness, with migrants reporting higher rates of loneliness than non-migrants (Stats NZ, 2022). Relocating to a new country disrupts existing social networks and forming new social relationships may be difficult because of language and cultural barriers (Morgan et al., 2020). Recent migrants are less likely to have formed new relationships and therefore may be at greater risk of experiencing loneliness than long-term migrants. More research is required to understand how cultural and societal factors shape experiences of loneliness for different ethnic groups and migrants, and how experiences of loneliness among these groups are shaped by age differences. It is important to note that methods for measuring loneliness need to be culturally appropriate, as discussed above.

Disability

Research has found that disabled people are more likely to report feeling lonely than non-disabled people. This is proposed to be because disabled people may experience more social exclusion and because of the intersections between disability and other risk factors for loneliness, such as low income and unemployment (Walker, 2021). A German study identified gender and age differences in the levels of loneliness reported by disabled people and non-disabled people; the study found that loneliness levels decreased with age for severely disabled males, while the opposite results was found for severely disabled females (Pagan, 2020). Various studies view the association between loneliness and disability from an individualised and biomedical perspective and argue that the relationship may be bidirectional (S. J. Macdonald, Deacon, et al., 2018). For instance, the association could be explained by the experience of disability interrupting social opportunities and leading to feelings of loneliness, or loneliness causing health issues and leading to long term disability (S. J. Macdonald, Deacon, et al., 2018). Alternatively, the association between loneliness and disability can be viewed through the structural barriers that impact the daily lives of disabled people (S. J. Macdonald, Deacon, et al., 2018). Examples of structural barriers include urban design, transport systems, building design, and information and communication systems, which create difficulties such as interacting with others, leaving the house, travelling, gaining employment, and engaging in leisure activities (Walker, 2021). A study found that disabled people who reported that disabling barriers impacted their daily lives were more likely to report experiencing loneliness or isolation (S. J. Macdonald, Deacon, et al., 2018). Focusing on the structural barriers that impact disabled people broadens the view both of pathways that can lead to loneliness and of opportunities for intervention.

Digital technologies and social media

There are contrasting theories about the impact of digital technology and social media on social relationships. One theory is that these digital technologies complement social relationships by encouraging people to communicate with existing friends and to form new relationships (Morrison & Smith, 2017). Another theory is that real-life relationships are being displaced by online connections, which may be of poorer quality, less authentic, and lack the social and emotional benefits of in-person interactions (Morrison & Smith, 2017). Lonely people may feel like their needs to belong are not met by in-person interactions and therefore seek to connect with others online to fulfil their needs (Deutrom, Katos, & Ali, 2022). People may favour online interactions over in-person interactions, for instance, a lonely person may feel shy or socially anxious and therefore prefer connecting online where they have more control over communication (Brewer & Kerslake, 2015). However, there are potential harms of connecting online. Feeling lonely can be a risk factor for being influenced by online grooming and scams (DeLiema, Li, & Mottola, 2022; Williams, Beardmore, & Joinson, 2017). There is also evidence of a relationship between loneliness and being a victim of cyberbullying (Şahin, 2012). Furthermore, social media platforms are often relied on as a source of information, such as during the COVID-19 pandemic, however these platforms can host misinformation and 'fake news' (Deutrom et al., 2022). Feeling lonely could make people susceptible to misinformation, however there is a lack of evidence to support this.

There is concern about social media use, among young people in particular, because of the link between social media use and loneliness (Song et al., 2014; Verduyn, Ybarra, Résibois, Jonides, & Kross, 2017). It is reported that young people spend more time on social media platforms than other age groups and a large part of their social interactions take place online (Hunt, Marx, Lipson, & Young, 2018; Yavich, Davidovitch, & Frenkel, 2019). Although social media platforms are useful tools for connection and communication, these platforms can also create an environment where users compare themselves to others and intensify feelings of loneliness (O'Day & Heimberg, 2021). However, there are mixed findings about the association between social media use and loneliness among young people, with some studies reporting a positive association between social media use and loneliness (Hunt et al., 2018; Primack et al., 2017), while other studies report no association (Marquez et al., 2022; Yavich et al., 2019). It is possible that the link between social media and loneliness may be shaped by the type of social media platforms used (Pittman & Reich, 2016) and how technologies are used (Matthews et al., 2019). Therefore, more research is required to understand how pre-existing social resources and online practices shape experiences of loneliness (O'Day & Heimberg, 2021; Patulny & Bower, 2022).

The COVID-19 pandemic has played a significant role in how digital technologies are used for social interaction. Videoconferencing, for example, was used to connect with friends, family, and colleagues, when opportunities for face-to-face interaction were restricted during the pandemic (Patulny & Bower, 2022). The use of this technology potentially mitigates against social and emotional loneliness, however some people may consider videoconferencing an inadequate substitute for in-person interaction (Shah, Nogueras, Van Woerden, & Kiparoglou, 2020). For example, a study has highlighted that video calls and other digital technologies used during the pandemic may not have been an appropriate solution to addressing loneliness among older people who may lack digital communication skills and access to the internet (Stuart et al., 2022). Another study found that respondents had mixed experiences of using digital technologies during the pandemic, and cautioned against promoting digital resources as a solution to loneliness because some groups are digitally excluded (Patulny & Bower, 2022).

How can loneliness be addressed?

Action has been taken to address loneliness at multiple levels. Loneliness has been made a key government priority in the UK with the adoption of a national loneliness strategy and the appointment of a Minister for Loneliness in 2018. New Zealand does not have a similar nationwide loneliness strategy, however the current government has a holistic approach to wellbeing through the Living Standards Framework which incorporates loneliness (Walker, 2020). Various countries have coalitions or campaigns that provide information about and advocate for alleviating loneliness, such as the Campaign to End Loneliness in the UK, Ending Loneliness Together in Australia, and Let's End Loneliness in New Zealand (Fakoya et al., 2020).

There is a range of loneliness interventions used with individuals and groups, such as leisure activities, educational approaches, befriending, therapies, and social and community interventions (Victor et al., 2018). This section discusses approaches to addressing loneliness among different age groups, and challenges of assessing the effectiveness of interventions. This section also provides example of an individualised approach and a structural approach to addressing loneliness.

Many reviews of loneliness interventions have focused on older adults, including older people living in the community and in institutionalised settings (Cattan & White, 1998; Fakoya et al., 2020; Masi, Chen, Hawkley, & Cacioppo, 2011; O'Rourke, Collins, & Sidani, 2018; Victor et al., 2018). These reviews have assessed group activities and one-on-one activities, as well as technology-based and in-person interventions. The types of interventions included in these reviews were therapies in addition to social network, social support, and social skills interventions. These reviews have highlighted challenges with assessing the effectiveness of interventions because of methodological issues with study designs. For example, assessing the effectiveness of interventions is difficult because often the term loneliness is not clearly defined, and sometimes studied alongside social isolation, meaning it is unclear which interventions address loneliness (Fakoya et al., 2020; O'Rourke et al., 2018). Furthermore, the theoretical underpinnings of studies are often not stated which makes it difficult to understand the mechanisms through which the interventions reduce loneliness and to assess what contexts the interventions would be appropriate in (Fakoya et al., 2020)

Some recent reviews have investigated the effectiveness of interventions to alleviate loneliness among young people (Eccles & Qualter, 2021; Osborn, Weatherburn, & French, 2021). Studies included in these reviews focused on social skills, social and emotional support, community projects, and therapies (Eccles & Qualter, 2021; Osborn et al., 2021). Both of these reviews found that interventions can help to address loneliness amongst young people, however the design of studies made it difficult to assesses the effectiveness of reducing loneliness. Interventions included in these reviews have targeted specific groups, such as young people who are considered at risk due to a health condition, and loneliness has been considered a secondary outcome in studies (Eccles & Qualter, 2021; Osborn et al., 2021). This highlights the need for interventions that address loneliness specifically and take account of the mechanisms and impacts of loneliness experienced by young people (Eccles & Qualter, 2021). One review explored the effectiveness of interventions for alleviating loneliness among non-elderly adults, including people with mental illnesses, parents and caregivers, refugees and migrants, and other marginalised groups (Bessaha et al., 2020). This review found that some interventions involving technology or support groups were effective in reducing loneliness (Bessaha et al., 2020). However, it is unclear whether support groups themselves reduce loneliness or whether a reduction in loneliness is due to bringing isolated people together for a group activity (Bessaha et al., 2020). More research is required to understand the effectiveness of loneliness interventions across the life span, particularly for younger age groups, and among diverse social groups.

Various reports have provided recommendations for addressing loneliness. A review of reviews recommended that loneliness interventions should build meaningful connections between people, reduce the stigma attached to loneliness, and tailor approaches to individuals or groups (Victor et al., 2018). Tailoring interventions is recommended because loneliness is a subjective experience and individuals and groups experience different drivers of loneliness (Fakoya et al., 2020). For example, it is important to understand whether people are experiencing transient or prolonged loneliness (Eccles & Qualter, 2021). Universal approaches may be appropriate to address transient loneliness, such as equipping young people with emotional management and social skills to deal with transient loneliness when it arises, with the aim of preventing prolonged loneliness (Eccles & Qualter, 2021). Relationship and sexuality education (RSE) learning programmes in schools, for example, could be an opportunity to provide students with knowledge about loneliness and tools to respond to it. More targeted approaches may be appropriate to alleviate prolonged loneliness, such as therapies to address the negative cognitive and mental health impacts of loneliness (Eccles & Qualter, 2021). It has been argued that loneliness interventions should consider the 'evolutionary design' of humans, referring to the cognitive mechanisms through which lonely people can become hypervigilant of social threats (Hawkley & Cacioppo, 2010). This argument is supported by a meta-analysis that found that the most successful loneliness interventions addressed maladaptive social

cognition, or the cognitive biases, that can reinforce feelings of loneliness and have adverse health outcomes (Masi et al., 2011). Many of the physiological pathways that lead to poor health are irreversible, therefore early intervention is important to alleviate transient and prolonged loneliness among young people (Hawkley, 2022; Matthews et al., 2019; Qualter et al., 2015).

There is much discussion about how to tailor loneliness interventions to suit different age groups. A life course perspective is useful for understanding different experiences of loneliness and can inform when and how to intervene. For instance, a study of older adults' experiences of loneliness across the life course suggests that those with and without previous experiences of loneliness may experience different types of loneliness in later life, and therefore interventions should build on prior life experiences to develop more personalised interventions (Victor et al., 2022). This example highlights heterogeneity within age groups, and the potential for interventions to alleviate loneliness across different age groups if people within these groups experience similar types and drivers of loneliness. A report about severe loneliness in London recommends tailoring interventions to address associative factors of severe loneliness rather than targeting sub-groups, such as young people or older adults (Neighbourly Lab, Campaign to End Loneliness, & What Works Centre for Wellbeing, 2022). The main associative factors identified in a survey of Londoners were being acutely poor; going through life changes or being new to the city; being single or living alone; being deaf or disabled; and feeling different or experiencing prejudice (Neighbourly Lab et al., 2022). This approach has the potential to target 'universal' factors (Hawkley et al., 2022) that impact different age groups, widen the scope of who is eligible for interventions, and address structural problems that contribute to loneliness, such as poverty and precarious employment.

Social prescribing is an example of an approach to addressing loneliness that tailors interventions to individual needs. This approach involves doctors prescribing patients social activities, while link workers guide patients to co-develop personalised solutions for their own health, such as attending community activities and social groups (Reinhardt, Vidovic, & Hammerton, 2021). Social prescribing was adopted in the UK in 2019 as part of a personalised care system that was implemented with the intention of giving individuals choice and control over their mental and physical health (Reinhardt et al., 2021). There have been various studies that have assessed the effectiveness of social prescribing for addressing loneliness. A study that investigated service-users' experiences of having 12 weeks of support from a link worker found that the majority of service users felt less lonely after receiving support (Foster et al., 2021). Another study found that social prescribing resulted in a reduction in reported loneliness, and improved different aspects of wellbeing such, as self-confidence, self-worth, a sense of belonging to a community, and sense of purpose (Liebmann, Pitman, Hsueh, Bertotti, & Pearce, 2022). Studies have found that having skilled link workers is key to the success of social prescribing programmes (Foster et al., 2021; Holding, Thompson, Foster, & Haywood, 2020). There are also potential issues with social prescribing approach, such as inappropriate choices of activities and mismatches between an individual and the approach of their link worker (Liebmann et al., 2022). Similar to reviews regarding other loneliness interventions, a review of the impact of social prescribing initiatives reported that it is difficult to assess the effectiveness of these initiatives because there are only a few studies and evidence is variable (Reinhardt et al., 2021). Furthermore, there is less evidence about the effectiveness of social prescribing among young people compared to older age groups (Goodfellow et al., 2022).

In addition to interventions for individuals and groups, there is emerging evidence to support making structural changes to prevent and alleviate loneliness. The built environment is a context where structural changes can be made. Well-designed and well-maintained built environments that are safe, welcoming, and accessible can positively impact sense of belonging and connectedness (Bower et al., 2023). Various characteristics of the built environment are linked with loneliness, such as building design, access to green space, transport connectivity, and walkability (Astell-Burt, Hartig, Eckermann, et al., 2022; Bower et al., 2023; Hsueh et al., 2022), and therefore interventions that target these characteristics could improve loneliness levels. For instance, the UK government has taken a cross-departmental approach to review how changes in transport systems, urban planning, and community services can address socio-spatial barriers to social connection (Hsueh et al., 2022). Furthermore, the Campaign to End Loneliness in the UK has published recommendations on how to make neighbourhoods less lonely including creating walkable routes and spaces that promote interaction (Campaign to End Loneliness, 2022). However, more research is

needed to understand the effectiveness of built environment interventions for addressing loneliness (Astell-Burt, Hartig, Putra, et al., 2022; Hsueh et al., 2022). Understanding the relationship between built environment characteristics and loneliness is complex, because this relationship is shaped by other sociocultural and economic factors, and intersects with individual experiences, values, and meanings (Bower et al., 2023), which highlights the challenges of making structural changes to address loneliness. For example, some groups may face barriers to accessing built environments, such as older adults, disabled people, and people with health conditions, and people in urban and rural settings are likely to experience different built environments (Bower et al., 2023). It is proposed that shifting focus away from individual experiences of loneliness towards objective social isolation may be beneficial for identifying structures that can be targeted by interventions to promote social connection (R. Mansfield et al., 2023). Structural changes targeting social isolation may also alleviate loneliness, however people can feel lonely without being socially isolated so changes may have limited impact on lonely people (Fakoya et al., 2020).

Discussion

Internationally, loneliness has received attention in policy and research. Alleviating loneliness is considered a public health priority because feeling lonely is associated with morbidity, mortality, health behaviours, and 'excess' service use (L. Mansfield et al., 2019). The psychological and physiological impacts of loneliness are understood from an evolutionary perspective, whereby feeling isolated from others triggers a cognitive response that can have a negative impact on health over time (Hawkley & Cacioppo, 2010). On one hand, this cognitive response to feeling isolated could be understood as an advantage as it motivates humans to form connections and ensures survival (J. T. Cacioppo et al., 2014), while on the other hand this response could be understood as less functional in contemporary society because of harmful impacts to the body and mind (Killeen, 1998). In recent decades, there have been changes and events that have had potential to increase social isolation and loneliness, such as increased geographic mobility, more people living alone, and the COVID-19 pandemic (Dykstra, 2009; Patulny & Bower, 2022), and therefore have significant impacts on health and wellbeing. However, there is currently limited evidence to support the theory that loneliness levels have increased in recent decades (Hawkley et al., 2019; Victor et al., 2000). Therefore, it could be useful for further research to explore how people, societies, and cultures adapt to changes in social connections and contexts (Morrison & Smith, 2017), such as how people compensate for loneliness or isolation in one context by forming connections in different contexts (R. Mansfield et al., 2023) and how people adopt different ways of connecting, such as digital technology (Patulny & Bower, 2022).

Defining loneliness and other related concepts is important to make sense of and measure experiences of loneliness and to implement appropriate interventions (L. Mansfield et al., 2021). While social isolation is considered an objective measure of a lack of social contact, loneliness is considered a subjective experience of deficient social relationships. Therefore, using these terms interchangeably is problematic because they convey different aspects of the social experience (Goodfellow et al., 2022; Hughes et al., 2004). This distinction between objectively being alone and subjectively feeling alone is useful for understanding how societal changes that increase social isolation do not automatically increase loneliness. In comparison to loneliness, social isolation is less well studied, which is reflected in this review. The commonly used definition of loneliness has been described as limited in capturing the complexity in the range, diversity, and depth of experiences of feeling lonely, which is problematic for measuring loneliness (L. Mansfield et al., 2021). Among other issues, commonly used indirect measures of loneliness may fail to capture non-Western experiences of loneliness (Heu et al., 2021), such as Māori and Pacific experiences of loneliness (Waldegrave et al., 2021). Different approaches to capturing experiences of loneliness have been recommended, including using both direct and indirect loneliness measures in questionnaires (What Works Wellbeing, 2019), and allowing different groups to define what loneliness means to them to inform suitable measures (Waldegrave et al., 2021). There is a need to evaluate how loneliness and related concepts are conceptualised in measurement tools, which is important for generating and interpreting evidence regarding the effectiveness of interventions (L. Mansfield et al., 2019).

Loneliness is a complex topic because there are various types and sources of loneliness that impact people in different ways and at different life stages. Experiences of loneliness are often linked with significant changes and transitions that occur across the life course, including leaving an education setting, moving to a new place, changes in employment status, relationship breakdown, and becoming a parent (What Works Wellbeing, 2019). Higher levels of loneliness reported by younger and older age groups are attributed to these changes that disrupt social contexts, as well as major physical and psychological developmental shifts (Qualter et al., 2015). These life stages are often associated with specific types of loneliness, which highlight how expectations of social relationships evolve over the life course (Peplau et al., 1982). Young adults are often characterised as experiencing social loneliness, while older adults are characterised as experiencing emotional loneliness (Victor & Yang, 2012). There is evidence, however, that specific age groups experience different types of loneliness (Qualter et al., 2015). Therefore, investigating different types of loneliness among all age groups is important, as well as the interrelationships between types of loneliness and other contributing factors (L. Mansfield et al., 2019). An age-normative perspective is

potentially useful for understanding how contributing factors associated with loneliness, such as socioeconomic circumstances, differ by age group. This perspective acknowledges that the influence of different factors on loneliness is shaped by the social contexts that are considered the 'norm' at different ages (Hawkley et al., 2022). For instance, employment status and income may be considered more important for middle age groups compared to younger and older adults. Despite young people often reporting the highest levels loneliness, most loneliness research has focused on older adults, therefore there is a need for more research to explore how loneliness is experienced by different age groups, and the intersection of age with other demographic, social, and economic factors.

Groups that are considered socially vulnerable, such as non-European ethnic groups, disabled people, people with low incomes, solo parents, and the LGBT+ community are more likely to report experiencing loneliness (Stats NZ, 2022). Discrepancies in loneliness levels can be made sense of in relation to individual factors such as personality traits, personal attitudes, biological predispositions, and life events (Luanaigh & Lawlor, 2008; What Works Wellbeing, 2019). However, feeling lonely is also shaped by broader structural circumstances (Bower et al., 2023), so taking a wider view of society can provide insight into the contexts where social connections are made (Morrison & Smith, 2017). Individuals live within political, socioeconomic, and cultural structures that create inequalities and impact on loneliness (Bower et al., 2023; Tapia-Muñoz et al., 2022). Inequality can have an indirect impact on loneliness through low social integration and lack of community trust (Tapia-Muñoz et al., 2022), for example, some social groups may face discrimination and marginalisation meaning that their belongingness needs are not met. Moreover, inequitable access to broader determinants of health and wellbeing, such as education, employment, income, can increase the proportion of people living in poverty and create uneven risks of loneliness (Tapia-Muñoz et al., 2022). Feeling lonely may in turn reinforce socioeconomic disadvantage as it is possible that there are bidirectional relationships between socioeconomic factors and loneliness (Morrish & Medina-Lara, 2021; Morrish et al., 2022). There is an opportunity for further research to explore how diverse groups experience loneliness, as well as the relationship between loneliness and wider inequality. In New Zealand, there is limited research investigating how loneliness is experienced by Māori and Pacific people, therefore there is a need for more research especially because of the inequities faced by Māori and Pacific people and the relatively young age structure of these populations which may contribute to loneliness.

Exploring loneliness across the life course and different groups' experiences of loneliness highlights a range factors that make people vulnerable to and protect people from loneliness, and the challenges of alleviating loneliness. Delivering standardised loneliness interventions is difficult because of the individual and subjective nature of feeling lonely (Fakoya et al., 2020). Studies suggest that interventions should be tailored to suit the needs of different individuals and groups (Fakoya et al., 2020; Victor et al., 2018), which means considering different types of loneliness, the different factors associated with loneliness, and whether loneliness is transient or chronic. A life course perspective considers the life stages and relational contexts that loneliness and isolation occur in, and therefore can inform when and how to intervene (R. Mansfield et al., 2023; Victor et al., 2022). This perspective can also provide insight into how different forms of disadvantage and discrimination can intersect and accumulate over a life course and make individuals more at risk of experiencing loneliness (F. Yang & Gu, 2020). It is important to understand how individuals and groups experience loneliness, so interventions can be tailored and personalised, such as through social prescribing. However, it is also important to investigate how broader structures can be moulded to alleviate and prevent loneliness among populations, such as addressing socioeconomic drivers of loneliness. The links between loneliness over the life course and different drivers of loneliness is complex, and likely to be culturally situated (C. R. Victor & Yang, 2012), prompting the need for more research on how to alleviate loneliness.

Conclusion

Loneliness and isolation are important public health issues. However, understanding, measuring, and addressing loneliness is complex because of its subjective and multidimensional nature. Loneliness levels vary across the life course, which is attributed to life changes and transitions. Young adults report higher rates of loneliness than older age groups in New Zealand, yet this group has received less attention in research than older adults. Alongside age, there are other demographic, social, and economic factors that can contribute to loneliness. Approaches to address loneliness should consider how to alleviate loneliness among individuals and groups as well as the broader societal structures that contribute to loneliness. However, there is limited evidence to support the effectiveness of loneliness interventions. More research is required to understand how loneliness is experienced among young people and diverse social groups and how loneliness can be alleviated.

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