

Trends and Cause Contributions to Area-level Socio-economic Inequalities in Life Expectancy in Australia, 2013-22.

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Background

Australia experiences one of the highest life expectancies in the world, particularly for men. However, there has been evidence of a slowdown in life expectancy increase in the pre-pandemic period,¹ while a recent comparative study has identified a mortality disadvantage at young-middle ages compared with the average of non-Anglophone high-income countries.² More recently, COVID-19 pandemic had a relatively delayed effect on life expectancy trends in Australia compared to many other countries - a substantial rise in 2020 was followed by subsequent declines in 2021 and especially 2022.^{3,4}

Despite Australia's reputation as a high-longevity society, there are significant inequalities in mortality and health within the country. The most recent studies of area-level socioeconomic inequalities in mortality found widening inequalities in premature mortality in Australia to up 2016.⁵⁻⁸ However, we were unable to find any more recent studies nor any that have examined trends in, as well as age group and cause of death contributions to, socioeconomic disparities in life expectancy in Australia. To meet this gap, this study aims to provide a contemporary and comprehensive analysis of area-level socioeconomic inequalities in life expectancy in Australia, including before and during the COVID-19 pandemic with a focus on ages and causes of death driving the observed disparities.

Data and Methods

We used individual-level Death Registrations, which contain information on all deaths registered in Australia, including year of death, age, sex, underlying cause of death, and SA2 code. SA2s indicate a place of usual residence of a deceased person and are the smallest geographical areas available in Death Registrations. Age- and sex-specific estimated resident population (ERP) for SA2 came from the Australian Bureau of Statistics (ABS). Following on from previous research, we used deciles of the ABS Index of Relative Socio-economic Advantage and Disadvantage (IRSAD), 2021 version, to measure relative socioeconomic position of each SA2.

We estimated death rates for each moving average period, 5-year age group, sex, and IRSAD decile. Using them, we estimated life expectancy at birth and cause-specific life-years lost (LYL)⁹ for each period, sex and IRSAD decile. We used the Slope Index of Inequality (SII)^{10,11} across all deciles as the main measure for assessing the magnitude and time trends in inequalities.

Preliminary results

Figure 1 shows the time trends in life expectancy at birth across ten deprivation deciles in Australia, separately for women and men. Throughout the study period, life expectancy was higher/lower in each successive decile. However, the top (D10) and especially the bottom (D1) deciles showed a greater deviation from the middle deciles. Life expectancy gradually improved throughout the pre-pandemic period in 5-6 top deciles, peaking at 87.3 and 84.7 years for women and men respectively in D10 in 2018-20. On the other hand, the stalled life expectancy trends were observed in 4-5 most deprived deciles before 2016-18, especially in women. Since then, the increase in life expectancy has accelerated in the most deprived areas, reaching its maximum in 2018-20 (82.7 years for women, 77.9 for men in D1). In the later phase of the COVID-19 pandemic (2021 and especially 2022), the decline in life expectancy was observed in every decile, with the greatest decline among women in the most disadvantaged areas.

Figure 2 depicts the temporal changes in inequalities in life expectancy at birth using two measures: the slope index of inequalities (SII) and the absolute difference between the top and bottom deciles, the trends and levels of which are quite similar, especially for men. The SII was expectedly higher for males compared to females. For men, the SII increased from 6.0 years (95% CI 5.7-6.3) in 2013-14 up to 6.8 years (6.4-7.1) in 2017-19, before gradually declining to 6.4 years (5.9-6.8) in 2021-22. Changes in the SII over time for women were less pronounced, but did increase slightly during the pandemic, reaching a maximum of 4.5 years (4.3-5.1) in 2021-22.

We examined the contribution of different causes of death to the observed inequalities in life expectancy by assessing the time trends in the SII for the cause-specific life-years lost (Figure 3). The SII was generally higher or similar for males than for females, with the largest sex difference due to suicide, traffic accidents and ischaemic heart disease (IHD). For men, the main causes (in descending order, ~70% of the total difference) were IHD, lung cancer, chronic obstructive pulmonary disease (COPD), suicide, traffic accidents, substance-related disorders and diabetes. The largest increases in cause-specific SII, particularly in the pre-pandemic period, were observed for COPD, injuries and diabetes. In women, COPD and lung cancer were the leading causes and increased over the study period. These were followed by IHD, diabetes, substance-related diseases and traffic accidents.

An international comparison shows that 10 per cent of Australian women living in the most affluent areas enjoyed a life expectancy very similar to that of the best performing country - Japan, while 50 per cent of Australian men outlived an average Japanese man. Life expectancy in the most deprived decile was intermediate between the UK and the US.

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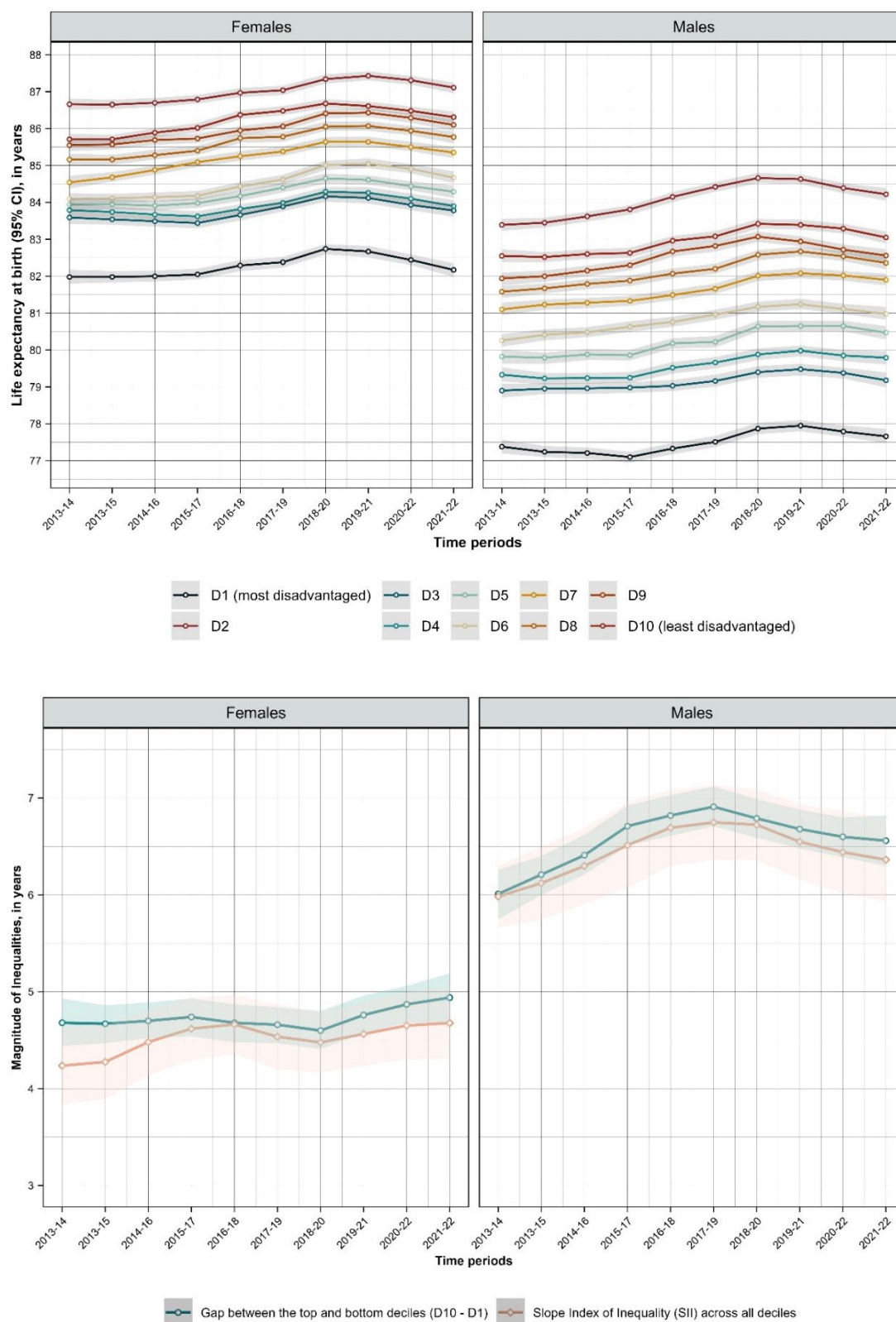


Figure 1. Time trends in life expectancy at birth across deprivation deciles in Australia (upper panel) and in inequality measures (lower panel), by sex, 2013-22 (moving average).

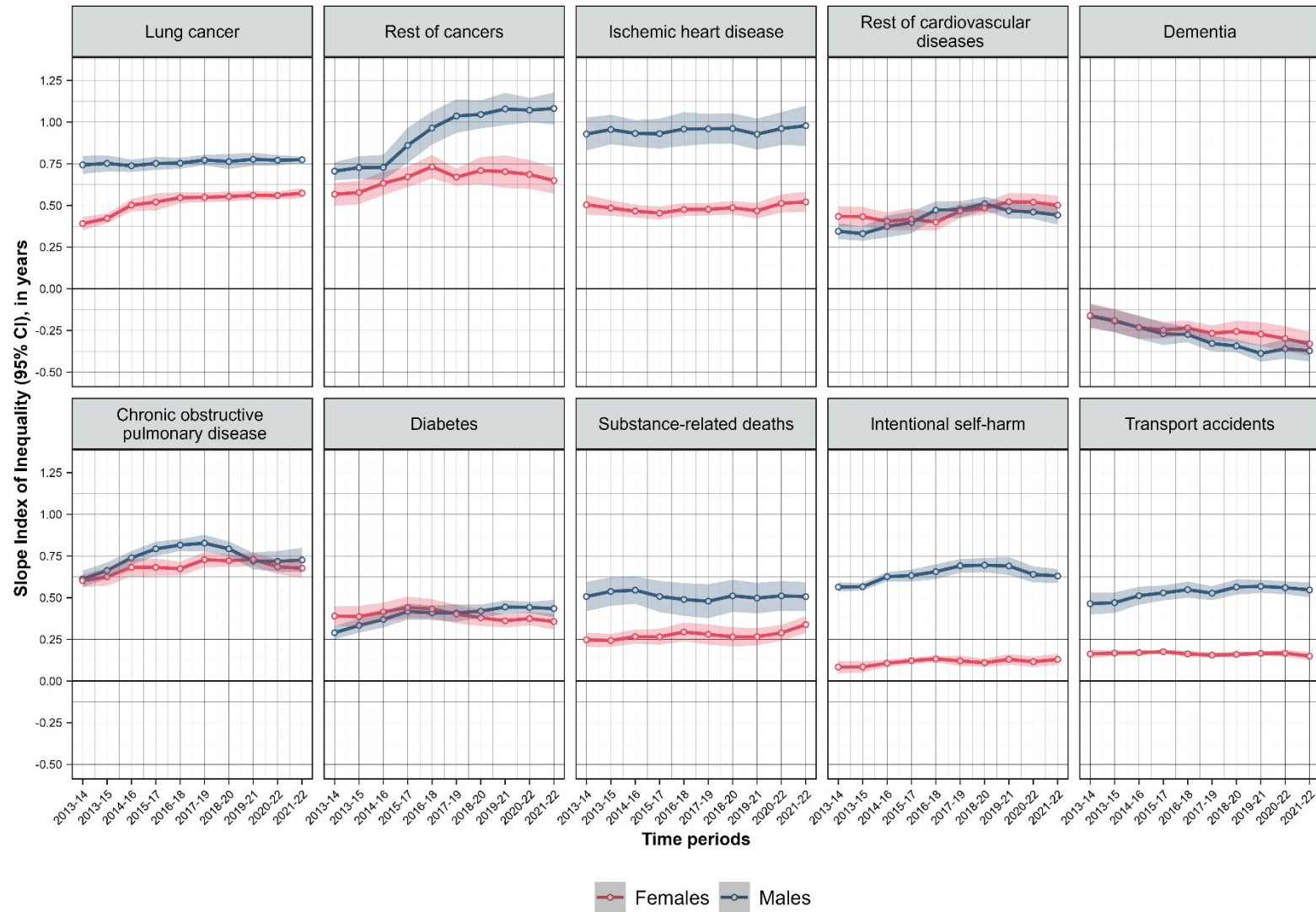


Figure 2. Time trends in the Slope Index of Inequality (SII) in cause-specific life years lost (LYL), by sex, 2013-22.