

Have Australians become more lonely and socially isolated? A longitudinal analysis of the Household, Income and Labour Dynamics in Australia study

Neta Hagani^{1,2,*}, Philip J. Clare^{1,2,3}, Katherine B. Owen^{1,2}, Mengyun Luo^{1,2}, Daniel L. Surkalim^{1,2}, Karine E. Manera^{1,2}, Michelle H. Lim^{1,2,4}, Ben J. Smith^{1,2}, Philayrath Phongsavan^{1,2}, Ding Ding^{1,2}

¹Prevention Research Collaboration, Sydney School of Public Health, The University of Sydney, Sydney, NSW, Australia

²Charles Perkins Centre, The University of Sydney, Sydney, NSW, Australia

³National Drug and Alcohol Research Centre, UNSW Sydney, Sydney, NSW, Australia

⁴Iverson Health Innovation Research Institute, Swinburne University of Technology, Melbourne, Victoria, Australia

*Corresponding author. Prevention Research Collaboration, School of Public Health, Level 6, The Hub Charles Perkins Centre (D17), The University of Sydney, Sydney, NSW 2006, Australia. E-mail: neta.hagani@sydney.edu.au

Abstract

Background: This study aimed to examine temporal trends in episodic and chronic loneliness and social isolation in the Australian population from 2001 to 2023.

Methods: We conducted a population-based longitudinal cohort study ($n = 13\,120$). Data were drawn from the Household, Income and Labour Dynamics in Australia (HILDA) survey. Episodic (at least one wave) and chronic (at least two consecutive waves) loneliness and social isolation were assessed using validated measures. Mixed-effects logistic regression models estimated marginal predicted probabilities over time and across demographic subgroups. Sensitivity analyses were conducted to test the robustness of the findings.

Results: Loneliness remained relatively stable overall, with a slight early decline followed by a modest increase and a gradual rise in chronic loneliness from the late 2000s. In contrast, social isolation increased substantially over time, with chronic isolation roughly doubling across the study period. Loneliness trends generally followed a decline during the 2000s and a rise from the 2010s onwards across most demographic groups, although the magnitude and timing varied between subgroups. In contrast, social isolation increased over time across most populations, with particularly marked increases among older adults and individuals in the lowest education and highest area-level disadvantage.

Conclusions: Social isolation increased substantially in Australia over the past two decades, while loneliness showed a moderate increase, disproportionately affecting vulnerable populations. Findings underscore the need for ongoing public health interventions that address the structural and social determinants of loneliness and social isolation.

Keywords loneliness, social isolation, social connection, socioeconomic status, trend analysis, HILDA

Key Messages

- Concerns about Australians becoming more disconnected have grown in recent years, yet there has been little national-level evidence showing whether loneliness or social isolation is actually increasing.
- Analysis of two decades of Household, Income and Labour Dynamics in Australia data shows marked increases in episodic and chronic social isolation, while loneliness has risen modestly, particularly among young, unemployed and socioeconomically disadvantaged Australians.
- Rising social isolation alongside a modest rise in loneliness points to changing patterns of social connection with potential long-term health impacts, highlighting the need for sustained policy and public health action across the life course.

Received: 13 December 2025. Accepted: 24 July 2026

© The Author(s) 2026. Published by Oxford University Press on behalf of the International Epidemiological Association.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact reprints@oup.com for reprints and translation rights for reprints. All other permissions can be obtained through our RightsLink service via the Permissions link on the article page on our site—for further information please contact journals.permissions@oup.com.

Background

Humans are inherently social beings, biologically driven to seek social connection as a means of survival and well-being [1]. When these connections are lacking, individuals may experience social isolation, characterized as an objective state of limited social contacts, engagement or meaningful relationships [2], and loneliness, which describes the perceived discrepancy between one's desired and actual social relationships [3]. Although related, they are distinct concepts, both linked to adverse outcomes, including cardiovascular disease, depression, cognitive decline, all-cause mortality, and increased health service use [4].

Media coverage and public discourse from recent years reflect a bleak picture: our societies have become more socially disconnected than ever [5, 6]. These concerns may indicate broader social trends over recent decades, such as demographic shifts (e.g. population ageing), social structural changes (e.g. more people living alone), and technological developments (e.g. digitalization) [7, 8]. In Australia, a recent state government report highlighted the extent of loneliness as a pressing public health concern, calling for ongoing surveillance and targeted policy interventions [9].

Evidence on long-term changes remains limited because few population surveys include repeated, standardized measures of loneliness and isolation [10, 11]. Existing studies show inconsistent trends: some report increases, especially among young adults [12], while others suggest stability or decline among older groups [13, 14]. Overall, public concern about rising loneliness exceeds the available evidence.

In addition, to date, most population-level loneliness and social isolation data come from Europe and North America, leaving an extensive data gap for the other regions of the world, including Australia [11]. Furthermore, even within the same country, population groups may experience loneliness and social isolation differently across time [13]. Examining such nuances is important for understanding the temporal dynamics and social determinants of loneliness and social isolation [10] but has rarely been undertaken in previous studies.

This study examined temporal trends in loneliness and social isolation among Australians aged 15 years and older between 2001 and 2023 and explored whether patterns varied across key demographic and socioeconomic subgroups.

Methods

The current study was reported following the strengthening of the reporting of observational studies in epidemiology (STROBE) guidelines [15] (Supplementary Appendix S1). The analysis plan of this study was preregistered (<https://osf.io/zjdg6/>) prior to the commencement of data analysis.

Data and study design

Data are from the nationally representative Household Income and Labour Dynamics in Australia (HILDA) survey [16]. Since the 2001 baseline, participants aged 15 years and older have been followed annually. The initial sample included 13 969 individuals from 7682 households, expanded in 2011 with a top-up sample to maintain representativeness (total = 17 612 participants from 9543 households). Baseline response rates were 66% at the household

level and 92% at the individual level, with retention rates of 87%–97% across waves. Sampling weights were updated annually, and ethical approval was granted by the University of Melbourne Human Ethics Advisory Committee (ID 1647030) [16, 17].

Measures

Social isolation and loneliness

Social isolation was measured using four questions similar to the five-item Social Isolation Index by Steptoe *et al.* [18]. These four questions were as follows: (i) number of people in household (lives alone = 1; lives with others > 1), (ii) marital status of the participant (married/de facto = 0; not married/de facto = 1), (iii) currently being an active member of a sporting, hobby, or community-based club or association (yes = 0; no = 1), and (iv) the frequency of getting together socially with friends or relatives not living with the participants (at least monthly = 0; less than monthly = 1). Social isolation was defined as scoring at least two on the three-point index. As the Social Isolation Index is a summative measure of distinct indicators, internal consistency metrics such as Cronbach's alpha are not applicable.

Loneliness was measured using two complementary measures:

- 1) A validated three-item scale (Cronbach's $\alpha = 0.70$) [19], including the following statements: 'people don't come to visit me as often as I would like', 'I often need help from other people but can't get it' and 'I often feel very lonely'.
- 2) A one-item measure: 'I often feel very lonely'. The one-item loneliness measure has been validated in longitudinal research and shown to correlate strongly with multi-item scales [20, 21].

For both measures, response options ranged from 1 (strongly disagree) to 7 (strongly agree), and a median score of more than 4 was classified as 'lonely', indicating average responses above the neutral midpoint. Further details are in Supplementary Appendix S2.

Social isolation and loneliness can be operationalized as both 'episodic' (i.e. occasional, short-term experience) and 'chronic' (i.e. long-term experience). We defined 'episodic' as reporting socially isolated or lonely in any single wave of data collection and 'chronic' based on reports over two or more consecutive waves, consistent with previous definitions [22, 23].

Demographic and socioeconomic characteristics

Population subgroups were defined by age (16–29, 30–64, and 65+ years), sex (female and male), educational attainment (below high school, high school/vocational, and university), country of birth (Australia, other English-speaking country, and non-English-speaking country), linguistic background (English as the first language and a language other than English as the first language), marital status (married/partnered, single, and widowed), living arrangement (living alone and living with others), employment status (employed, unemployed, and not in the labour force), area-level socioeconomic disadvantage using the Index of Relative Socio-economic Disadvantage-IRSD (bottom three deciles, middle three deciles, and top three deciles) [24], remoteness (metropolitan, inner-regional, and outer-regional/remote).

Statistical analysis

We used the HILDA data from waves 1 to 23 (2001–23), where social isolation and loneliness were measured at each wave. To model the trends over time, we conducted a series of mixed-effects logistic regression models to account for the correlation across repeated measures within individuals and then used those models to estimate the marginal predicted probabilities [25]. We modelled the main effects of the survey wave (as a continuous variable) on social isolation and loneliness.

To test linearity, we compared the fit of models with a simple linear term against those with quadratic, cubic, and natural logarithmic functions, with the best-fitting model selected using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), with preference given to AIC where the two disagreed, as BIC prefers more parsimonious models (Supplementary Table S3.1 and Appendix S3).

Subgroup analysis

To determine whether the trends in social isolation and loneliness differed by demographic and socioeconomic characteristics, we included in the model the survey wave and one sociodemographic characteristic at a time as independent variables, and social isolation and loneliness as dependent variables, with the addition of a multiplicative interaction term between the wave and each sociodemographic variable. Of the demographic and socioeconomic characteristics, sex, country of birth, and linguistic background were treated as time-constant, while the rest were treated as time-varying. Time-varying covariates were updated at each wave. Therefore, participants could contribute to different categories over time if their status changed (e.g. if they achieved a higher level of education).

Missing data

Two types of missing data were considered: (i) intermittent missing data within waves resulted from non-response to individual questions (e.g. declined to answer) and (2) missing an entire wave due to loss to follow-up. Both types of missing data were handled using the sample weights, which included an adjustment for loss to follow-up. Apart from non-completion, there was very minimal other missing data (<2%). Overall, <10% of cases were missing; therefore, we conducted a complete case analysis. Further details on missing data in HILDA are reported elsewhere [16].

Sensitivity analyses

The following additional analyses were conducted:

- 1) Assessing whether the trends changed as a result of the COVID-19 pandemic (Supplementary Appendix S5.1).
- 2) Modelling the mean of loneliness and social isolation using continuous outcomes.
- 3) Modelling social isolation excluding marital status and living arrangement items to focus on the behaviour of social participation and away from demographic changes.
- 4) Modelling chronic loneliness and social isolation using three, instead of two, consecutive waves [13].

All analyses were conducted in R 4.3.1 and Stata 18.0. We used unweighted data for descriptive statistics and applied sampling weights for all mixed-effects models so that the analytical samples were nationally representative for each survey wave. We presented the results as the marginal predicted mean prevalence of loneliness and 95% confidence intervals (CIs) in each year.

Results

Sample characteristics

Unweighted descriptive statistics are presented in Table 1. At baseline, 13,120 participants were included. The sample aged over time, with those aged 65+ increasing from 14.8% in 2001 to 22.9% in 2023. Females rose from 43.6% to 51.2%, and university graduates from 17.8% to 31.2%. Most participants were Australian-born (75%–80%) and native English-speaking (~90%). Approximately 84% were living with others, and ~65% were married or partnered. Employment rose slightly (61.6%–65.2%). Socioeconomic distribution was balanced according to area-level disadvantage, and two-thirds lived in metropolitan regions throughout.

Temporal trends in loneliness and social isolation: 2001–23

The unadjusted prevalences of loneliness and social isolation are presented in Supplementary Figs. S4.1–S4.2 and Table S4.1. Figure 1 and Supplementary Table S4.2 show the modelled trend in episodic loneliness and social isolation across the study period. All trends changed across time. The prevalence estimate of episodic loneliness varied between 16.3% (95% CI: 15.6%–17.0%) and 17.3% (95% CI: 16.7%–17.9%) by scale, with a slight decrease between 2001 and 2008 and then a gradual relative increase of 16.1% starting from 2008 until 2023. Similarly, the prevalence estimate of episodic loneliness by the single-item measure decreased between 2001 and 2013 from 21.7% (21.1%–22.4%) to 18.5% (18.1%–19.0%) and then rose to 20.5% (19.8%–21.2%) by 2023. The prevalence of episodic social isolation increased from 16.9% (95% CI: 16.2%–17.6%) in 2001 to 29.9% (95% CI: 29.1%–30.8%) in 2023.

The prevalence estimates of chronic loneliness and social isolation were much lower than the episodic measures, but the trends were similar. The prevalence of chronic loneliness by scale was stable until 2006 (6.3%; 95% CI: 6.1%–6.6%), before it steadily increased to 8.4% (95% CI: 8.0%–8.9%) in 2023. By the single-item measure, chronic loneliness decreased until 2011 (8.0%; 95% CI: 7.7%–8.3%), before a steady increase up to 9.9% (95% CI: 9.4%–10.4%) in 2023. The prevalence of chronic social isolation doubled from 10.3% (95% CI: 9.6%–10.9%) in 2002 to 20.5% (95% CI: 19.7%–21.4%) in 2023 (Fig. 2 and Supplementary Table S4.2).

Temporal trends in loneliness and social isolation by population subgroups

The temporal trends in loneliness and social isolation by population subgroups are presented in Figs 3–6 and in Supplementary Figs. S4.3–S4.4 and Tables S4.3–S4.10.

Table 1 Descriptive statistics of socio-demographic characteristics of participants in the Household, Income and Labour Dynamics in Australia (HILDA) survey 2001–2023 (data presented for every second wave).

Year		2001	2003	2005	2007	2009	2011	2013	2015	2017	2019	2021	2023
Sample size		n = 13 120	n = 11 585	n = 11 257	n = 11 199	n = 11 401	n = 15 348	n = 15 189	n = 15 314	n = 15 942	n = 15 820	n = 14 938	n = 14 667
		%	%	%	%	%	%	%	%	%	%	%	%
Sex	Male	56.38	54.39	53.50	52.74	51.57	51.12	50.58	50.94	50.70	49.86	49.30	48.79
	Female	43.62	45.61	46.50	47.26	48.43	48.88	49.42	49.06	49.30	50.14	50.70	51.21
Age categories	16–29	23.12	22.72	23.24	23.89	25.16	25.22	25.87	25.17	24.92	23.88	21.96	20.98
	30–64	62.04	62.02	60.96	59.20	58.28	57.81	56.24	55.73	55.90	55.67	56.51	56.15
	65+	14.84	15.26	15.80	16.90	16.56	16.97	17.88	19.10	19.19	20.45	21.54	22.87
Education	Below high school	56.33	53.32	50.87	49.97	48.26	45.62	43.17	41.15	39.33	37.99	36.33	35.75
	High school/vocational	25.88	27.23	28.09	28.55	29.10	30.26	31.55	32.55	33.51	33.62	33.36	33.07
Country of birth	University	17.78	19.45	21.04	21.48	22.64	24.12	25.28	26.31	27.16	28.39	30.31	31.19
	Australia	74.73	77.89	78.61	79.39	79.86	77.37	77.90	78.54	79.36	79.66	80.18	80.12
	Other English-speaking country	11.18	10.62	10.53	9.93	9.64	10.19	10.00	9.75	9.33	8.97	8.61	8.42
English as the first language	Non-English-speaking country	14.09	11.49	10.86	10.68	10.49	12.44	12.10	11.71	11.31	11.37	11.21	11.46
	Yes	87.47	89.99	90.51	90.69	90.87	89.14	89.36	89.82	90.21	90.19	90.30	90.14
Marital status	No	12.53	10.01	9.49	9.31	9.13	10.86	10.64	10.18	9.79	9.81	9.70	9.86
	Married/partnered	65.01	64.11	63.75	64.32	63.63	64.58	64.67	64.67	64.90	64.92	65.23	64.78
	Single	30.01	30.82	30.91	30.18	31.23	30.61	30.73	30.67	30.79	30.59	30.34	30.85
	Widowed	4.98	5.08	5.34	5.49	5.14	4.81	4.61	4.66	4.31	4.49	4.43	4.37
	Living alone	14.25	15.63	16.03	15.81	15.70	14.84	15.29	15.57	15.59	15.80	16.12	15.41
Living arrangement	Living with others	85.75	84.37	83.97	84.19	84.30	85.16	84.71	84.43	84.41	84.20	83.88	84.59
	Employed	61.55	63.48	65.15	65.17	64.81	64.29	63.06	62.80	63.81	63.94	63.73	65.18
Employment status	Not employed	4.22	3.32	2.86	2.88	3.34	3.26	3.96	4.32	3.77	3.76	3.13	2.75
	Not in the labour	34.22	33.20	31.99	31.96	31.85	32.45	32.98	32.88	32.42	32.30	33.14	32.07
	Most disadvantaged (deciles 1–3)	32.47	30.53	29.53	28.41	28.10	28.16	28.61	28.57	28.35	28.02	27.41	28.07
	Middle disadvantaged (deciles 4–7)	36.68	37.52	38.64	39.20	40.15	39.73	39.91	40.14	40.97	41.51	42.19	42.35
Area-level socioeconomic disadvantage	Least disadvantaged (8–10)	30.85	31.95	31.83	32.39	31.75	32.11	31.48	31.29	30.68	30.48	30.40	29.58
	Metropolitan	64.12	63.69	64.31	64.60	64.82	67.18	67.13	66.93	66.21	66.18	65.60	65.67
	Inner-regional	22.11	22.85	22.95	22.71	22.58	21.44	21.33	21.83	22.36	22.79	23.57	23.80
	Outer-regional/remote	13.77	13.47	12.74	12.70	12.60	11.38	11.54	11.24	11.43	11.03	10.83	10.52

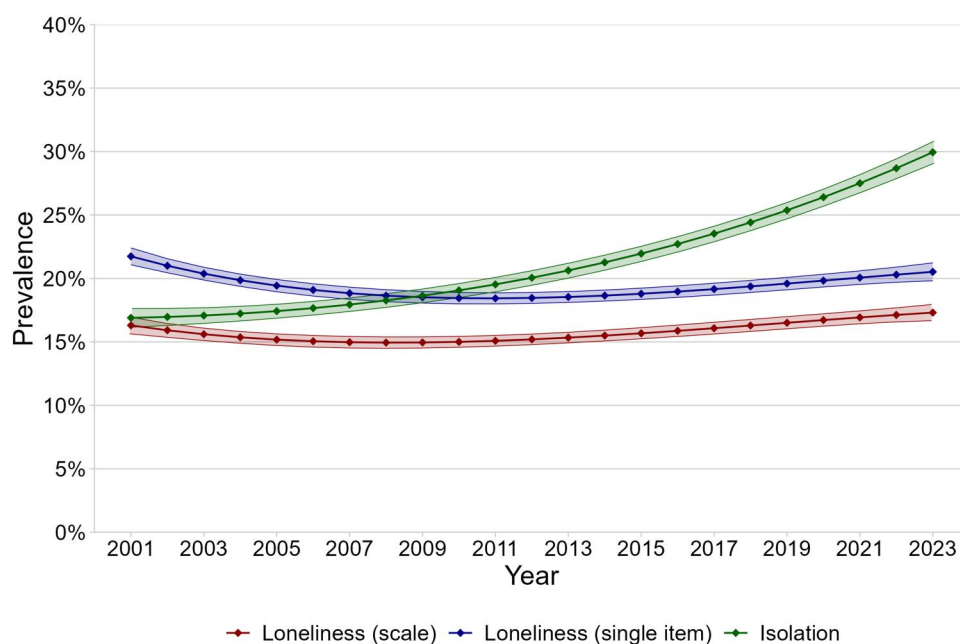


Figure 1 Prevalence estimates of episodic loneliness and social isolation, 2001–23.

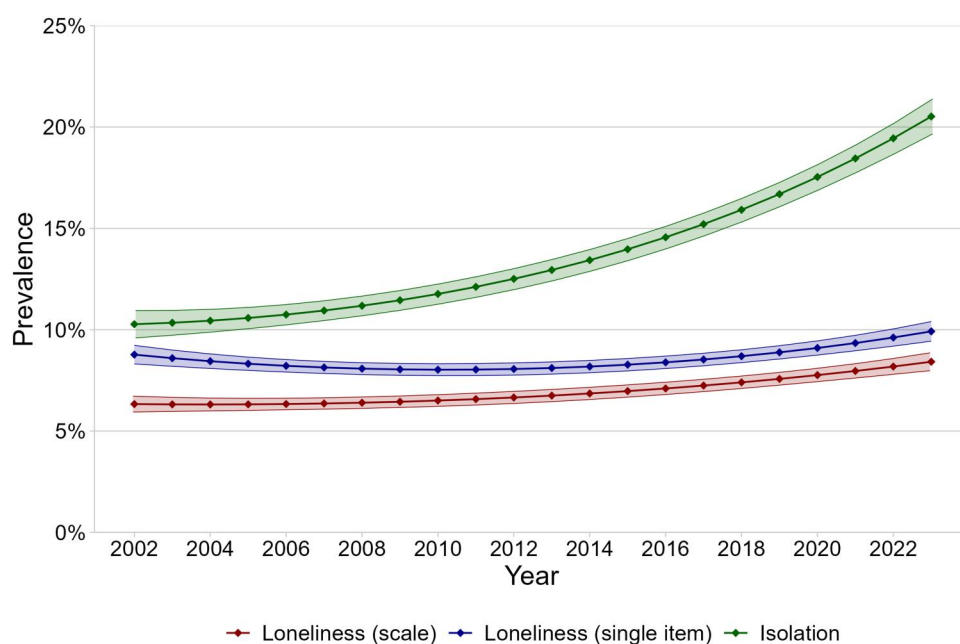


Figure 2 Prevalence estimates of chronic loneliness and social isolation, 2002–23.

Age

Younger adults (16–29 years) started with the lowest levels of episodic and chronic loneliness (scale and one item), but their rates rose from the beginning of the 2010s, narrowing the age gap around 2015, and, based on the one-item measure, surpassed other age groups to report the highest levels of loneliness by 2023. Chronic loneliness (scale and one-item) rose among all ages, mainly among younger adults. Social isolation (episodic and chronic) increased across all age groups. The most pronounced increase in social isolation occurred in the 65+ group. This group also consistently reported the highest levels of episodic and chronic social isolation over time.

Sex

Trends in episodic and chronic loneliness (scale and one item) and social isolation showed similar patterns across sexes. In the one-item loneliness measure, females consistently reported a slightly higher increase in episodic and chronic loneliness.

Marital status

Episodic loneliness declined and then increased (scale and one item), with a particularly steep rise among the widowed group in the scale measure. Chronic loneliness was stable in the scale measure and declined in the one-item measure among widowed

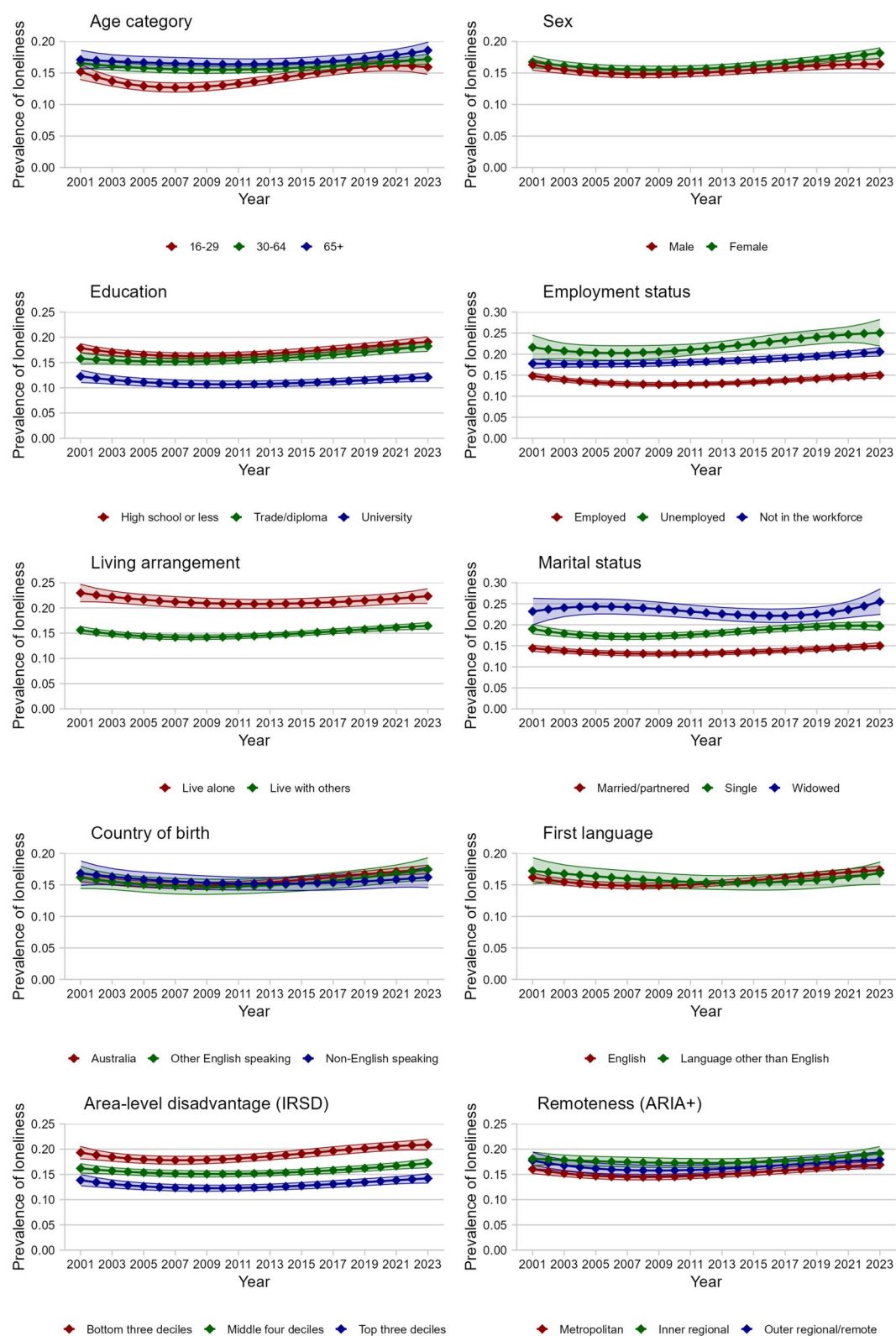


Figure 3 Prevalence estimates of the episodic loneliness scale by sociodemographic characteristics, 2001–23.

individuals. Single individuals, who initially reported lower levels of chronic loneliness, reached levels similar to widowed individuals by 2022. In the loneliness scale measure, this was driven

by increasing loneliness among single individuals, whereas in the one-item measure, it reflected declining loneliness among widowed individuals.

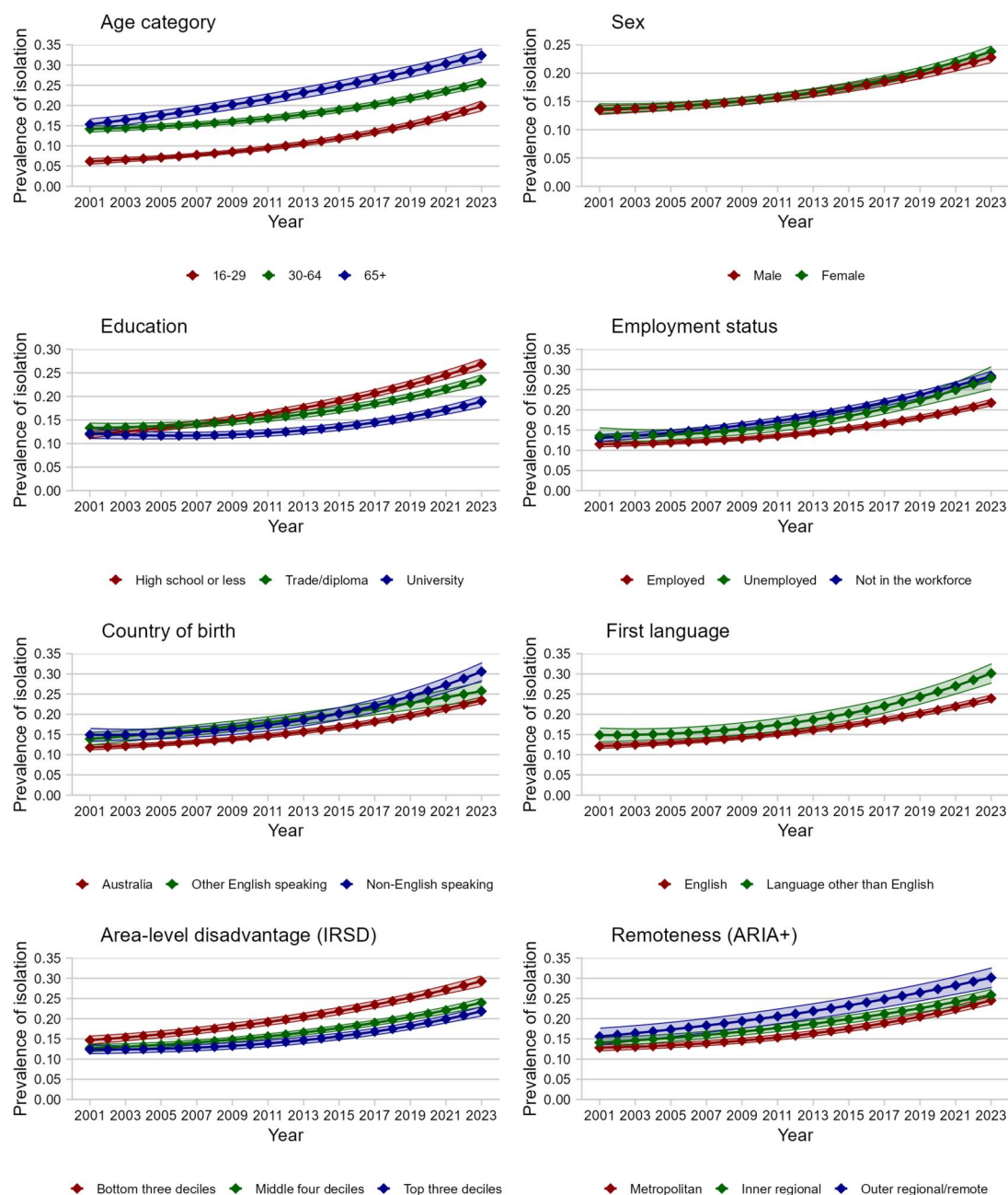


Figure 4 Prevalence estimates of episodic social isolation by sociodemographic characteristics, 2001–23.

Living arrangement

Loneliness levels (scale and one item) were consistently higher for those living alone; however, episodic and chronic loneliness in this group declined over time, while chronic loneliness increased in those living with others.

Education

Episodic and chronic loneliness (scale and one item) were lower among individuals with university education. For all groups, episodic and chronic loneliness and social isolation followed a downward and then upward trend. Both episodic and chronic social isolation showed a gradual increase in all groups.

Employment

Employed individuals were less lonely and isolated. Both episodic and chronic loneliness (scale and one item) followed a down-and-up trend, and chronic loneliness increased steeply among unemployed individuals. Social isolation followed a similar trend, with the increase being most pronounced in the unemployed group.

Country of birth

Across country of birth subgroups, episodic and chronic loneliness (scale and one item) declined through the 2000s and rose from the 2010s onwards. Chronic social isolation increased in

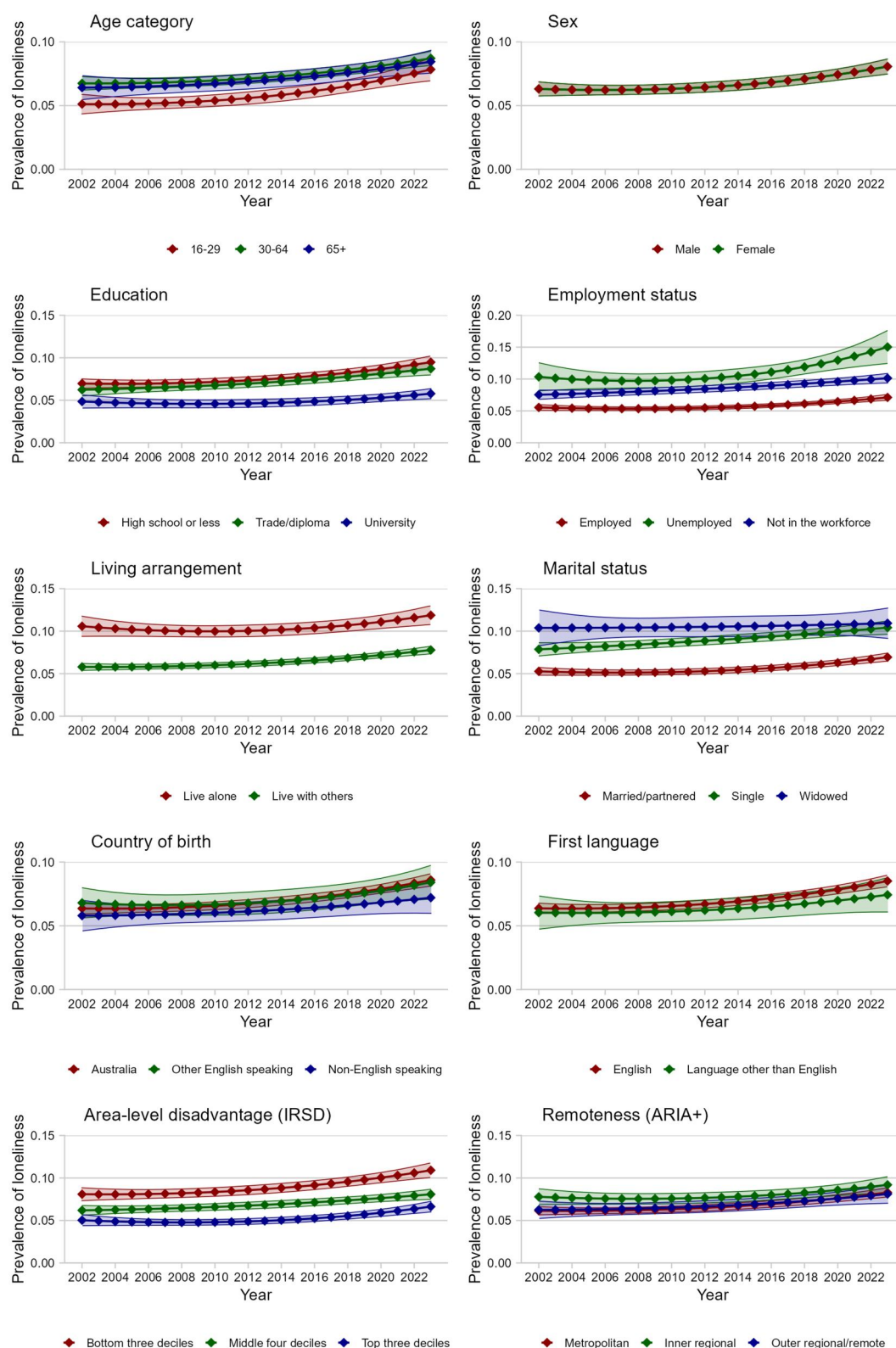


Figure 5 Prevalence estimates of the chronic loneliness scale by sociodemographic characteristics, 2002–23.

people born in English-speaking countries and Australia, while it declined and rose again in those born in non-English-speaking countries, narrowing the gap and eventually reversing it.

First language

No major differences were observed by first language in episodic and chronic loneliness (scale and one item). Social isolation

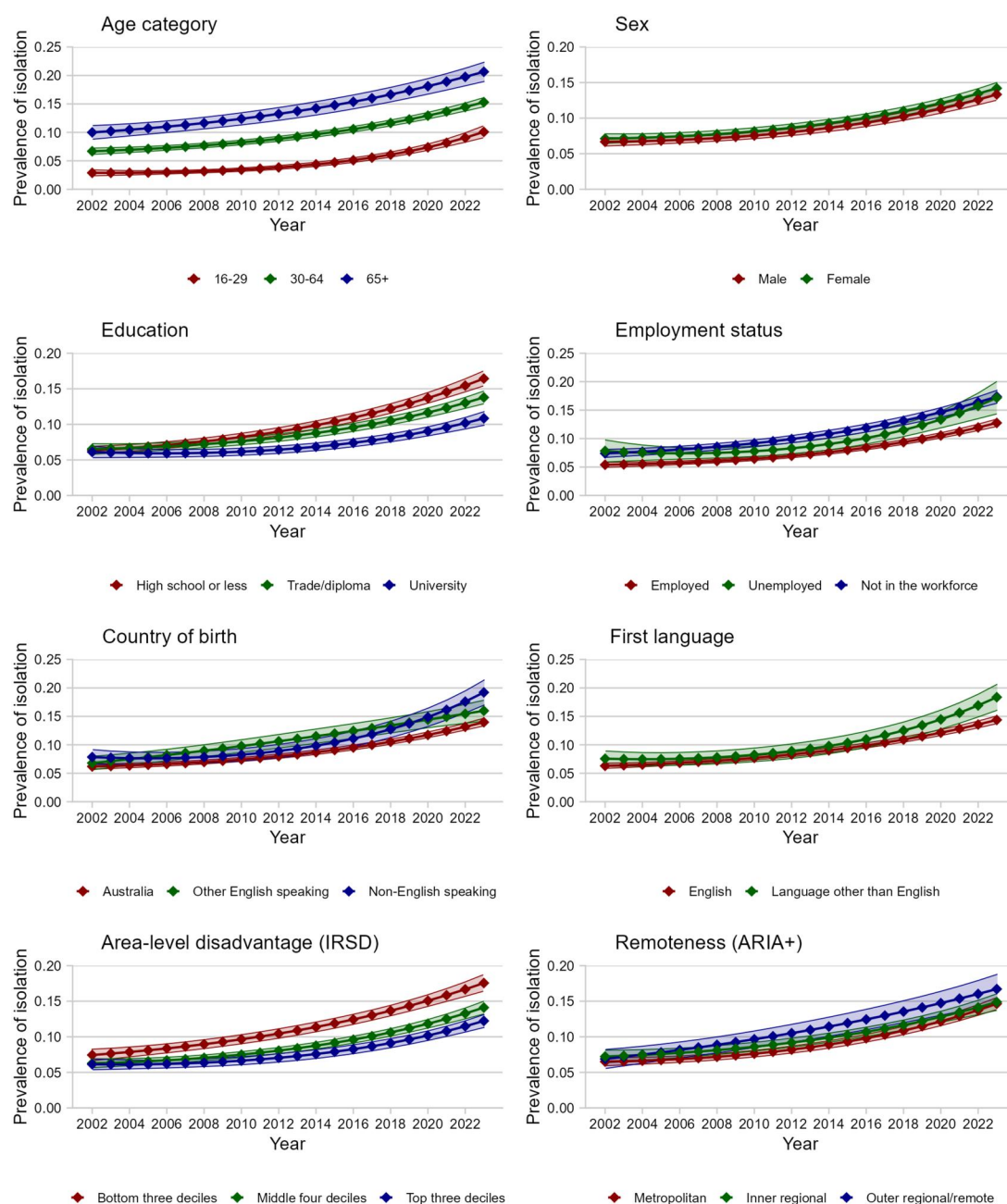


Figure 6 Prevalence estimates of chronic social isolation by sociodemographic characteristics, 2002–23.

increased in both groups, with greater increases among those who do not speak English as their first language.

Area-level disadvantage

Lower IRSD deciles (higher area-level disadvantage) had higher levels of episodic and chronic loneliness (scale and one item) and social isolation. Across groups, episodic and chronic loneliness followed a down-and-up trend, while social isolation followed an upward trend.

Area remoteness

Both episodic and chronic loneliness (scale and one-item) and social isolation followed similar trends and levels across area

remoteness levels. While loneliness showed a down-and-up trend, social isolation had a steady upward trend, with slightly higher levels in rural areas.

Sensitivity analysis

Sensitivity analysis testing for COVID-related changes showed trends were consistent with the primary analysis, with a small post-COVID uptick in loneliness and a marked increase in social isolation, which rose in 2020–21 before returning to expected levels in 2022 ([Supplementary Table S5.1 and Fig. S5.1](#)).

Modelling loneliness and social isolation as continuous outcomes showed similar trends to the main and subgroup analysis. Episodic and chronic loneliness declined and then increased over

time, while social isolation increased steadily (Supplementary Figs. S5.2–S5.3).

Modelling social isolation excluding marital status and living arrangement items substantially reduced social isolation levels and between-group differences, with trends remaining increasing but flatter and more uniform across subgroups (Supplementary Figs. S5.4–S5.7).

Modelling chronic loneliness and social isolation using three, instead of two, consecutive waves produced comparable trends to the 2-year definition, though the three-wave definition captured a slightly stronger upward trend (Supplementary Fig. S5.8).

Discussion

This is one of the first studies to examine long-term trends in loneliness and social isolation across a broad range of age groups in Australia [26]. Our findings reveal that over 23 years, both episodic and chronic social isolation increased substantially, while loneliness remained relatively stable, with only moderate increases and a slight decline in episodic loneliness in the 2000s. Previous studies have shown stable levels of loneliness over time [27, 28] and increases in social isolation, consistent with our findings [29, 30]. However, other studies found no clear overall trends in social isolation across time and contexts [27, 31]. These differences may reflect variations in definition, measures and analytical decisions.

In the 2000s, loneliness declined while social isolation increased, possibly reflecting broader societal changes such as the rise of digital communication, which sustained connections despite reduced face-to-face contact [32] and stable pre-2008 economic conditions that may have buffered against loneliness [33]. From the 2010s, both loneliness and isolation rose, likely driven by digital displacement of in-person contact, economic instability, casualized work, rising living costs, and demographic shifts, including ageing and urbanization [34, 35]. Although COVID-19 may have intensified these patterns [36], our sensitivity analysis and other evidence suggest the increase would likely have occurred regardless [37].

In the current study, the prevalence of the chronic loneliness scale showed a relative increase of 33.3% between 2002 and 2023, while chronic social isolation approximately doubled over the same period. Chronic loneliness and social isolation are associated with serious health risks, including cardiovascular disease and early mortality [23, 38]. Their consistent rise suggests there is a vulnerable group with persistent social difficulties, possibly influenced by socio-economic or health status [39].

Our subgroup analysis showed no sex differences in loneliness or social isolation trends over time. However, episodic loneliness among females rose gradually between 2015 and 2023, while males' levels remained stable. Evidence concerning gender differences remains mixed; men may experience greater loneliness due to fewer social ties, while women may be more vulnerable due to longer life expectancy, caregiving roles, and widowhood [40]. Stigma around emotional expression may also lead to underreporting among men, possibly explaining the slightly higher reported rates among women [40].

The sharpest rise of episodic and chronic loneliness and social isolation was among young adults (16–29) after the 2000s, and

older adults (65+ years) reported the highest levels of episodic and chronic loneliness (scale), and both forms of isolation rose, reflecting vulnerability linked to health decline and loss of ties [41]. Middle-aged adults followed similar patterns of loneliness and social isolation, potentially driven by the combined pressures of work, caregiving responsibilities, and limited opportunities for social engagement [42]. The rise in chronic loneliness among young adults may reflect growing digitalization, as well as financial and housing stress, which contributes to more anxiety, depression and time spent alone [43, 44]. It may also indicate an increased awareness and recognition of social and mental health issues [45].

Consistent with previous studies [13], partnered individuals and those living with others consistently reported lower and more stable loneliness, while increases were observed among single and widowed individuals. Widowed individuals reported the highest levels, with stable chronic loneliness and fluctuating episodic loneliness, likely reflecting grief, adaptation, and age-related health declines. Relationship status is a strong predictor of loneliness, especially in older age, as other social ties diminish [46]. In the sensitivity analysis excluding marital status and living arrangement from the social isolation measure, differences between marital status and living arrangement groups were minimal, underscoring the strong contribution of these components to observed disparities. Our findings show that education, employment, socioeconomic status, and geographic remoteness are determinants of loneliness and social isolation, consistent with international evidence linking lower socioeconomic status to greater risk [13]. Metropolitan residents reported slightly lower isolation, though prior research suggests loneliness is shaped more by area-level deprivation than remoteness [47], with strong community ties in rural areas potentially buffering against loneliness [48].

Strengths and limitations

This 23-year trend analysis used nationally representative longitudinal data and robust methods, including multiple sensitivity and subgroup analyses. Both episodic and chronic loneliness and social isolation were assessed, yielding consistent findings across two validated loneliness measures. The use of both dichotomous and continuous outcomes, as well as both scale-based and single-item direct loneliness measures, strengthened the robustness of the results. Sensitivity analyses confirmed that the trends were not pandemic-driven. The results are highly representative of the settled Australian population. However, immigrants arriving after 2011 are under-sampled [17]. Despite using population weighting to mitigate this, the study may not fully reflect the higher rates of loneliness typically observed in recent migrants and culturally and linguistically diverse communities [49, 50]. This suggests that actual national levels of loneliness and social isolation in Australia could be higher than those reported here.

Conclusions

This study shows that while social isolation has increased substantially over 23 years, loneliness has shown comparable

smaller absolute changes. However, even modest absolute increases in chronic loneliness represented meaningful relative increases over time. These findings indicate that objective social interactions have declined more than subjective perceptions of social connections. This may reflect shifting norms around marriage, family, and living arrangements, suggesting reduced contact is not always perceived as distressing. However, prolonged loneliness and isolation pose serious health risks, including mental illness and early mortality, with implications for health policy and urban planning. Although protective factors like employment and cohabitation persist, rising loneliness and isolation among younger, widowed and disadvantaged populations highlight broader societal shifts.

Acknowledgements

This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the author and should not be attributed to either DSS or the Melbourne Institute.

Author contributions

All authors contributed substantially to this work. N.H. contributed to conceptualization, project administration, data curation, and formal analysis, and co-led the writing of the original draft, as well as review and editing. P.J.C. contributed to supervision, conceptualization, and led the methodology, data curation, formal analysis, and manuscript review and editing. K.B.O. and M. L. contributed to conceptualization, methodology, and manuscript review and editing. D.L.S. and K.E.M. contributed to conceptualization and manuscript review and editing. M.H.L., B.J.S., and P.H. provided supervision, conceptualization, and manuscript review and editing. D.D. led the supervision, project administration, conceptualization, and methodology, and co-led the writing of the original draft and subsequent revisions. All authors reviewed and approved the final version of the manuscript.

Supplementary material

Supplementary material is available at *IJE* online.

Conflicts of interest

No relevant disclosures.

Funding

Ding Ding was funded by the National Health and Medical Research Council Emerging Leader Fellowship (award no. 2009254). Philip J. Clare was supported by the Prevention

Research Support Program Round 6, funded by the New South Wales Ministry of Health.

Data availability

Data are publicly available and can be obtained upon formal permission from the Household, Income and Labour Dynamics in Australia (HILDA) data custodians.

Code availability

The code is available at <https://www.philipclare.com/code/hilda/>

Use of artificial intelligence (AI) tools

No AI tools were used in collecting and/or analysing data, producing images or graphical elements, or in writing the paper.

References

1. Hawkey LC, Cacioppo JT. Loneliness matters: a theoretical and empirical review of consequences and mechanisms. *Ann Behav Med* 2010;**40**:218–27. <https://doi.org/10.1007/s12160-010-9210-8>
2. Nicholson NR. A review of social isolation: an important but underassessed condition in older adults. *J Prim Prev* 2012; **33**:137–52. <https://doi.org/10.1007/s10935-012-0271-2>
3. Russell D, Peplau LA, Cutrona CE. The revised UCLA Loneliness Scale: concurrent and discriminant validity evidence. *J Pers Soc Psychol* 1980;**39**:472–80. <https://doi.org/10.1037//0022-3514.39.3.472>
4. Leigh-Hunt N, Baggeley D, Bash K *et al*. An overview of systematic reviews on the public health consequences of social isolation and loneliness. *Public Health* 2017;**152**:157–71. <https://doi.org/10.1016/j.puhe.2017.07.035>
5. Manning-Schaffel V. Americans Are Lonelier Than Ever—but 'Gen Z' May Be the Loneliest 2018. <https://www.nbcnews.com/better/pop-culture/americans-are-lonelier-ever-gen-z-may-be-loneliest-ncna873101> (27 May 2025, date last accessed).
6. Jessica B. Why is loneliness on the rise among young Australians? *SBS News* 2023. <https://www.sbs.com.au/news/article/why-do-so-many-young-people-feel-so-lonely/pmobpxyp9> (27 May 2025, date last accessed).
7. Australian Institute of Health and Welfare. Older Australians: Demographic profile Canberra. 2021. <https://www.aihw.gov.au/reports/older-people/older-australians/contents/demographic-profile> (27 May 2025, date last accessed).
8. The United Nations Economic Commission for Europe (UNECE). *Ageing in the Digital Era: UNECE Highlights Key Actions to Ensure Digital Inclusion of Older Persons*. Geneva: UNECE2022. <https://unece.org/digitalization/press/ageing-digital-era-unece-highlights-key-actions-ensure-digital-inclusion-older> (29 May 2025, date last accessed).

9. New South Wales Parliament Legislative Council Standing Committee on Social Issues. The prevalence, causes and impacts of loneliness in New South Wales. Report no. 65. 2025.
10. Luhmann M, Buecker S, Rüsberg M. Loneliness across time and space. *Nat Rev Psychol* 2023;**2**:9–23. <https://doi.org/10.1038/s44159-022-00124-1>
11. Surkalim DL, Luo M, Eres R *et al*. The prevalence of loneliness across 113 countries: Systematic review and meta-analysis. *BMJ* 2022;**376**:e067068. <https://doi.org/10.1136/bmj-2021-067068>
12. Buecker S, Mund M, Chwastek S, Sostmann M, Luhmann M. Is loneliness in emerging adults increasing over time? A pre-registered cross-temporal meta-analysis and systematic review. *Psychol Bull* 2021;**147**:787–805. <https://doi.org/10.1037/bul0000332>
13. Surkalim DL, Clare PJ, Eres R, Gebel K, Bauman A, Ding D. Have middle-aged and older americans become lonelier? 20-year trends from the Health and Retirement Study. *J Gerontol B Psychol Sci Soc Sci* 2023;**78**:1215–23. <https://doi.org/10.1093/geronb/gbad062>
14. Aunsmo RH, Langballe EM, Hansen T, Selbæk G, Strand BH. Time trends in loneliness from 1984 to 2019 among 27,032 older adults in Norway: a HUNT study. *Prev Med* 2023;**175**: 107659. <https://doi.org/10.1016/j.ypmed.2023.107659>
15. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, STROBE Initiative. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *BMJ* 2007;**335**:806–8. <https://doi.org/10.1136/bmj.39335.541782.AD>
16. Watson N, Wooden MP. The HILDA survey: a case study in the design and development of a successful household panel survey. *Longitudinal and Life Course Studies* 2012; **3**:369–81.
17. Summerfield M, Garrard B, Nesa M, Kamath R, Macalalad N, Watson N, Wilkins R, Wooden M. *HILDA User Manual – Release 23*. Melbourne Institute: Applied Economic and Social Research, University of Melbourne, Melbourne, 2024.
18. Steptoe A, Shankar A, Demakakos P, Wardle J. Social isolation, loneliness, and all-cause mortality in older men and women. *Proc Natl Acad Sci USA* 2013;**110**:5797–801. <https://doi.org/10.1073/pnas.1219686110>
19. Manera KE, Smith BJ, Owen KB, Phongsavan P, Lim MH. Psychometric assessment of scales for measuring loneliness and social isolation: an analysis of the household, income and labour dynamics in Australia (HILDA) survey. *Health Qual Life Outcomes* 2022;**20**:40. <https://doi.org/10.1186/s12955-022-01946-6>
20. Nicolaisen M, Thorsen K. Who are lonely? Loneliness in different age groups (18–81 years old), using two measures of loneliness. *Int J Aging Hum Dev* 2014;**78**:229–57. <https://doi.org/10.2190/AG.78.3.b>
21. Peplau L, Perlman D, Russell D. The measurement of loneliness. In: Peplau L, Perlman, D (eds.), *Loneliness: A Sourcebook of Current Theory, Research and Theory*. New-York: John Wiley & Sons, 1982, 81–104.
22. Lim MH, Manera KE, Owen KB, Phongsavan P, Smith BJ. The prevalence of chronic and episodic loneliness and social isolation from a longitudinal survey. *Sci Rep* 2023;**13**:12453. <https://doi.org/10.1038/s41598-023-39289-x>
23. HaGani N, Clare P, Merom D, Smith BJ, Ding D. Loneliness and all cause mortality in Australian women aged 45 years and older: causal inference analysis of longitudinal data. *BMJ Med* 2025;**4**:e001004. <https://doi.org/10.1136/bmjmed-2024-001004>
24. Australian Bureau of Statistics Canberra. *Technical Paper: Socio-Economic Indexes for Areas (SEIFA)*. Canberra: ABS; 2016.
25. Greenland S. Model-based estimation of relative risks and other epidemiologic measures in studies of common outcomes and in case-control studies. *Am J Epidemiol* 2004;**160**: 301–5. <https://doi.org/10.1093/aje/kwh221>
26. Fuller-Rowell TE, Sultana S, Kawachi I. Global trends and disparities in social isolation. *JAMA Netw Open* 2025;**8**:e2532008. <https://doi.org/10.1001/jamanetworkopen.2025.32008>
27. Australian Institute of Health and Welfare. *Social Isolation and Loneliness Canberra*. 2024. <https://www.aihw.gov.au/mental-health/topic-areas/social-isolation-and-loneliness> (29 May 2025, date last accessed).
28. Blom V, Kallings LV, Ekblom B *et al*. Self-reported general health, overall and work-related stress, loneliness, and sleeping problems in 335,625 Swedish adults from 2000 to 2016. *Int J Environ Res Public Health* 2020;**17**:511. <https://doi.org/10.3390/ijerph17020511>
29. Anttila T, Selander K, Oinas T. Disconnected lives: trends in time spent alone in Finland. *Soc Indic Res* 2020;**150**:711–30. <https://doi.org/10.1007/s11205-020-02304-z>
30. Kannan VD, Veazie PJ. US trends in social isolation, social engagement, and companionship – nationally and by age, sex, race/ethnicity, family income, and work hours, 2003–2020. *Popul Health* 2023;**21**:101331.
31. Donnelly R, Hey N, McIntyre H, *Social Isolation over Time*, Briefing: What Works Centre for Wellbeing, June 2023. <https://whatworkswellbeing.org/resources/trends-in-social-isolation/> (29 May 2025, date last accessed).
32. Amichai-Hamburger Y, Hayat Z. The impact of the Internet on the social lives of users: A representative sample from 13 countries. *Comput Human Behav* 2011;**27**:585–9. <https://doi.org/10.1016/j.chb.2010.10.009>
33. Plumb M, Baker M, Spence G. *The Labour Market during the 2008–2009 Downturn*. Reserve Bank of Australia, Bulletin – March 2010.
34. Esposto A, Agudelo JF. Casualisation of work and inequality in the Australian labour market. *Aust J Labour Econ* 2019; **22**:53–74.
35. Bower M, Kent J, Patulny R *et al*. The impact of the built environment on loneliness: a systematic review and narrative synthesis. *Health Place* 2023;**79**:102962. <https://doi.org/10.1016/j.healthplace.2022.102962>
36. O’Sullivan R, Burns A, Leavey G *et al*. Impact of the COVID-19 pandemic on loneliness and social isolation: a multi-country study. *IJERPH* 2021;**18**:9982. <https://doi.org/10.3390/ijerph18199982>
37. Ernst M, Niederer D, Werner AM *et al*. Loneliness before and during the COVID-19 pandemic: a systematic review with meta-analysis. *Am Psychol* 2022;**77**:660–77. <https://doi.org/10.1037/amp0001005>

38. Valtorta NK, Kanaan M, Gilbody S, Ronzi S, Hanratty BJ. Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis of longitudinal observational studies. *Heart* 2016; **102**:1009–16. <https://doi.org/10.1136/heartjnl-2015-308790>
39. Barreto M, Doyle DM, Qualter P. Changing the narrative: loneliness as a social justice issue. *Polit Psychol* 2024; **45**: 157–81. <https://doi.org/10.1111/pops.12965>
40. Barreto M, Victor C, Hammond C, Eccles A, Richins MT, Qualter P. Loneliness around the world: age, gender, and cultural differences in loneliness. *Pers Individ Dif* 2021; **169**: 110066. <https://doi.org/10.1016/j.paid.2020.110066>
41. Puyan  M, Chabrera C, Cam n E, Cabrera E. Uncovering the impact of loneliness in ageing populations: a comprehensive scoping review. *BMC Geriatr* 2025; **25**:244. <https://doi.org/10.1186/s12877-025-05846-4>
42. Akhter-Khan SC, Hofmann V, Warncke M, Tamimi N, Mayston R, Prina MA. Caregiving, volunteering, and loneliness in middle-aged and older adults: a systematic review. *Aging Ment Health* 2023; **27**:1233–45. <https://doi.org/10.1080/13607863.2022.2144130>
43. O'Day EB, Heimberg RG. Social media use, social anxiety, and loneliness: A systematic review. *Comput Hum Behav Rep* 2021; **3**:100070. <https://doi.org/10.1016/j.chbr.2021.100070>
44. Roberts MK, Bhat AC, Fenelon A. The long-term effects of housing insecurity in young adulthood on subsequent material hardship, physiological and mental health. *Soc Sci Med* 2025; **367**:117761. <https://doi.org/10.1016/j.socscimed.2025.117761>
45. B hler JL, Nikitin J. Sociohistorical context and adult social development: new directions for 21st century research. *Am Psychol* 2020; **75**:457–69. <https://doi.org/10.1037/amp0000611>
46. Barjakov  M, Garner  A, Hombres B. Risk factors for loneliness: a literature review. *Soc Sci Med* 2023; **334**:116163. <https://doi.org/10.1016/j.socscimed.2023.116163>
47. Victor CR, Pikhartova J. Lonely places or lonely people? Investigating the relationship between loneliness and place of residence. *BMC Public Health* 2020; **20**:778. <https://doi.org/10.1186/s12889-020-08703-8>
48. Henning-Smith C, Moscovice I, Kozhimannil K. Differences in social isolation and its relationship to health by rurality. *J Rural Health* 2019; **35**:540–9. <https://doi.org/10.1111/jrh.12344>
49. Chen W, Wu S, Ling L, Renzaho AMN. Impacts of social integration and loneliness on mental health of humanitarian migrants in Australia: evidence from a longitudinal study. *Aust N Z J Public Health* 2019; **43**:46–55. <https://doi.org/10.1111/1753-6405.12856>
50. Lam J. Neighborhood characteristics, neighborhood satisfaction, and loneliness differences across ethnic-migrant groups in Australia. *J Gerontol B Psychol Sci Soc Sci* 2022; **77**: 2113–25. <https://doi.org/10.1093/geronb/gbab219>